American Psychosomatic Society 68th Annual Meeting
Portland, Oregon – March 10 - 13, 2010 ~ Program Schedule-at-a-Glance

Abstracts are grouped by symposia, followed by all of the poster presentations, and conclude with all of the paper presentations.

Wednesday, March 10
9:00-4:30  Full Day Preconference Workshop: A Primer on Cancer Biology
12:30-4:30  Half Day Preconference Workshops: APS Mini-Medical School and Meditation Research
5:00-5:10  Welcome and Announcements
5:15-6:10  Plenary Session: Homeostatic Definition of Stress
6:15-7:00  Awards Session: Patricia R. Barchas Award Presentation and Award Announcements
7:00-8:30  Citation Poster Session (p. A23-A30) and Reception

Thursday, March 11
7:00-8:00  Breakfast Roundtables
8:00-8:55  Plenary Session: Mechanisms Linking Stress and Disease
9:00-10:15  Invited Symposium: Mapping Relationships between the Social World and Physical Health
Symposium 1074: Behavioral Interventions (p. A2-A3)
Paper Session 1 - Depression and Cardiac Disease Risk (p. A141-A142)
Paper Session 2 - Pain (p. A142-A143)
10:30-11:25  Invited Talk: Mindfulness-Based Cancer Recovery
Paper Session 3 - Sleep (p. A143-A144)
Paper Session 4 - Psychoendocrinology (p. A145-A146)
Paper Session 5 - Respiratory Disorders (p. A146-A147)
11:30-12:45  Lunch on your own/Roundtable Lunches/Committee Meetings
12:45-2:00  Symposium 1045: Couple Interaction and Stress in Health and Disease (p. A3-A4)
Invited Minority Initiative Symposium: Stress and Coping in the Context of Health Disparities
Symposium 1417: Stress and Pregnancy  (p. A4-A6)
Paper Session 6 - Health Behaviors  (p. A147-A148)
2:15-3:30  Invited Symposium: Stress and Wound Healing
Paper Session 7 - Cardiac Disease Risk (p. A148-A149)
Symposium 1243: Evolving from Individual to Socially Contextualized Concepts and Theories of Stress (p. A6- A7)
Symposium 1774: Traumatic Stress and Physical Stress (p. A7-A8)
3:45-5:00  Plenary Session: Measuring Biomarkers of Stress I
5:00-6:15  Poster Session 1 (p. A31-A69)

Friday, March 12
7:00-8:00  Breakfast Roundtables
8:00-8:55  Presidential Address: Cardiovascular Disease and Neurocognitive Function
9:00-9:55  Plenary Session: Perspectives on Gene-Environment Interaction for Psychosomatic Medicine
Symposium 1157: Emotion Regulation and Chronic Pain (p. A8-A10)
Symposium 1164: Recent Approaches to Perseverative Negative Conditions (p. A11-A13)
Paper Session 8 - Cancer (p. A150-A151)
11:30-12:45  Lunch on your own/Roundtable Lunches/Committee Meetings
1:00-2:15  Invited Symposium Stress Reactivity and Recovery
Symposium 1231: Stress and Functional Somatic Syndromes (p. A13-A14)
Symposium 1346: Sweating the Small Stuff? (p. A14-A15)
Paper Session 9 - Stress and Reproductive Function (p. A151-A152)
2:30-3:45  Invited Symposium: Psychosocial Stress as an Environmental Exposure
Symposium 1116: Patients' Illness Perceptions  and Outcomes in Cardiology (p. A16-A17)
Paper Session 10 - Race, Ethnicity and Health (p. A152-A154)
4:00-5:15  Plenary Session: Measuring Biomarkers of Stress II
5:15-6:30  Poster Session 2 (p. A70-A104)
6:30-8:00  Special Interest Gatherings

Saturday, March 13
7:00-8:00  Breakfast Roundtables
8:00-9:00  Business Meeting
9:00-9:55  President's Award: A Tribute to Dr. Thomas Pickering
10:15-11:30  Symposium 1035: Current Perspectives on Stress, Sleep and Health (p. A18)
Symposium 1124: Stress and Health and Black South Africans (p. A19-A20)
Paper Session 11 - Aging (p. A154-A155)
Paper Session 12 - Stress and Cancer (p. A155-A156)
1:30-12:45  Lunch on your own/Roundtable Lunches
12:45-3:30  Awards Series: Paul D. MacLean Award; Alvin P. Shapiro Award; Herbert Weiner Award Presentations
3:45-5:00  Symposium 1023: How can we Impact Community Clinical Practice? (p. A20- A21)
Symposium 1310: Medically Unexplained Symptoms (p. A21-A22)
Paper Session 13 - Depression and Health (p. A156-A157)
5:00- 6:15  Poster Session 3 (p. A105-A140)
7:00  Dinner and Entertainment
SYMPOSIA

Symposium 1074

BEHAVIORAL INTERVENTIONS BASED ON TARGETED BIOPSYCHOSOCIAL MEDIATORS OF HIV DISEASE PROGRESSION

Jane Leserman, PhD, Psychiatry, University of North Carolina, Chapel Hill, NC, Rae Jean Proeschold-Bell, PhD, Center for AIDS Prevention Studies, University of California San Francisco, San Francisco, CA, Brian W. Pence, PhD, Community and Family Medicine, Duke University, Durham, NC, Lydia R. Temoshok, Ph.D., Medicine/Institute of Human Virology, University of Maryland School of Medicine, Baltimore, MD, Gail H. Ironson, MD, Ph.D., Psychology and Psychiatry, University of Miami, Coral Gables, Florida

There have been many studies documenting the high rates of previous trauma and psychological disturbance among HIV-infected persons. Stress, depression, and maladaptive coping have been linked to HIV progression markers and mediators. To develop psychosocial treatments, it is critical to determine potential biobehavioral mediators of HIV disease progression in order to establish treatment targets. Thus, the goal of this symposium is two-fold: 1) to present data on biobehavioral mediators of HIV disease progression and 2) to examine the mental and physical health efficacy of two distinct psychosocial treatment models. Addressing the first goal, findings are presented on 611 HIV-positive men and women in the rural Southeast exploring the possible psychosocial and health behavior mediators through which lifetime traumatic experiences influence later HIV clinical outcomes (e.g., mortality, health functioning). A 36-month longitudinal study of over 100 HIV infected men and women examines how maladaptive emotional coping (Type C, Alexithymia) and dysregulated heart rate and blood pressure response to experimental emotional stress affects chemokine and cytokine HIV progression and anti-progression mediators. Elucidation of the predictive relationships between coping and stress response variables and accepted disease progression mediators is the first step in developing interventions that target these biopsychosocial mediators. To address the second aim of this symposium, two randomized controlled trials (RCTs) will be discussed. The first examines psychological and health outcome differences between an emotional disclosure intervention (writing about trauma) and a trivial writing control. The second RCT compares the Healthy Living Project (an individualized cognitive behavioral intervention) to a waitlist control on psychological variables, health behaviors, and HIV disease markers. Given discrepant results from previous intervention studies, both of these RCTs provide recommendations for future psychological treatment research in HIV.

Individual Abstract Number: 1193

THE INFLUENCE OF PAST TRAUMATIC EXPERIENCES ON HIV-RELATED BEHAVIORS AND HEALTH OUTCOMES: AN EXPLORATION OF CAUSAL PATHWAYS

Brian W. Pence, PhD, Community and Family Medicine, Duke University, Durham, NC, Rae Jean Proeschold-Bell, PhD, Center for Health Policy, Duke University, Durham, NC, Jane Leserman, PhD, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, Susan Reif, Center for Health Policy, Duke University, Durham, NC, Michael J. Tonnen, MD, Medicine, University of Alabama at Birmingham, Birmingham, AL

Traumatic life experiences such as childhood sexual and physical abuse are recognized as having profound and far-reaching implications for health and health-related behaviors. A growing literature documents the high prevalence of past trauma in people living with HIV/AIDS (PLWHA) and the association of past trauma with secondary transmission risk behaviors, HIV medication adherence, clinical outcomes, and even all-cause mortality. Yet the causal pathways explaining these relationships remain poorly understood. The present study uses data on 611 outpatient PLWHA from the Coping with HIV/AIDS in the Southeast study to test a conceptual model that trauma influences later health and behaviors through the following mediators: adult mental health, substance abuse, recent stressful life events, coping styles, self efficacy, social support, and trust in the medical system. In unadjusted analyses, greater past trauma exposure was associated with 12 behavioral and health outcomes including increased odds or hazard of recent unprotected sex (OR=1.17 per each additional type of trauma, 95% CI=1.06-1.29), poor medication adherence (OR=1.14, 1.04-1.24), emergency room visits (OR=1.14, 1.06-1.22), incident opportunistic infections (HR=1.12, 1.00-1.24), and all-cause mortality (HR=1.18, 1.03-1.34). In multivariable models controlling for all hypothesized mediators, point estimates for health care utilization outcomes were reduced by about 50% whereas point estimates for behavioral outcomes remained largely unchanged and point estimates for incident health outcomes increased. In nested models, the inclusion of recent stressful life events led to the largest shift in point estimates while the inclusion of coping styles, self efficacy, social support, trust, and current mental health changed point estimates little. For nearly all outcomes, point estimates remained elevated even after adjusting for all hypothesized mediators. These data suggest that past trauma influences adult health and behaviors through pathways independent of the mediators considered in this model.

Individual Abstract Number: 1249

DEVELOPING AN INTERVENTION MODEL AIMED AT REDUCING HIV PROGRESSION BASED ON TARGETING EMPIRICALLY LINKED BIOPSYCHOSOCIAL MEDIATORS

Lydia R. Temoshok, Ph.D., Lerissa L. Smith, B.S., Rebecca L. Wald, Ph.D., Institute of Human Virology/Medicine, University of Maryland School of Medicine, Baltimore, MD, James A. Wiley, Ph.D., RIMI Faculty Development Program, San Francisco State University, San Francisco, CA

We reported that dysregulated emotional coping (Type C and Alexithymia), as well as dysregulated patterns of cardiovascular reactivity and recovery in response to experimental emotional stress tasks were significantly associated in 140 HIV-infected individuals with biomedically accepted cytokine and chemokine mediators of HIV progression or protection. These baseline results were confirmed over 24 months of follow-up, strengthening our hypothesis that chronic patterns of emotional and psychophysiological dysregulation may contribute to HIV progression via persistent upregulation of pro-inflammatory cytokine production and/or inappropriate pro-inflammatory cytokine production which stimulates immune activation and HIV replication. Data are presented here from the 100+ participants (91% African American, 49% female) who completed the 36 month assessment on all emotional coping, cardiovascular reactivity/ recovery, and immune measures (antigen-stimulated production of IL-6 and the anti-HIV chemokines MIP-1 alpha and beta, as well as clinical biomarkers of HIV progression (CD4+ cell count and HIV viral load). Using generalized estimating equations to make longitudinal predictions, based on a linear model, we found the same pattern of results at the 36-month follow-up. We have applied these robust longitudinal findings, which identify biopsychosocial factors associated predictively with immune factors shown to mediate HIV progression, to developing an empirically based intervention model, which is congruent with several recent RCTs of cognitive-behavioral interventions for HIV-positive persons. The enhanced intervention model presented here specifically targets the HIV progression immune mediators and biopsychosocial factors (dysregulated emotional and physiological coping) found to be predictive in our research, with the ultimate aim of decreasing HIV clinical progression.

Individual Abstract Number: 1306

AUGMENTED TRAUMA WRITING: EFFECTS ON HIV SYMPTOM REPORTS, CD4 AND VL

Gail H. Ironson, M.D., Ph.D., Psychology and Psychiatry, University of Miami, Coral Gables, Florida, Conall O’Cleirigh, Ph.D., Psychiatry, Harvard University, Boston, MA, Joanne Fordani, Ph.D., Psychology, University of Miami, Coral Gables, Florida, Neil Schneiderman, PhD, Psychology, University of Miami, Miami, FL, Jane Leserman, PhD, Psychiatry, University of North Carolina, Chapel Hill, North Carolina

Emotional disclosure studies have shown that writing about trauma, compared to writing about trivial events, has salutary health effects in reducing physical symptoms, health visits, depression, pain, and physical dysfunction. Yet there is only one study in HIV focused on
The present study examined the efficacy of the Healthy Living Project intervention (RCT) of an individually-tailored, cognitive-behavioral intervention for HIV, CD4 and VL at baseline, 1 month and 6 month follow-up. Hierarchical Linear Modeling analyses controlling for baseline symptoms showed that trauma writing had a significantly different slope for HIV symptoms compared to daily events writing (gamma = -.08, t = -2.08 (df = 229), p = .038). The physical symptom reports for the trauma group were 24, 23, and 19 at baseline, 1 and 6 month follow-up respectively, whereas the the daily events writing group were 21, 23, and 29. The tests for differences in slopes between the experimental and control groups were not significant for CD4 (p=.92) and for VL (p=.56). Further analysis showed a significant gender interaction for HIV symptoms (p=.003), indicating efficacy of the trauma writing in reducing physical symptoms among women, but not men. Previously, we reported trauma writing to be effective on depression, but not on HIV physical symptoms for women, but not men. This trajectory pattern appears to have a beneficial effect on physical symptoms and dysphoria among women; neither sex had changes in CD4 or viral load associated with trauma writing. We will explore a variety of different hypotheses for why this intervention may be more efficacious in women than men.

Individual Abstract Number: 1076

PRELIMINARY EVIDENCE THAT AN INDIVIDUALLY-TAILORED, COGNITIVE-BEHAVIORAL INTERVENTION DECREASES HIV VIRAL LOAD

Adam W. Carrico, PhD, Center for AIDS Prevention Studies, University of California San Francisco, San Francisco, CA, Edwin D. Cisneros, PhD, Mary McFallory, O. Johnson Center for AIDS Prevention Studies, University of California, San Francisco, San Francisco, CA, Robert H. Remien, Ph.D., Psychiatry, Columbia University, New York City, New York, Marguerita A. Lightfoot, Ph.D., Wayne T. Steward, Ph.D., Stephen F. Morin, Ph.D., Center for AIDS Prevention Studies, University of California, San Francisco, San Francisco, CA, Margaret A. Chesney, Ph.D., Center for Integrative Medicine, University of Maryland, Baltimore, MD, Center for AIDS Prevention Studies, University of California, San Francisco, CA, Robert H. Remien, Mitzi S. Smilkstein, MD, AIDS Prevention Studies, University of California, San Francisco, CA, Clinical Health Services, San Francisco, CA, Robert H. Remien, Ph.D., Psychiatry, Columbia University, New York City, New York, Marguerita A. Lightfoot, Ph.D., Wayne T. Steward, Ph.D., Stephen F. Morin, Ph.D., Center for AIDS Prevention Studies, University of California, San Francisco, San Francisco, CA, Margaret A. Chesney, Ph.D., Center for Integrative Medicine, University of Maryland, Baltimore, MD. The Healthy Living Project is a multi-site randomized controlled trial (RCT) of an individually-tailored, cognitive-behavioral intervention for HIV-positive persons. Findings to date indicate that this intervention reduces HIV transmission risk behavior, improves adherence to antiretroviral therapy (ART), and decreases substance use. The present study examined the efficacy of the Healthy Living Project intervention with respect to HIV disease markers. The 15-session intervention included 3 distinct modules that were delivered over 15 months: coping skills training (5 sessions); sexual risk reduction (5 sessions); adherence to HIV medical treatment (5 sessions). In total, 936 participants were randomized to the cognitive-behavioral intervention (n = 467) or a wait-list control (n = 469). Peripheral venous blood samples to measure HIV viral load and T-helper (CD4+) count were collected at baseline as well as 10, 15, and 25 months post-randomization. A binary logistic regression analysis was used to examine intervention effects on achieving an undetectable HIV viral load and displaying a CD4+ count greater than 200 cells at 25-months post-randomization. Most participants were male (79%), of whom 72% were men who have sex with men. Thirty-two percent of participants were Caucasian, 45% were African American, and 15% were Hispanic/Latino. After controlling for baseline values, individuals randomized to the intervention were 49% more likely to display an undetectable viral load at 25 months post-randomization (Adjusted Odds Ratio [AOR] = 1.49, 95% CI = 1.01 - 2.20, p < .05). Findings were unchanged after adjusting for whether participants were continuously on ART over the investigation. No concurrent intervention effects were observed for CD4+ count (AOR = 0.91, 95% CI = 0.59 - 1.42). By placing these findings in context of some important limitations of the Healthy Living Project, we will provide recommendations to inform future RCTs of psychological interventions examining HIV disease markers.

Symposium 1045

COUPLE INTERACTION AND STRESS IN HEALTH AND DISEASE: PSYCHOLOGICAL AND BIOLOGICAL MEDIATORS

Beate Ditzen, Ph.D., Psychology, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Switzerland, Switzerland, Christiane A. Hoppmann, PhD, Psychology, University of British Columbia, Vancouver, British Columbia, Canada, Beate Ditzen, Ph.D., Psychology, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Switzerland, Switzerland, Anita DeLongis, PhD, Psychology, University of British Columbia, Vancouver, BC, Canada, Kathleen P. Brooks, M.A., Psychology, University of California, Los Angeles, Los Angeles, CA, Janice Kiecolt-Glaser, Ph.D., Psychiatry, Ohio State University College of Medicine, Columbus, Ohio

Epidemiological research points to significant associations between marital relationships, wellbeing, health, and longevity. Yet, the underlying psychobiological mechanisms are not well understood and are suggested in the buffering effect of affiliation and social support on physiological stress systems. Thus trauma writing appears to have a beneficial effect on physical symptoms and dysphoria among women; neither sex had changes in CD4 or viral load associated with trauma writing. We will explore a variety of different hypotheses for why this intervention may be more efficacious in women than men.

Individual Abstract Number: 1047

SPOUSAL INTERRELATIONS IN DEPRESSIVE SYMPTOMS AND FUNCTIONAL LIMITATIONS: LONGITUDINAL FINDINGS FROM THE STUDY OF ASSET AND HEALTH DYNAMICS AMONG THE OLDEST OLD (AHEAD)

Christiane A. Hoppmann, PhD, Psychology, University of British Columbia, Vancouver, British Columbia, Canada, Denis Gerstorf, PhD, Human Development and Family Studies, The Pennsylvania State University, University Park, PA, Anita Hibbert, BA, Psychology, University of British Columbia, Vancouver, BC, Canada

Purpose: Aging does not take place in isolation and is often interrelated with close others such as marital partners. Importantly, spouses may extend developmental options but they can also make each other vulnerable to the experience of loss. The present study extends past research of wellbeing-health associations in old age that use samples of unrelated individuals by examining interrelations of levels and change in these two key domains of functioning using longitudinal data from married couples of a national sample. Methods: We use 14-year longitudinal data of initially 1,704 married couples from the Study of Asset and Health Dynamics Among the Oldest Old (AHEAD; Mean
age = 75 years at T1). Both spouses rated their depressive symptoms and functional limitations at up to eight measurement occasions. We applied four-variable latent growth models to test our hypotheses. Results: Findings corroborate and extend earlier individual-level reports that levels and overall change in depressive symptoms and functional limitations are considerably linked (.46, p<.01 for levels; .51, p<.01 for changes). Importantly, results also highlight sizeable interrelations between levels and overall change in depressive symptoms and functional limitations between husbands and wives. For example, increases in depressive symptoms in one spouse were accompanied by increases in depressive symptoms (.64, p<.01) and functional limitations (.20, p<.01) in the other spouse. No gender differences emerged in the observed dyadic associations and potential covariates (age, education, cognition, length of marriage, number of children) did not account for these associations. Our findings are consistent with an interactive minds perspective, which proposes that aging is linked in social relationships, but they also suggest that such interrelations can benefit or hamper aging outcomes.

Individual Abstract Number: 1129

EFFECTS OF COUPLES RELATIONSHIP EDUCATION ON CORTISOL LEVELS DURING PSYCHOLOGICAL STRESS AND COUPLE CONFLICT

Beate Ditzen, Ph.D., Psychology, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Switzerland, Kurt Hahlweg, Ph.D., Psychology, Clinical Psychology, Psychotherapy, and Technical University Braunschweig, Braunschweig, Germany, Germany, Gabriele Fehm-Wolsdorf, Ph.D., Institute of Behavioral Medicine, Lubeck, Germany, Germany

Purpose of Study: Couple conflict in unhappy marriages is suggested to impair individual health via chronic psychophysiological stress reactions in couples’ everyday lives. As a consequence, we hypothesized that standard couples relationship education (CRE) would decrease psychophysiological stress, namely salivary cortisol levels, during couple conflict in the laboratory as compared to a standard psychological stress paradigm. Subject Sample and Methods: Salivary cortisol was repeatedly investigated in 61 couples during a) a standard psychological stress test, and b) a standard instructed couple conflict in the laboratory before and after CRE. In addition, increases in self-reported marital quality were analyzed with regard to their influence on salivary cortisol. Data were analyzed using multilevel modeling. Results: Cortisol responses to psychological stress were unaffected by CRE (T=-.689; P=.491), but specifically, cortisol responses to the couple conflict session were significantly reduced following CRE compared to pre-intervention levels (T=-2.306; P=.022). This effect was associated with increases in self-reported marital quality following CRE (T=2.201; P=.029). Discussion: These data suggest that CRE reduces cortisol levels during couple conflict and thus might improve individual health.

Symposium 1417

STRESS AND PREGNANCY

Clayton J. Hilmert, Ph.D., Psychology, North Dakota State University, Fargo, ND, Christine Dunkel Schetter, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA, Clayton J. Hilmert, Ph.D., Psychology, North Dakota State University, Fargo, ND, Mary E. Coussons-Read, Ph.D., Psychology, University of Colorado Denver, Denver, CO, Gwen E. Latendresse, Ph.D., College of Nursing, University of Utah, Salt Lake City, UT, Michelle E. Okun, Ph.D., Sleep Medicine Institute, University of Pittsburgh School of Medicine, Pittsburgh, PA

A growing body of research points to maternal stress as a potent factor in fetal development and prevalent adverse pregnancy outcomes including preterm birth and low birthweight. Such outcomes have far reaching consequences contributing to infant mortality and effecting human development. Some individuals experience increased cortisol during pregnancy, and these personal cortisol levels are valuable predictors of pregnancy outcomes, but a significant proportion of these effects remains poorly understood. This study was designed to test whether individual and partner attachment predict cortisol response to interaction with a romantic partner, test whether these effects are moderated by gender, and test whether these effects can be explained by subjective experience. Method: Young adult couples (N = 66, mean age = 23.32) completed two laboratory sessions during which they discussed areas of disagreement (conflict) or things about themselves they wished to change (support). During each visit, participants rated their experience during the discussion and their partner's behavior. Saliva samples were assessed at four time points to assess cortisol production. Results: Higher levels of attachment anxiety were associated with greater cortisol during both discussions among men (support B = 0.44, p < .05; conflict B = 0.56, p < .01). Higher levels of partner avoidance were associated with greater cortisol during the support discussion among men (B = 0.48, p < .01), and with greater cortisol during both discussions among women (support B = 0.45, p < .05; conflict B = 0.52, p < .01). Theses effects were not mediated by subjective ratings of the discussion or ratings of the partner. Taken together, these findings suggest that individual and partner attachment security influence cortisol responses to interaction with a romantic partner, which contributes to our understanding of how individual differences moderate the effects of romantic relationships on health.
of variance remains unexplained. Thus, researchers have been examining the effects of psychosocial stress on pregnancy outcomes, and on postpartum maternal and infant health. Pregnancy involves numerous psychological and physiological changes for mothers and studies have begun to address various interactions between stress and cardiovascular, immune, and neuroendocrine functioning. In this symposium we will first present an overview of stress and pregnancy research describing the biopsychosocial model that has become a primary focus. Then, four talks will present findings consistent with this model. The first of these talks focuses on changes in resting blood pressure that occur during pregnancy and considers how the impact of these changes may depend on the experience of a severe, life-long stressor, namely, racial discrimination. The following talk considers the meditational role of the immune system in explaining how maternal distress effects length of gestation and other pregnancy outcomes. Also, the effects of social support, a factor that can buffer the negative impact of stress, are examined. The fourth talk presents data on interactions among stress- and pregnancy-related physiological parameters focusing on how stress, and neuroendocrine and immune functioning are associated during pregnancy. Implications for interventions that would mitigate the effects of stress on pregnancy outcomes will also be discussed. The final talk looks at the effects of post-partum sleep quality on immune system functioning and the development of post-partum depression. Together, these talks will present a broad view of stress during and, after pregnancy can impact child and maternal health through a variety of psychophysiological mechanisms.

Individual Abstract Number: 1418

STRESS IN PREGNANCY AND BIRTH OUTCOMES: BIOPSYCHOSOCIAL ADVANCES
Christine Dunkel Schetter, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA

Background: Preterm birth has been described as a silent epidemic in the United States because of its high prevalence and low public awareness. Rates of both preterm birth (PTB) and low birth weight (LBW) are particularly high in African Americans and are associated with financial strain, chronic stress, and paternal care. Considerable research also shows that PTB and LBW have significant consequences for health and development over the life span. Multidisciplinary research on pregnancy and birth has been growing in recent years to advance our understanding of the etiology of these major health problems. Methods: This presentation will summarize results of prospective studies on prenatal maternal stress and effects on PTB and LBW, and describe the common and possibly distinct mediating processes. Researchers have assessed many types of stressors including life events, perceived stress, chronic strain, catastrophic events, racism, neighborhood factors, and pregnancy-specific forms of stress. Results: Consistent results regarding risk factors and mediating pathways are emerging. Pregnancy anxiety is a clear risk factor for PTB and lower birth weight. Many stressors appear to be better predictors of fetal growth and LBW. Conclusion: Conceptual models guiding research that capture current findings are needed and that distinguish and integrate pathways to PTB and LBW.

Individual Abstract Number: 1419

BIRTHWEIGHT, CHANGES IN BLOOD PRESSURE DURING PREGNANCY, AND LIFETIME EXPERIENCES OF DISCRIMINATION
Clayton J. Hilmert, Ph.D., Psychology, North Dakota State University, Fargo, ND, Tyan L. Parker Dominguez, Ph.D., School of Social Work, University of Southern California, Los Angeles, CA, Christine L. Dunkel Schetter, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA, Laura M. Glynn, Ph.D., Psychology & Human Behavior, University of California, Irvine, Orange, CA, Calvin M. Hobel, MD, Obstetrics & Gynecology, Cedars-Sinai Medical Center, Los Angeles, CA, Curt A. Sandman, Ph.D., Psychiatry & Human Behavior, University of California, Irvine, Irvine, CA

Changes in blood pressure (BP) during pregnancy may be normative or reflect dysfunctional cardiovascular responsiveness to a significant psychophysical stress. The impact of a lifetime stressor like discrimination may be one factor that determines the impact of changes in BP on pregnancy outcome. Purpose: The purpose of this study was to examine how BP changes during pregnancy in the context of lifetime discrimination stress and more recent stress impact pregnancy outcome. Method: Thirty-nine healthy, pregnant African-American women provided psychosocial stress data, including lifetime discrimination, recent stressful Life Events, Perceived Stress, and State Anxiety. Changes in BP from 18-20 (T1) to 24-26 (T2) and 30-32 (T3) weeks gestation were considered. Baby’s birthweight was examined as a function of psychosocial stress, changes in BP, and interactions between stress and BP changes. Results: About half of the women in the study had increases in systolic BP (SBP, 57%) and diastolic BP (DBP, 49%) between T1 and T3 (2-5% had no change). There were negative associations between changes in SBP (T1-T2 and T1-T3), and recent Stressful Life Events and Perceived Stress (p<.05) indicating that higher levels of recent stress tended to lead to decreases in SBP rather than increases. T1-T3 change in DBP was similarly negatively associated with State Anxiety (p<.05). Regression analyses controlling for SES revealed a significant interaction between change in DBP and reports of childhood vicarious discrimination (p<.05). Relative to women who reported little childhood vicarious discrimination or who had BP decreases, women who reported more experiences of childhood vicarious discrimination and had increases in DBP during the third trimester of pregnancy gave birth to babies with lower birthweights. This pattern was not evident for recent stress indicators suggesting that lower social support was associated with higher levels of recent stress and remained significant when controlling for recent stress. Conclusion: The impact of physiological alterations during pregnancy may depend on experiences of severe life-long stress, such as racial discrimination.

Individual Abstract Number: 1420

NEURAL-IMMUNE CORRELATES OF STRESS DURING PREGNANCY
Mary E. Coussoux-Read, Ph.D., Psychology, University of Colorado Denver, Denver, CO

Growing evidence shows that elevated stress during pregnancy may increase the risk of preterm delivery and other pregnancy and birth complications. Recent work has suggested that prenatal stress associated with controls for socioeconomic status, medical risk factors and prenatal care. Considerable research also shows that PTB and LBW have significant consequences for health and development over the life span. Multidisciplinary research on pregnancy and birth has been growing in recent years to advance our understanding of the etiology of these major health problems. Methods: This presentation will summarize results of prospective studies on prenatal maternal stress and effects on PTB and LBW, and describe the common and possibly distinct mediating processes. Researchers have assessed many types of stressors including life events, perceived stress, chronic strain, catastrophic events, racism, neighborhood factors, and pregnancy-specific forms of stress. Results: Consistent results regarding risk factors and mediating pathways are emerging. Pregnancy anxiety is a clear risk factor for PTB and lower birth weight. Many stressors appear to be better predictors of fetal growth and LBW. Conclusion: Conceptual models guiding research that capture current findings are needed and that distinguish and integrate pathways to PTB and LBW.

Individual Abstract Number: 1424

CYTOKINES, CORTICOTROPIN-RELEASING HORMONE, AND PSYCHOSOCIAL STRESS IN PREGNANCY
Gwen A. Latendresse, Ph.D., College of Nursing, University of Utah, Salt Lake City, UT; R. Jeanne Ruiz, PhD WHNP, Univ. of Texas,
Individual Abstract Number: 1550

CHANGES IN SLEEP QUALITY, BUT NOT HORMONES PREDICT TIME TO POSTPARTUM DEPRESSION RECURRENCE
Michele L. Okun, Ph.D., Sleep Medicine Institute, University of Pittsburgh School of Medicine, Pittsburgh, PA

Background: Poor sleep quality, dysregulation of hormones and increased inflammatory cytokines are all associated with risk for postpartum major depression (PPMD). We evaluated change over time in sleep quality and hormones during the first 17-weeks postpartum, as well as a single cytokine measure, and their association with PPMD recurrence. Methods: Participants were pregnant women (N = 56), with past histories of PPMD but not depressed in their current pregnancy. The Pittsburgh Sleep Quality Index (PSQI) and blood samples were collected 8 times during the first 17 weeks postpartum. Estradiol, prolactin and cortisol, and a single measure of IL-6 were assayed. Recurrence was determined by two consecutive 21-item Hamilton Rating Scale for Depression scores > 15 and clinician interview. Results: In analyses of time to PPMD recurrence, poor sleep quality across time, a woman’s risk for recurrence increased by approximately 25%. There was no significant association between PSQI scores and IL-6 concentrations early in sleep quality and hormones during the first 17-weeks postpartum increases the risk for recurrent PPMD. The effect of environmental chaos on health and wellbeing is gaining interest in disease activity. The talks will serve as a springboard for a dialogue addressing several theoretical advantages and challenges inherent in moving from an individual to a relational concept of stress. For example, what is unique about family/social relational stress as compared to other stressors? Are human relations stressors or part of the stress response? When is a relational process stressful or buffering for the individuals in the relationship/family? What are the socio-psycho-biological mechanisms and pathways of stress and buffering effects? How is separation or loss a stress? Can the absence of relationship be a stress? Can relationship buffer the effect of external stress on the individuals in relationship? We believe that opening a dialogue along these avenues of discourse will open doors to new ways of understanding health and disease as it relates to the important social contexts of individuals.

Symposium 1243

EVOVING FROM INDIVIDUAL TO SOCIAL CONTEXTUALIZED CONCEPTS AND THEORIES OF STRESS: ILLUSTRATIONS FROM PEDIATRIC STIHA.
Beatrice L. Wood, Ph.D., Psychiatry and Pediatrics, University at Buffalo, Buffalo, NY, Barbara H. Fiese, Ph.D., Human and Community Development, University of Illinois at Urbana-Champaign, Urbana, IL, Bruce D. Miller, M.D., Psychiatry, University of New York at Buffalo, Buffalo, NY, Beatrice L. Wood, Ph.D., Psychiatry, University at Buffalo, Buffalo, NY, Seija Sandberg, M.D., Mental Health Sciences, University College London, London, placeholder, Great Britain, Christopher Coe, Ph.D., Psychology, University of Wisconsin-Madison, Madison, WI

It is well accepted that social context is an important determinant of health versus illness. Yet the scientific investigation of “stress” is still highly individual in concept, theory, and methods. The conceptual frameworks of “sociophysiology” and social neuroscience are potentially important organizing paradigms in the study of how interpersonal relationships and physical well being interact. We propose that to move scientific inquiry forward in this realm, it is essential to re-conceptualize “stress” in a socially contextualized way. The presentations in this symposium will use studies of child asthma in families to demonstrate the importance of “relational stress” in disease activity. The talks will serve as a springboard for a dialogue addressing several theoretical advantages and challenges inherent in moving from an individual to a relational concept of stress. For example, what is unique about family/social relational stress as compared to other stressors? Are human relations stressors or part of the stress response? When is a relational process stressful or buffering for the individuals in the relationship/family? What are the socio-psycho-biological mechanisms and pathways of stress and buffering effects? How is separation or loss a stress? Can the absence of relationship be a stress? Can relationship buffer the effect of external stress on the individuals in relationship? We believe that opening a dialogue along these avenues of discourse will open doors to new ways of understanding health and disease as it relates to the important social contexts of individuals.
.0001, r²=.11). In addition, the effect of daily routines on adherence was moderated by mealtime communication (F(5, 169) = 5.43, p < .05, R² = .29). Conclusion: Environmental chaos disrupts communication and elements of planning essential for good disease management. Furthermore, environmental chaos may place added strains on relationships, and accumulate over time, in high risk environments.

Individual Abstract Number: 1634
THE ROLE OF CLOSE INTERPERSONAL STRESS IN CHILDHOOD ASTHMA
Seija Sandberg, M.D., Mental Health Sciences, University College London, London, London, United Kingdom
Objective: Several studies have shown that stressful experiences negatively impact on childhood asthma. Chronic psychosocial stress has been linked to heightened production of inflammatory cytokines (Chen & Miller 2007), increased risk of new exacerbations following negative life events (Sandberg et al 2000), and reduced expression of genes encoding for the receptors influencing the effectiveness of asthma medications (Miller & Chen 2006). The family environment is a major source of chronic stress on children, with adverse impact on asthma from a complex interweaving of negative family emotional climate, negative communication, and maternal and child depression (Wood et al 2008; Lim et al 2008). To take these findings further, we conducted a prospective study of stress and disease exacerbations. Method: Ninety children with chronic asthma were followed for 18 months using continuous monitoring of asthma along with level and timing of acute and chronic stressors. Results: Despite the homogeneity of the sample with respect to demographics and asthma severity, the number of new exacerbations, severe lung function varied widely. Exacerbations following acute stressors were more likely and occurred sooner in children with high chronic stress: (OR 1.71, p<.05, and 2.17, p<.01 in weeks 3-4 and 5-6, respectively, without high chronic stress; OR 2.98, p<.05 in weeks 1-2, with high chronic stress). Without high chronic stress, internalizing problems further increased risk (OR 2.51, p<.01), but with high chronic stress, oppositional behavior reduced risk (OR 0.52 for high score, p<.01). Aggregation of multiple adversities affecting the child's key relationships and personal security accounted for 60% of all chronic stressors, with 22% of the children at marked risk from these relational stressors (parental discord, family conflict, parent ill health, experience of abuse/neglect, and school and peer related problems). These risks were 5-11 times higher (p<.01, for all comparisons), among the at-risk children. Conclusion: Interpersonal and relational stress is particularly toxic for child asthma.

Individual Abstract Number: 1631
THE EFFECTS OF ATTACHMENT, SEPARATION AND LOSS ON CHILD ASTHMA: DEPRESSION AND AUTONOMIC DYSREGULATION AS POSSIBLE MECHANISMS.
Bruce D. Miller, M.D., Psychiatry, University of New York at Buffalo, Buffalo, NY
Objective: The stress of separation of infants from their mothers results in depressive symptoms and autonomic (ANS) dysregulation non-human primates (Reite,1974; Suomi,1999) and humans (Field,1994). Early parent loss, child maltreatment and other attachment disturbances have long term consequences in psychobiologic development, particularly with regard to regulation of stress responses (Cicchetti,2001). We posit that insecure attachment is destabilizing and thereby potentiates the effects of separation and loss, and that through depression and ANS dysregulation this process could affect child asthma. Method. We studied 171 children with asthma under laboratory conditions using the film “E.T., The Extraterrestrial” to evoke emotional distress. The ET death scene was pre-selected to elicit loss-related emotions, including sadness and hopelessness. The Relatedness Questionnaire (Lynch et al,1991) indexed the child's relational security with mother, and the Child Depression Inventory indexed depressive symptoms. Asthma disease activity was assessed by NHLBI criteria. The child viewed the film alone while continuous ECG and impedance measures of heart beat were used to derive indices of sympathetic activity. The child viewed the film alone while continuous ECG and impedance measures of heart beat were used to derive indices of sympathetic activity. Pulmonary function was indexed by respiratory resistance (Rint). Results: Children who were categorized as having insecure attachment with their mothers had significantly higher depressive symptoms (t=3.6, p=.001), greater vagal bias in the death scene (t=1.9, p=.06) and greater disease activity (t=2.1, p=.04). When stratified by depression score, depressed vs non-depressed children had significantly greater vagal bias in response to ET death scene (t=2.25, p=.03), and greater disease activity (t=3.2, p=.002). Finally vagal bias was correlated with post-movie Rint (r=.39, p=.004). These findings support the proposition that insecure attachment contributes to stress vulnerability, depression and ANS dysregulation which potentiate disease activity.

Individual Abstract Number: 1632
EFFECT OF FAMILY HOSTILITY VERSUS WARMTH ON AIRWAY FUNCTION DURING STRESSFUL FAMILY INTERACTION.
Beatrice L. Wood, Ph.D., Psychiatry, University at Buffalo, Buffalo, NY
Objective. Laboratory based studies show that negative family emotional climate predicts asthma disease activity, mediated by child depression and anxiety. This study examined whether family hostility worsened asthma airway function during stressful family interaction, and whether family warmth buffered the effect of family hostility. Method. Families (n=310) and children with asthma, aged 7-17 (55% boys) took part in a laboratory based family interaction study. Families were videotaped during 6 tasks: build a card house, discuss a child difficulty, discuss a sad event/loss with the child, resolve a parent-child conflict, resolve a parental conflict, and tell what they liked best about each other. Family Interactions were rated according to the Iowa Family Interaction Rating Scales, a macro-level observation coding system. The Hostility code (HS) was defined as hostile, angry, critical, disappointing, and/or rejecting behavior toward another person, and warmth (WM) as expressions of liking, appreciation, praise, care, affection, concern, or support. Airway function was assessed pre and post family interaction using spirometry (FEV1). Data analysis: Family hostility (HS) and family warmth (FWM) was defined as the average of HS or WM across family members and tasks. Hierarchical multiple regression (HMR) controlled for confounds in assessing associations between FHS, FWM and FEV1. Results: FWM predicted FEV1 scores at both at baseline (B = 8.68, SE = 3.45, p < .02) and during interaction (B = 10.27, SE = 3.89, p < .01, respectively). FHS was not significant. To examine direct effects of FWM and FHS on airway function during interaction, we used HMR to examine the relationship between FHS or FWM and the amount of decrement in FEV1 from baseline to post stressful family interaction. FWM predicted less decrement in FEV1 (B = 4.25, SE = 1.73, p = .02. FHS was not significant. Conclusion. These findings are consistent with family warmth as buffering the impact of stressful family interaction on airway function, but family hostility itself seemed to have no effect.

Symposium 1774
TRAUMATIC STRESS AND PHYSICAL HEALTH
Judith E. Andersen, Ph.D., Judith E. Andersen, Ph.D., Psychology, Cornell University, Ithaca, NY, Alison E. Holman, Ph.D., Nursing Science, University of California, Irvine, Irvine, CA, Mark D. Seery, Ph.D., Psychology, State University of New York at Buffalo, Buffalo, NY
The objective of this symposium is twofold. First, to provide a description of the types of physical health issues associated with traumatic stress. Second, to explore new empirical research on traumatic stress and health conducted with nationally representative samples and prospective longitudinal designs. Representative samples further aid in understanding trauma-related health issues relevant to the general population and the effects of these associations over time. Authors present empirical work examining trauma history, exposure to mild and severe adversity, and genetic factors related to trauma exposure and health. The effects of trauma history on physical health were explored among a national probability sample of 2729 U.S. adults before and 3 years following the 9/11 terrorist attacks. Pre-9/11 trauma (e.g., violence, disaster, death) was associated with significant increased incidence of cardiovascular, endocrine, musculoskeletal, gastrointestinal, and respiratory ailments. The effects of mild and
severe adversity exposure on the functional impairment and healthcare utilization related to chronic back pain were explored among 396 adult members of a national panel. Significant quadratic relationships emerged between adversity and self-rated functional impairment, disabled employment status, and frequency of physician/clinic visits for CBP, prescription analgesic use, and comorbid depression treatment-seeking. People with some lifetime adversity reported less impairment and healthcare utilization than people who had experienced either no adversity or a high level of adversity. Additional analyses failed to support alternative explanations of the findings. Implications for understanding and promoting resilience in the context of CBP are discussed.

Individual Abstract Number: 1783

THE EFFECTS OF ADVERSITY ON CHRONIC BACK PAIN: IMPLICATIONS FOR FUNCTIONAL IMPAIRMENT AND HEALTH CARE UTILIZATION

Mark D. Seery, Ph.D., Psychology, State University of New York at Buffalo, Buffalo, NY

Previous research has demonstrated an association between lifetime exposure to adverse events and chronic back pain (CBP), but the nature of this relationship has not been fully specified. Adversity exposure typically predicts undesirable outcomes, suggesting that lack of all adversity is optimal. However, we hypothesized that among individuals faced with CBP, a history of a low level of lifetime adversity would yield protective effects, manifested as lower impairment and healthcare utilization. In an online survey, 396 adult members of a national panel endorsed a history of CBP when reporting their physical health status; they further reported their functional impairment and healthcare utilization. Respondents had previously completed an online survey of lifetime adversity exposure to adverse events. Significant U-shaped quadratic relationships emerged between adversity and self-rated functional impairment (p < .001), disabled employment status (p < .001), frequency of physician/clinic visits for CBP (p < .01), prescription (but not over-the-counter) analgesic use (p < .01), and comorbid depression treatment-seeking (p < .01). Specifically, people with some lifetime adversity reported less impairment and healthcare utilization than people who had experienced either no adversity or a high level of adversity. Additional analyses failed to support alternative explanations of the findings. Implications for understanding and promoting resilience in the context of CBP are discussed.

Symposium 1157

EMOTION REGULATION AND CHRONIC PAIN

Mark A. Lumley, Ph.D., Psychology, Wayne State University, Detroit, Michigan, Howard Schubiner, MD, Internal Medicine, Providence Hospital / Wayne State University, Southfield, Michigan, John W. Burns, PhD, Behavioral Sciences, Rush University Medical Center, Chicago, IL, Henriët van Muldersbarg, PhD, Clinical and Health Psychology, Utrecht University, Utrecht, Utrecht, The Netherlands, Alex Zautra, Ph.D., Psychology, Arizona State University, Tempe, Arizona, U S A, Arnstein Finset, PhD, Behavioral Sciences in Medicine, University of Oslo, Oslo, Oslo, Norway

This symposium brings together five researchers from three countries to present studies to the effects of emotion regulation in patients with chronic pain, particularly fibromyalgia (FM). The researchers focus on different aspects of emotion regulation, and they use a range of methods. The first presentation is an experimental demonstration in patients with chronic low back pain that the suppression of anger exacerbates pain behavior and activates the lower paraspinal muscles, and also identifies subsets of patients most likely to show these effects. The second researcher presents data from a study that manipulated how emotionally-focused and how empathic a physician was during interviews of patients with FM. This study found that patients with alexithymia had elevated sympathetic nervous system arousal when interviewed by an empathic physician. The third study had patients cardiovascular ailments reported over the three years following the attacks. 711 respondents from a 3-year prospective longitudinal national study of coping following the 9/11 attacks provided saliva samples via Oragene kits mailed to their homes. Acute stress symptoms were assessed between 9-23 days following the attacks and self-reports of doctor-diagnosed cardiovascular (CV) ailments were made before the 9/11 attacks, and again 1 and 3 years later via a Web-based survey. In the Caucasian subsample (N=518) carriers of the AA or TT genotype were 2.52 (1.29 -4.95; p =.007) and 2.67 (1.05 -6.83; p =.04) times more likely to report symptoms that meet criteria B,C,D,E for DSM-IV acute stress disorder in the 3 weeks following 9/11, respectively. The TT genotype was also associated with a 43% increased incidence of reports of CV ailments over the 3 years following the attacks (IRR 1.43, 1.03-1.99, p =.03) after controlling for pre-9/11 mental health and CV ailments. These findings suggest that genetic susceptibility to both acute stress and CV ailments following trauma exposure may be related to RAS function.
with FM and non-FM controls engage in anger and sadness recall and found that cardiac and blood pressure hypo-reactivity predicted increased pain among the FM patients. The fourth presentation demonstrates that emotional complexity - the ability to differentiate negative from positive affect - is a resilience factor, and shows through studies of experimental pain induction, daily diaries, and heart rate variability that FM patients have relatively poor emotional complexity, putting them at risk for more pain. This group also is testing an emotional awareness intervention for patients with FM. The last presentation is of a completed randomized clinical trial of a novel emotional awareness training intervention, which found substantial positive benefits in pain and functioning out to 6 months for patients with FM. Together, these many studies converge to indicate that emotional unawareness and emotional suppression contribute to chronic pain in people with FM, and that interventions to enhance emotional awareness and expression have substantial potential value in treating this challenging condition.

Individual Abstract Number: 1280

ANGER SUPPRESSION, PHYSIOLOGICAL REACTIVITY AND PAIN BEHAVIOR AMONG CLBP PATIENTS: TESTS OF MODERATION MODELS

John W. Burns, PhD, Behavioral Sciences, Rush University Medical Center, Chicago, IL, Phillip J. Quartana, PhD, Psychiatry & Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD

Suppression of anger is linked to acute and chronic pain intensity. It is not clear, however, exactly how suppressing anger affects pain. We proposed an irritable process model (adapted from Wegner) which holds that attempts to suppress anger lead paradoxically to increased accessibility of anger-related content and physiological reactivity, which in turn affects responses to later noxious events. Chronic low back pain (CLBP) patients (N=58) were randomized to suppress or not suppress anger during a maze task while being harassed by a confederate, and then performed a Pain Behavior Task (PBT; standing, walking, visual and auditory recall) while pain behavior was videotaped for coding. During the initial harassment, tension in the lower paraspinal (LP) muscles increased significantly more in the Suppression than in the Nonsuppress condition [F=5.1; p<.05], whereas trapezius muscle tension, SBP, DBP and HR increases were approximately equal across conditions [F<2; p>.10]. Suppression condition patients showed more pain behaviors during the PBT than Nonsuppress patients [F=5.8; p<.05]. Moderation models (ie, Condition differences in pain behavior could be accounted for by Condition differences in physiological reactivity) were not supported. However, several moderation models (eg, Condition x LP reactivity = pain behavior) were supported. Among Suppression condition patients, LP, SBP, DBP residual change scores were related significantly to pain behavior (beta's >.46; p<.05). For Nonsuppress patients, these indexes were not correlated significantly with behaviors. Trapezius muscle reactivity were not related significantly with pain behavior, irrespective of condition. Results indicate that attempts to suppress anger may lead to greater pain severity during everyday activities revealed through pain behaviors, and this effect may be most dramatic among patients who also experience significant low back muscle tension and pressor increases during anger. Thus, suppressing anger at one point may influence CLBP severity at another point among patients most prone to show substantial physiological arousal.

Individual Abstract Number: 1502

FIBROMYALGIA PATIENTS AND ALEXITHYMIA: EMOTIONAL RESPONSIVENESS TO INTERPERSONAL EMOTIONAL STRESSORS

Arnstein Fieset, PhD, Tonje L. Stensrud, MSc, Behavioral Sciences in Medicine, University of Oslo, Oslo, Oslo, Norway, Sigrid H. Wigers, MD/PhD, Dept. Medicine, Jeoya Rehabilitation Center, Moss, Ostfold, Norway

Patients with fibromyalgia (FM) often report difficult relationships with doctors, and patients with poor affect regulation (such as alexithymia) may respond with increased arousal to emotional topics during medical interviews. This study sought to better understand the interpersonal dynamics in medical consultations with patients with problems in affect regulation by investigating the responses of FM patients with and without alexithymia to various emotional stimuli presented during a medical interview. Electrodermal activity (EDA), a marker of sympathetic activation, was the primary outcome. Patients with confirmed FM (n=48) completed the Toronto Alexithymia Scale (TAS); 19 had alexithymia according to TAS criteria, 18 did not, and 11 were intermediate. Patients were given a clinical interview in a randomized 2x2 design, in which interviewer empathic behavior (explicitly responding with empathic statements vs. ignoring emotional cues and concerns) and the topic of the interview (emotional reactions to illness vs. a presumed neutral topic) were manipulated. EDA was measured during the interview using the Biopac MP150 system, and patient satisfaction was assessed. Based on cluster analysis, 18 patients were considered EDA non-responders, and 30 showed EDA responses. Among the EDA responders, patients with alexithymia responded with a larger tonic EDA response (mean rise in EDA level) during the empathy condition (interaction, p<.01), while the interview topic had little impact on arousal. Patient satisfaction was higher in the empathy condition only among patients without alexithymia (p<.01). We conclude that patients with poor affect regulation (alexithymia) responded with increased tonic sympathetic arousal to an explicit emotional provider response, even when the response was specifically designed as empathic. FM patients without alexithymia were particularly susceptible to provider emotional response in a clinical interview due to a reduced inability to verbally handle emotions. There is a need to tailor consultations to patient characteristics, in particular to affect regulation.
Individual Abstract Number: 1468

EMOTIONAL COMPLEXITY AS A RESILIENCE RESOURCE AMONG CHRONIC PAIN PATIENTS
Alex Zautra, Ph.D., Mary Davis, Ph.D., Psychology, Arizona State University, Tempe, Arizona, Patrick Finan, M.S., Denise Kruzelwski, M.S., Psychology, Arizona State University, Tempe, AZ, Anna Kratz, M.S., Psychology, Arizona State University, Tempe, Arizona, Perry Nicassio, Ph.D., Cousins Center for Psychoneuroimmunology, UCLA Neuropsychiatric Institute, Los Angeles, CA

The capacity to be aware of multiple, even contradictory emotions can be a valuable asset for those struggling with chronic difficulties, allowing for a silver lining to arise within emotional storms. However, this capacity may be compromised by stressful events, requiring an intervention that can help people sustain their emotional complexity. In a series of studies, we examine evidence for a reduction in complexity during days of elevated pain and stress among arthritis patients. We also explore resilience resources such as coherent variations in heart rate and an emotion regulation treatment that includes meditation, as ways of sustaining emotional complexity among these patients. Not all forms of chronic pain are related to emotional difficulties in the same way. We examine evidence that Fibromyalgia (FM) patients have unique problems in sustaining emotional complexity. In an experimental study, we report that pain induction was more difficult to ease for FM patients in comparison to controls. Diary data reveal different patterns of positive and negative affects across days with and without stress and pain for FM patients in comparison to controls suggesting deficits in sustaining positive emotion. Further analyses reveal that high resting heart rate variability and elevations in positive affect are predictors of decreased average daily pain, suggesting that these are resources of resilience in chronic pain patients. Lastly, we report on progress in a clinical trial designed to enhance the capacity for greater awareness of positive emotions as distinct from negative emotions, and suggest how a bi-dimensional model of psychological health may allow those with chronic pain to be more resilient.

Individual Abstract Number: 1272

EMOTIONS MATTER: SUSTAINED REDUCTIONS IN FIBROMYALGIA PAIN AFTER A BRIEF PSYCHOLOGICAL INTERVENTION
Howard Schubiner, MD, Internal Medicine, Providence Hospital / Wayne State University, Southfield, Michigan, Michael Hsu, MD, Physical Medicine and Rehabilitation, Kaiser-Northwest Permanente, Clackamas, Oregon, Mark A. Lumley, Ph.D., Psychology, Wayne State University, Detroit, Michigan, David A. Williams, Ph.D., Anesthesiology and Internal Medicine, Daniel J. Clauw, M.D., Internal Medicine, University of Michigan, Ann Arbor, Michigan

Stress, emotional unawareness and non-expression contribute to the onset and maintenance of fibromyalgia (FM), but interventions have not directly addressed these problems. We developed, manualized, and tested the effectiveness of an innovative emotional awareness program for FM. A sample of 45 women with FM (age M=50.5) were recruited from the community and randomized to intervention (n=24) or wait-list control (n=21). The intervention consisted of one individual physician consultation followed by 3 weekly 2-hour group sessions. The program tested the effectiveness of emotional awareness and standards cognitive behavioral pain management, to determine the specificity and added benefit of this emotional awareness intervention.

Symposium 1225

EXPERIENCES OF DISCRIMINATION AND CARDIOVASCULAR RISK FACTORS: EXPLORING COMPLEXITIES IN THE ASSOCIATION BETWEEN DISCRIMINATION AND HEALTH
David R. Williams, PhD, Society, Human Development and Health, Harvard School of Public Health, Boston, MA, Michelle A. Albert, MD, MPH, Cardiovascular Medicine and Preventive Medicine, Brigham and Women's Hospital, Boston, MA, Gary G. Bennett, Ph.D., Psychology & Neuroscience & Duke Global Health Insti, Duke University, Durham, NC, Natalie B. Slopen, M.A., Society, Human Development, and Health, Harvard School of Public Health, Boston, MA, Tené T. Lewis, PhD, Epidemiology & Public Health, Yale University School of Medicine, New Haven, CT

Psychosocial stressors in the form of perceived discrimination and interpersonal mistreatment have been linked to a wide variety of health outcomes. To date, much of the research in this area has focused on establishing a basic association between perceived discrimination and health. Consequently, we know very little about 1) contextual factors that might influence the association between discrimination and health; 2) whether certain types of stressors have a more deleterious for health than other types and 3) whether or not the perceived impact of discrimination on life's opportunities and well-being influences health. In this symposium, we will explore complexities in the association between perceived discrimination and health, with an emphasis on modifiable cardiovascular risk factors. The symposium will begin with a brief overview of the current status of research on perceived discrimination and health. Presentation 1 will explore whether associations between perceived discrimination and obesity differ by contextual factors (e.g. socioeconomic status and racial composition). Presentation 2 will focus on associations between one specific type of discrimination (medical discrimination) and blood pressure outcomes. Presentation 3 will examine the association between the perceived impact of discrimination over the lifecourse (i.e. burden of discrimination) and C-reactive Protein. To conclude, a clinical cardiologist will discuss the implications of the presented research for clinical practice and disease prevention.

Individual Abstract Number: 1656

DISCRIMINATION, SOCIAL CONTEXT, AND OBESITY AMONG BLACK ADULTS
Gary G. Bennett, Ph.D., Psychology & Neuroscience & Duke Global Health Insti, Melissa G. Scharoun-Lee, Ph.D., Duke Global Health Institute, Duke University, Durham, NC, Kathleen Wolin, Ph.D., Siteman Cancer Center, Washington University School of Medicine, St. Louis, MO, Sherman A. James, Ph.D., Sanford School of Public Policy, Duke University, Durham, NC, David R. Williams, PhD, Society, Human Development, and Health, Harvard School of Public Health, Boston, MA

The dramatic rise in U.S. obesity prevalence has disproportionately affected Blacks; over 45% of non-Hispanic Blacks are obese. Obesity's most proximal determinants (i.e. overconsumption of energy-dense foods and insufficient physical activity) are patterned by socioeconomic status (SES) and can be influenced by chronic exposure to psychosocial stressors. Among the range of stressors affecting the health of Blacks, racial discrimination has received increasing attention given its association with a host of deleterious psychosocial, physiological and health behavior outcomes. The purpose of our study was to examine the association between reported racial discrimination and obesity among adult Blacks. We were particularly interested in the potential for effect modification by both SES and the racial composition of context (i.e. the proportion of Black respondents - both of which have been independently associated with obesity among Blacks. We analyzed data...
from the Pitt County Study, a community-based, prospective investigation of risk factors for hypertension among Blacks residing in Eastern North Carolina. Baseline data were collected in 1988 with follow-up in 1993 and 2001; we analyzed cross-sectional data from the 1,178 individuals (418 men, 760 women) who completed the 2001 assessment. Discrimination was assessed using the Williams everyday discrimination measure and anthropometric data (height, weight, waist circumference) were measured. Among women, we found a higher likelihood of obesity among individuals reporting racial discrimination. Consistent with predictions, we found that the highest likelihood of obesity existed for low SES women reporting racial discrimination (OR: 3.02; 95% CI: 1.37, 6.63; p<.01). These findings persisted after adjustment for age, non-racial discrimination, trait anger, general perceived stress, smoking status, 1988 BMI, and social desirability (OR: 3.19; 95% CI: 1.45, 7.00). No associations were observed for men. Our findings demonstrate that perceived racial discrimination may be an important contributor to obesity among Black women, particularly those in lower SES circumstances.

Individual Abstract Number: 1661

DISCRIMINATION IN MEDICAL CARE AND ELEVATED BLOOD PRESSURE

Natalie B. Slopen, M.A., Society, Human Development, and Health, Harvard School of Public Health, Boston, MA, Tene T. Lewis, PhD, Division of Chronic Disease Epidemiology, Social and, Yale School of Public Health, New Haven, CT. Michelle A. Albert, MD, Preventive Medicine, Brigham and Women's Hospital, Boston, MA, Carol D. Ryff, PhD, Psychology, University of Wisconsin, Madison, Madison, WI, David R. Williams, PhD, Society, Human Development, and Health, Harvard School of Public Health, Boston, MA.

There is a growing number of national and international studies examining the association between discrimination and health. Blood pressure (BP) is one of the outcomes examined in this literature but the findings have been complex and unclear, suggesting the need to refine measures of discrimination in order to advance research. We propose that the opportunity to consider the specific context of discrimination in relation to BP. Discrimination in medical care may be particularly relevant, given that the maintenance of healthy BP can be influenced by patient-provider interactions and prevention behaviors. We hypothesized that experiences of discrimination in medical care is associated with elevated BP. Data were analyzed from 233 African-Americans and 975 Whites aged 35 to 86 in the Survey of Midlife in the United States. Discrimination in medical care was measured using a single item from the Lifetime Discrimination Scale, and models were repeated using the full version of this scale (11 items). Systolic and diastolic BP were modeled using linear regression. Discrimination in medical care was reported by 21.9% of African Americans and 8.3% of Whites. Interactions between discrimination in medical care and race were detected for systolic (b=11.17, p<.01) and diastolic BP (b=3.54, p=.08). Race-stratified models show that discrimination in medical care predicted higher systolic (b=8.30, p<.02) and diastolic BP (b=3.40, p=.09) in the African American sample, independent of age, gender, BP medication, BMI, income, education, alcohol intake, smoking, physical activity, and neuroticism. Within the White sample, there was no association between discrimination in medical care and diastolic BP; however, discrimination in medical care was negatively associated with systolic BP (b=-5.40, p<.01) adjusting for the covariates noted above. Replication using the Lifetime Discrimination score indicated similar results. Model adjustment for systolic BP revealed a significant difference in means, t(1,176)=2.46, p=0.01. Race-stratified models showed that discrimination in medical care was negatively associated with systolic BP; however, the association was not significant. Our results suggest that discrimination in medical care may be an important form of discrimination that is relevant for BP among African Americans in mid-life.

Individual Abstract Number: 1784

PERCEIVED BURDEN OF DISCRIMINATION OVER THE LIFECOURSE AND C-REACTIVE PROTEIN IN MIDDLE-AGED AFRICAN-AMERICAN AND WHITE ADULTS

Tene T. Lewis, PhD, Epidemiology & Public Health, Yale University School of Medicine, New Haven, CT, Natalie B. Slopen, MA, David R. Williams, PhD, Society, Human Development and Health, Harvard School of Public Health, Boston, MA, Carol Ryff, PhD, Psychology, University of Wisconsin, Madison, Madison, Wisconsin, Mahasin S. Majahid, PhD, Epidemiology, UC Berkeley School of Public Health, Berkeley, CA.

An emerging body of literature suggests that self-reported experiences of discrimination may be associated with poor cardiovascular health. The majority of studies in this area have focused on the association between the occurrence of discriminatory events and health, but few have examined the association between the perceived impact of discrimination and health. The current study was designed to examine the association between the perceived impact, or burden, of discrimination over the lifecourse and C-Reactive Protein (CRP), a marker of systemic inflammation and cardiovascular risk. Data were taken from 233 African-Americans and 975 Whites aged 35 to 86 in the Survey of Midlife in the United States. Discrimination was reported by 61% of African-Americans and 57% of Whites. Burden of discrimination was assessed among these individuals by two items: "Overall, how much has discrimination interfered with you having a full and productive life?" and "Overall, how much harder has your life been due to discrimination?" Responses were scored on a 4-point scale. African-Americans reported higher levels of lifetime burden due to discrimination as compared to Whites (p<.0001). In linear regression models adjusting for age, gender, education, current smoking, BMI, and total number of chronic health conditions, higher perceived burden of discrimination was associated with higher levels of CRP in African-Americans (b=13, p<.03), but not Whites (b=0.008, p=.86). Item level analyses revealed that the observed association was largely driven by feeling that discrimination had interfered with having a full and productive life (African-American b=13, p<.03; White b=0.01, p=.77; p for interaction=.046). Findings suggest that the perceived burden, or negative impact, of discrimination on life's opportunities may be associated with elevated cardiovascular risk in African-American populations.

Symposium 1164

RECENT APPROACHES TO PERSEVERATIVE NEGATIVE COGNITIONS AND THEIR HEALTH-RELATED CONSEQUENCES

Jos F. Brosschot, PhD, Psychology, Leiden University, Leiden, Zuid-Holland, The Netherlands, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH; William Gerin, PhD, Biobehavioral Medicine, Penn State University, University Park, PA, Cristina Ottaviani, PhD, Psychology, University of Bologna, Bologna, Italy; Italy, Jos F. Brosschot, PhD, Psychology, Leiden University, Leiden, Zuid-Holland, The Netherlands, LuBarron K. Hill, M.A., Psychology, The Ohio State University, Columbus, OH, Joshua M. Smyth, PhD, Psychology, Syracuse University, Syracuse, NY

Acute transitory physiological changes in response to stress are hypothesized to cause sustained biological dysregulations in relevant systems that are linked to the development of chronic illness. Many researchers, however, have emphasized the role of stress in making individuals more vulnerable to the physiological responses observed while the stressor is actually occurring, but rather the sequelae, that is, physiological changes observed after the activation of the memory of the stressor, whether immediately following the actual stress ("recovery") or after weeks or months have elapsed. We have referred to this process as "perseverative cognition" or "rumination." We posit that it is the effects of the stressor carried forward, rather than the acute effects observed at the moment of the stress, that are implicated in biological dysregulation and, ultimately, development of chronic illness. Evidence in favor of this hypothesis is growing. The most recent studies suggest that the nature of these affect-tinged cognitive representations may matter considerably regarding their health-threatening effects. This symposium highlights some of the most intriguing new approaches to perseverative cognition and its physiological consequences. Among the contributions are: an introduction to the biobehavioral phenotype of ruminative thought; inter-ethnic differences in types of worry and cardiovascular concomitants; a hypothesized self-perpetuating type of perseverative cognition and effects on cortisol and metabolic risk; and the possibility that "unconscious worry" has physiological consequences too, suggested by an experiment using subliminal priming. Taken together, this work illustrates the increasing sophistication in theorizing about and studying perseverative cognition in psychosomatic medicine and makes a case for the importance of...
studying the determinants of prolonged activation in the investigation of the effects of stress on disease.

Individual Abstract Number: 1168

THE "AUTONOMIC PHENOTYPE" OF RUMINATION: INSIGHTS FROM CARDIAC AUTONOMIC BALANCE AND CARDiac AUTONOMIC REGULATION
Cristina Ottaviani, PhD, Psychology, University of Bologna, Bologna, (BO), Italy, David Shapiro, PhD, Psychiatry, University of California, Los Angeles, California, Leah Z. FitzGerald, PhD, Nursing, UCLA, Los Angeles, CA
We recently showed that an autonomic phenotype of rumination, obtained by heart rate variability (HRV), baroreflex sensitivity and effectiveness indices, was associated with personality characteristics and endothelial activation, suggesting that this pattern of autonomic dysregulation might play a role in the relationship between personality and cardiovascular risk. In this study, we further investigated this concept by the use of innovative approaches in autonomic profiling (Bernston et al., 2008). Specifically, we obtained indices of cardiac autonomic balance and regulation (CAB, CAR) during rumination and we tested their relationship with traditional risk factors, such as personality, cardiovascular health, and endothelial activity. To have a detailed picture of the cardiovascular mechanisms occurring during rumination, the hemodynamic profile was also obtained. ECG, Impedance Cardiography, continuous BP and blood samples were collected for 60 participants (27 men and 34 women; mean age=33.4 (±9.5)) during a 10-min baseline, a 5-min Anger Recall Interview, and a 10-min recovery period, during which rumination was manipulated by the use of a distracter. Rumination was associated with reduced overall autonomic regulatory capacity, yielding a lower CAR (t=-3.15;p<.0001) and diminished contribution of the parasympathetic branch suggested by enhanced CAB (t=-3.61;p<.0001). Furthermore, rumination was associated with a more vascular profile (t=-3.32;p<.0001). CAR and CAB during rumination were correlated with anger-in (STAXI; r=-.43; p<.02) and depression (CESD;r=.43; p<.05). A higher CAB was associated with reduced norepinephine (r=.53;p<.01) and soluble intercellular adhesion molecule-1 (r=.43;p=.04) increases after rumination. Results strengthen previous findings on reduced HRV during rumination and further suggest a diminished overall autonomic variability and a shift towards a more vascular compared to the relatively more efficient regulation of BP via cardiac mechanisms. Present results underscore the importance of rumination for health

Individual Abstract Number: 1340

NEGATIVE EMOTIONAL PROCESSING WITHOUT AWARENESS INCREASES BLOOD PRESSURE
Jos F. Brosschot, PhD, Wapke Haenen, MSc, Psychology, Leiden University, Leiden, Zuid-Holland, The Netherlands
There is growing evidence that conscious types of perseverative cognition (PC), such as worry and rumination, can increase health-relevant physiological parameters, and that PC may mediate the prolonged physiological effects of psychological stress. There are, however, several indications that part of PC is unconscious and may be responsible for a considerable part of daily prolonged physiological activity. The existence of unconscious PC (UPC) is likely because most cognitive processes are (partly or entirely) unconscious. Moreover, several studies using subliminal negative emotional stimuli suggest that unconscious emotional cognition increase amygdala activity and skin conductance level. We hypothesized that subliminal negative stimuli also increase health-related parameters such as blood pressure. Showing this would imply crucial support for the notion that UPC can have health-relevant physiological effects. Eighty college students anticipating an examination in the next two weeks, were shown either (1) subliminal negative words, such as 'failure' and 'stupid', (2) subliminal neutral words, (3) supraliminal (above awareness threshold) negative words, or (4) neutral supraliminal words, during a neutral computer task. For subliminal stimulation a masking procedure was used. Blood pressure was measured continuously using a Portapres Monitor. A blood pressure check ascertainment that no subject could consciously perceive the subliminal stimuli Results indicated that while negative words decreased systolic blood pressure marginally significantly across awareness conditions (F(1,177) = 2.65, p < .10), they did so clearly and significantly in the subliminal condition (p<.05), but nonsignificantly in the supraliminal condition. High trait anxiety but not high trait worry augmented these differential effects of awareness of negative stimuli. The effects could not be explained by conscious PC or mood. The results suggest that unconscious but not conscious negative emotional information can increase blood pressure. This lends credence to the hypothesis that UPC may have physiological consequences.

Individual Abstract Number: 1593

CARDIOVASCULAR CATCH-22: PERSEVERATION IMPACTS THE PIPES AND THE PUMP IN AFRICAN AMERICANS.
LaBarron K. Hill, M.A., John J. Sollers, III, PhD, Psychology, The Ohio State University, Columbus, OH, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, O
We have previously shown that higher self-reported Perseverative Cognition is related to elevated blood pressure and delayed recovery in total peripheral resistance (TPR) following both a physical and psychological stressor in young, healthy African Americans. We now report on additional data from this work describing the influence of Perseverative Cognition (i.e.Worry) on parasympathetic (heart rate variability/HRV) activity in this group. Taking into account the growing body of research indicating that African Americans exhibit higher levels of HRV compared to Whites, as well as the considerable evidence that higher resting HRV is generally associated with better cognitive performance and overall health and that Perseverative Cognition may impact vagal activity, our data offer a preliminary glimpse into what may be a new and interesting piece to the larger autonomic-hemodynamic puzzle. In light of the notion that differential hemodynamic processes may underlie the larger prevalence and incidence of Hypertension in African Americans, findings from the present study point to a "Cardiovascular Catch-22" wherein perseveration may double impact African Americans. Specifically, not only do the High Worry African Americans in our sample exhibit elevations in diastolic blood pressure (DBP), mean arterial pressure (MAP) and TPR compared to Whites with similar trait worry levels, but this group also shows significantly higher resting HRV (LogHF) compared to other African Americans ( p <.05). We explore this pattern in follow-up analysis and describe the potential implications of this apparent "Cardiovascular Conundrum" as it relates to Perseverative Cognition and health, specifically in African Americans.

Individual Abstract Number: 1697

STINKING THINKING: DYNAMIC PERSEVERATIVE COGNITION AS A COMMON PATHWAY LINKING STRESS AND HEALTH
Joshua M. Smyth, PhD, Psychology, Syracuse University, Syracuse, NY, Martin J. Sliwinski, PhD, HDFS, Pennsylvania State University, State College, PA
Evidence links stress both to health outcomes and intermediary risk factors. Individual differences in such relationships are less well understood, as are situations under which stress poses the greatest risk. Prior work has suggested ruminative processes may prolong physiological stress responses. We focus on dynamic perseverative cognition [DPC], a ruminative style characterized by intrusions, avoidance, and self-blame, as a common pathway linking both objective events (stressors) and subjective responses (stress) to a broad array of risk and resilience factors. A diverse sample of adult volunteers (N=275; ages 20-83 [M=49.6]; 52% white, 38% African American; 52% female) completed measures of negative life events, subjective stress, and DPC (intrusions, thought suppression, worry, self-punishment). Health outcomes assessed included a composite of metabolic risk (BMI, waist circumference, mean arterial BP, bodyfat % and Hba1c), waking rise in cortisol, cognitive function (working memory), and sleep quality. DPC significantly mediated a large percentage of the relationship between stress (both subjective and objective events) and this broad range of health-related outcomes. For example, DPC accounted for much of the effect of subjective stress
on metabolic risk (27%; p<.05), waking rise in cortisol (40%; p<.05), working memory (57%; p<.01), and sleep quality (45%; p<.01). Similar effects were observed examining negative life events. Moreover, results were substantively unchanged when controlling for age, gender, and negative affect. These data suggest that individuals characterized by more extensive DPC are at greater risk of stress-related negative outcomes. Moreover, that DPC accounts for a substantial portion of the health risks associated with both objective life events as well as subjective stress responses. Also, that DPC may be a common pathway (across outcomes/systems) linking stress and health. Given the magnitude and breadth of this relationship, interventions targeted at reducing DPC may be effective and widely efficacious in reducing and preventing stress related dysfunction.

Symposium 1231

STRESS AND FUNCTIONAL SOMATIC SYNDROMES

Francis Creed, MD, Psychiatry Research Group, University of Manchester, Manchester, UK, UK, Judith G. Rosmalen, PhD, Psychiatry, Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands, The Netherlands, Joel E. Dinsdale, PhD, Psychiatry, University of California, San Diego (UCSD), La Jolla, California, Caroline Creed, MD, Psychiatry Research Group, University of Manchester, Manchester, UK, UK, Lukas Van Oudenhove, PhD, Pathophysiology, University of Leuven, Leuven, Vlaams-Brabant, Belgium, John McBeth, PhD, ?, ?, Manchester, UK, UK

There is evidence for both infective and stress-related aetiology of functional syndromes, but sound scientific evidence for the latter is scarce and the underlying mechanisms remain unclear. The first presentation concerns a population-based cohort study that demonstrated a low onset rate and moderate persistence of Irritable Bowel Syndrome (IBS), Fibromyalgia (FM) and Chronic Fatigue (CF) over one year. Although there is some commonality of risk factors between the three syndromes (including childhood abuse, stressful life events and number of bodily symptoms), there is a stronger association between anxiety/depression and CF than with IBS & FM. This may have implications for understanding mechanisms. The second presentation investigated whether genetic markers associated with variation in stress response pathways moderate the relationship between psychological stress and susceptibility to developing functional symptoms. Data will be presented suggesting that the relationship between anxiety/depression and functional symptoms is moderated by genetic variants involved in serotinergic and hypothalamic-pituitary-adrenal (HPA) axis pathways. The third speaker will discuss alterations in the autonomic nervous system and the HPA axis as etiological factors in the development of functional syndromes. A recent meta-analysis from this laboratory suggested that lowered DPC was associated with functional syndromes for statistical analysis. Conclusions The association between chronic widespread pain and few years of education concurs with findings in back pain. The association of chronic fatigue with neuroticism/anxiety, on the other hand, may indicate a different mechanism in this syndrome and this needs to be considered further in genetic and physiological studies of the mechanisms involved.

Individual Abstract Number: 1307

GENETIC VARIATION IN STRESS PATHWAY GENES IS ASSOCIATED WITH MULTIPLE SOMATIC SYMPTOMS

John McBeth, PhD, Kate L. Holliday, PhD, Barbara J. Nicholl, PhD, Wendy Thomson, PhD, ARC Epidemiology Unit, University of Manchester, Manchester, UK, UK

Purpose of study: In common with all complex disorders susceptibility to functional somatic syndromes (FSS) will be determined by a combination of psychological, environmental, and genetic factors. The relationship between stress, notably anxiety and depression, and the onset of FSS has been established. We hypothesised that genetic markers associated with variation in stress response pathways (the serotinergic system and the hypothalamic-pituitary-adrenal (HPA) axis) would moderate the relationship between depression and anxiety and susceptibility to developing FSS. Sample and methods: Subjects were participants in a population based study of multiple FSS who had completed the Somatic Symptom Checklist and the Hospital Anxiety and Depression Scale. DNA samples were obtained from 1189 subjects. A total of 195 (16%) were excluded as they did not meet sample quality control criteria. Of the remaining 994 subjects, 967 had complete FSS data and were included in the analysis. The median age of subjects was 50.6 (95%CI 49.7, 51.7) and 58.5% were female. 53% of subjects reported 0 somatic symptoms, 29% reported 1 and 18% reported 2 or more. Serotinergic system genes (TPH2, SLC6A4, HTR2A) and HPA axis genes (CRH, CRHR1, CRHBP, MC2R, POMC, NR3C1, SERPINA6) were successfully genotyped in 967 subjects for 145 (87%) SNPs. A number of SNPs were significantly associated with the presence of multiple FSS. For example in the TPH2 gene two SNP’s (rs9567746, p = 0.024 and rs2274639, p = 0.024) and one SNP in the SERPINA6 gene (rs7465530, p=0.006) were significantly associated. These genes showed evidence of interaction with higher levels of anxiety and depression. Conclusion: SNPs in serotinergic and HPA axis genes were associated with reporting multiple somatic symptoms. These genes may moderate the relationship between psychological stress and FSS although these relationships require replication in independent cohorts.

Individual Abstract Number: 1273

POPULATION-BASED STUDY OF STRESS IN THREE FUNCTIONAL SOMATIC SYNDROMES

Francis Creed, MD, Psychiatry Research Group, Carolyn Chew-Graham, MD, Primary Care Research Group, University of Manchester, Manchester, UK, UK, Gary Macfarlane., Dept of Public Health, University of Aberdeen, Foresterhill, Aberdeen, UK, Scotland, Barbara Tomenson, MSc, Psychiatry Research Group, Ian Davies, MSc, ARC Epidemiology Unit, Judy Jackson, MSc, Psychiatry Research Group, Alison Littlewood, MSc, John McBeth, PhD, ARC Epidemiology Unit, University of Manchester, Manchester, UK, UK

Background Unlike previous epidemiological studies we assessed the association of childhood and adult stress with 3 functional syndromes. Method: Prospective population-based cohort study of 1443 UK adults (58% response); 741 (75% of those agreeable) completed questionnaires 1 year later. We assessed purported risk factors at baseline to see whether they were common to the 3 syndromes: Chronic Widespread pain (CWP), Irritable bowel syndrome (IBS), chronic fatigue (CF). We identified risk factors for persistence over 1 year using logistic regression. Results After excluding medically explained syndromes (by examining medical records) 9.4% had Chronic Widespread Pain, 3.5% Irritable Bowel Syndrome and 12.6% had chronic fatigue. Baseline analysis indicated common effects across the 3 syndromes for many demographic features, reported childhood abuse and recent stressful life events. For the following there was no common effect: * less than 12 years of education was associated only with CWP * recent serious illness in a close relative, neuroticism, HADS anxiety and SF12 mental scores were associated only with Chronic fatigue, indicating worse mental health in this syndrome. In logistic regression with baseline variables as independent variables: Persistent Chronic Widespread Pain (42% of baseline cases) was predicted by numerous bodily symptoms (OR=1.22[95%CI: 1.1-1.5]) and recent serious illness (OR=4.1[95%CI: 1.1-13.2]). Persistent chronic fatigue (46% of baseline cases) was predicted by HADS depression (OR=1.3[1.13-1.5]) & numerous bodily symptoms (OR=1.1 [1.0-1.2]). There too few cases of persistent IBS or of new onset cases of all 3 syndromes for statistical analysis. Conclusions The association between chronic widespread pain and few years of education concurs with findings in back pain. The association of chronic fatigue with neuroticism/anxiety, on the other hand, may indicate a different mechanism in this syndrome and this needs to be considered further in genetic and physiological studies of the mechanisms involved.
META-ANALYSIS AND META-REGRESSION OF HYPOTHALAMIC-PITUITARY-ADRENAL AXIS ACTIVITY IN FUNCTIONAL SOMATIC DISORDERS
Judith G. Rosmalen, PhD, Psychiatry, Internal Medicine, Lineke M. Tak, MD, MSc, Hans J. Oremel, PhD, Psychiatry, University Medical Center Groningen, Groningen, The Netherlands, The Netherlands, Simon Wessely, Psychological Medicine, King's College, London, UK, UK, Iris Kox, Psychiatry, University Medical Center Groningen, Groningen, The Netherlands, The Netherlands, Anthony Cleare, Psychological Medicine, Andiappan Manoharan, Biostatistics and Computing, King's College, London, UK, UK

Alterations in stress responsive systems are thought to play a role in the etiology of functional syndromes, such as chronic fatigue syndrome (CFS), fibromyalgia (FM), and irritable bowel syndrome (IBS). In line with this, a recent meta-analysis found reduced parasympathetic nervous system function in functional syndromes, with no evidence for differences between CFS, FM and IBS. The aim of the current meta-analysis was to study the association between basal hypocortisolism and functional syndromes, and to identify potential moderators of this association, such as type of functional syndrome, gender, medication use, co-morbidity with depressive disorder, and physical inactivity. We performed a systematic search without study restrictions using Medline, Embase and PsycINFO databases. Cross-sectional case-control studies of HPA-axis activity in adult subjects with CFS, FM, or IBS were selected. A standardized mean difference (SMD) between cases and controls of basal cortisol levels in either saliva, serum, or urine was calculated. Meta-analysis on 82 studies revealed that although basal cortisol levels were generally lower in functional syndromes, this was only consistent in subjects compared to controls, with this association did not reach statistical significance (SMD -0.07, 95% CI -0.18 to 0.04, p = 0.125). However, when the three functional syndromes were assessed separately, statistically significant hypocortisolism was observed in CFS subjects compared to controls (SMD -0.14, 95% CI -0.28 to 0.00, p = 0.047), but not in FM or IBS. In a moderator analysis, hypocortisolism was associated with female gender, absence of current smoking, younger age at use, and presence of comorbidity with other disorders. However, when all potential moderators were entered into a meta-regression analysis, only type of functional syndrome remained a significant predictor of hypocortisolism. In conclusion, we did not find evidence to consider all functional syndromes as hypocortisolemic disorders.

ABNORMAL BRAIN ACTIVITY AS A PUTATIVE MEDIATING MECHANISM BETWEEN ADVERSE LIFE EVENTS AND SYMPTOM REPORTING IN FUNCTIONAL DYSPESPIA
Luuk van Ouwendhove, PhD, Jan Tack, PhD, Pathophysiology, University of Leuven, Leuven, Vlaams-Brabant, Belgium
Purpose Severe adverse life events (history of sexual/physical abuse) have been related to hypersensitivity to gastric distension and symptoms in functional gastrointestinal disorders. The underlying mechanisms remain unclear, but brain mechanisms may be involved. Our aim was to study the relationship between abuse history and brain responses to gastric distension in functional dyspepsia (FD). Subject sampling and abuse history was determined using a validated self-report questionnaire (Leserman & Drossman 1995). Brain H215O-PET was performed in 25 tertiary care FD patients during 3 conditions: no distension (baseline), gastric distension at individual discomfort and pressure to sham distension. Mean brain activity responses to gastric distension in functional dyspepsia (FD). Subject sampling and abuse history was determined using a validated self-report questionnaire (Leserman & Drossman 1995). Brain H215O-PET was performed in 25 tertiary care FD patients during 3 conditions: no distension (baseline), gastric distension at individual discomfort and pressure to sham distension. Mean brain activity compared between both groups, differences were found in right H1P/AMYG & left occipital regions (both lack of deactivation in abuse), right insula and left dorsolateral & dorsomedial PFC (all activation in nonabuse, deactivation in abuse). In conclusion, abused FD patients are characterized by higher symptom levels as well as an abnormal response to gastric distension in affective/cognitive pain modulatory brain regions. These findings are in line with brain imaging studies in post-traumatic stress disorder (PTSD) and may represent deficient cognitive reappraisal of unpleasant stimuli in abused patients.

SYMPOSIUM 1346
SWEATING THE SMALL STUFF?: EMOTION, STRESS, AND HEALTH IN EVERYDAY LIFE
Matthew L. Newman, Ph.D, Social and Behavioral Sciences, Arizona State University, Glendale, AZ, Sally S. Dickerson, Ph.D., Department of Psychology and Social Behavior, University of California, Irvine, Irvine, CA, Nicole A. Roberts, Ph.D., Matthew L. Newman, Ph.D., Social and Behavioral Sciences, Arizona State University, Glendale, AZ, Kathi L. Heffner, Ph.D., The Rochester Center for Mind-Body Research, University of Rochester School of Medicine and Dentistry, Rochester, NY
The links between emotion, stress, and health have been long-debated, but important questions remain unanswered. For example, which individuals successfully regulate their emotions in the face of stressful and traumatic life events, and what implications does this have for longer-term health outcomes? Can we reliably identify physiological mechanisms subserving such regulation? In this symposium, three presentations address these questions using multiple methods (e.g., measures of both autonomic and endocrine responding) and unique populations, including community samples, elderly individuals and individuals with histories of trauma. Our first speaker presents findings from a sample of individuals age 50 and older in response to a series of challenging cognitive tasks, revealing the importance of both parasympathetic and sympathetic flexibility in understanding the emotional and physiological sequelae, and ultimately health effects, of stress. Second, by studying co-morbid and non-clinical populations with prior trauma exposure (individuals with and without post-traumatic stress disorder), our second speaker shows that low levels of emotional distress and better emotion regulation abilities (based on physiological and self-report indicators) protect against traumatic stress reactions and somatic symptoms. Finally, in a series of studies using survey, laboratory-based, and physiological methods, our third speaker shows that commonplace early stressful experiences such as being bullied can have a long-lasting impact on coping abilities and cardiovascular health. As will be discussed in a critical synthesis by our discussant, these studies have significant implications for the role of emotion in health and well-being and its relationship with stress and resiliency.

AUTONOMIC CARDIAC CONTROL AND RELATIONSHIPS TO NEGATIVE AFFECT, NEUROENDOCRINE, AND INFLAMMATORY RESPONSES TO ACUTE STRESS
Kathi L. Heffner, Ph.D., Rochester Center for Mind-Body Research, Psychiatry, University of Rochester, Rochester, NY
Evidence supports ties among negative emotions, autonomic nervous system (ANS) dysfunction-including reduced parasympathetic cardiac control-and risk for cardiovascular disease (CVD). Recent approaches to identifying links between ANS function and CVD suggest that contributions of both the sympathetic and parasympathetic ANS branches to cardiac regulation during resting states may indicate greater adaptive capacity of the ANS in response to psychological stressors, mitigating CVD risk. Individual differences in autonomic regulatory capacity may also relate to the regulation of negative emotions in response to stress. We examined this association in healthy men and postmenopausal women (N = 85) ages 50 and older. Given the interactions of the autonomic, endocrine and immune systems, we also examined associations among autonomic regulatory capacity and stress hormone and inflammatory responses to acute stress. Negative affect (NA), salivary cortisol and plasma levels of the inflammatory cytokine interleukin-6 (IL-6) were assessed at the end of a 30-minute rest period and at multiple points during recovery from challenging cognitive
tasks. We also derived resting high frequency heart rate variability (HF-HRV) and pre-ejection period (PEP) from the electrocardiogram and impedance cardiography to derive individuals’ capacity for autonomic regulation and cardiac autonomic balance (indexing parasympathetic dominance), using recently suggested formulas (Berntson et al., 2008). Greater autonomic regulatory capacity related to lower NA (p = .02) and IL-6 (p = .04), and modestly to greater cortisol (p = .06) in response to the tasks, controlling for baseline measures and age. Parasympathetic dominance at rest was not associated with affective or cortisol responses to the task, but related strongly to greater elevations in IL-6 (p < .001). Individual differences in autonomic regulatory capacity may reflect greater overall capacity to adapt emotionally and physiologically to stress, and thus offer additional information about stress and emotion pathways to cardiovascular health.

Individual Abstract Number: 1347

WHAT CAN TRAUMA TEACH US ABOUT STRESS AND EMOTION?
Nicole A. Roberts, Ph.D., Social and Behavioral Sciences, Arizona State University, Glendale, AZ

Major stressful or traumatic life events (e.g., a severe car accident, sexual assault) have been associated with disruptions in emotional processing. Many individuals exposed to such events, however, seem to lead typical emotional lives without experiencing poor health outcomes. The present study aimed to determine whether severity of traumatic stress reactions (i.e., symptoms of post-traumatic stress disorder) varied systematically with emotional functioning based on standard measures of emotional reactivity and regulation. Thirty-four individuals with varying degrees of prior trauma exposure (from minimal exposure to prolonged exposure and clinically-significant levels of distress) completed questionnaire measures of emotion and a laboratory task that involved rating emotional (positive, negative, neutral) slides. Baseline respiratory sinus arrhythmia (RSA) was measured as an index of parasympathetic regulation. Greater post-traumatic symptom severity was associated with: (a) greater reports of negative emotionality (Emotion Regulation Scale), (b) greater reports of perceived stress (Pereceived Stress Scale), (c) greater general psychological distress (Symptom Checklist-90-Revised), (d) greater emotion regulation difficulties (Difficulties in Emotion Regulation Scale) (all ps < .01) and (e) lower baseline RSA (p<.05). Post-traumatic symptom severity was not associated with ratings of emotional valence or intensity in response to the slides (all ps > .05). Findings suggest that the reported severity of one's reaction to a traumatic event is associated with general emotional and psychological distress and difficulty regulating this distress, as shown by self-report and physiological indicators. In contrast, reactions to trauma do not appear to translate into heightened emotional reactivity or impairments in emotional processing when individuals are required to evaluate basic emotional stimuli (i.e., emotional slides). Thus, in a mixed clinical and subclinical sample, stressful life events may not impact in-the-moment emotional reactivity, but rather more general perceptions and markers of emotional distress and dysregulation.

Individual Abstract Number: 1348

THE EMOTIONAL IMPACT OF BEING BULLIED
Matthew L. Newman, Ph.D., Social and Behavioral Sciences, Arizona State University, Glendale, AZ

Approximately one-third of children are victims of bullying during development, and this victimization has been linked with a wide range of emotional and behavioral problems. The existing literature leaves little doubt that being bullied has negative consequences. However, little attention has been paid to the psychological and physiological mechanisms for these consequences. This talk summarizes recent research from my lab, suggesting that previous experience with the stress of being bullied leads to lasting changes in stress and emotion processes. In Study 1 (N=1,473), college students with a history of being bullied reported more overall stress, and an increased use of avoidant coping strategies (ps < .001). Avoidant coping also partially in the long-term, these strategies are maladaptive by acting to prolong stress. In two laboratory studies, bullying victims showed blunted cardiovascular responses to public speaking (Study 2; N=40) and ostracism (Study 3; N=24), as indicated by a decreased heart rate, lower stroke volume, and longer pre-ejection period (ps < .01). This blunted response pattern mirrors findings from studies of learned helplessness and PTSD, and suggests that the consequences of bullying may extend to biological processes, with implications for cardiovascular health. Taken together, these studies point to a potential mechanism for the damage done by bullying.

Symposium 1325

FUNCTIONAL NEUROIMAGING OF STRESS: HUMAN EVIDENCE ON EFFERENT AND AFFERENT BRAIN-BODY PATHWAYS
Tor D. Wager, Ph.D., Psychology, Columbia University, New York, NY, Peter Gianaros, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA, Naomi Eisenberger, Ph.D., Psychology, University of California, Los Angeles, CA, Israel Liberzon, M.D., Psychiatry, University of Michigan, Ann Arbor, MI, Tor D. Wager, Ph.D., Psychology, Columbia University, New York, NY.

Recent studies have shown that stressors influence a number of brain regions in the relationship between psychological stress and both psychological and physiological outcomes. Research on the brain mechanisms underlying human stress responses is in its infancy. This symposium presents converging evidence from recent functional neuroimaging studies of human stress. The speakers focus on three areas: 1) efferent brain-body control, 2) afferent body-brain feedback from exogenous administration of cortisol and peripheral cytokines, and 3) stress effects on psychological function, including mood, decision-making, and working memory. Coverage of efferent pathways focuses cortical-subcortical brain pathways that mediate the effects of psychological stress on cardiac function. The speakers present converging evidence that there are reciprocal medial prefrontal regions that mediate stress-induced baroreflex suppression and heart rate responses. Specifically, dorsal and ventral medial prefrontal cortices have opposing roles in promoting and antagonizing these autonomic indices of stress. Research on afferent pathways focuses on the effects of experimentally administering peripheral corticotropin and endotoxin on brain function related to mood and decision-making. In one study, endotoxin administration influenced both mood and brain correlates of social rejection in the dorsal anterior cingulate and insular cortices. In another study, cortisol administration abolished loss aversion in a decision-making task, an effect mediated by changes in fMRI signal in the insula. Together, these presentations underscore both the possibility and the necessity of unpacking the brain mechanisms of both efferent and afferent brain-body feedback loops associated with psychological and physiological stress.

Individual Abstract Number: 1342

STRESSOR-INDUCED SUPPRESSION OF THE BAROREFLEX COVARIATES WITH FUNCTIONAL ACTIVITY IN A DISTRIBUTED CORTICOLIMBIC CIRCUITRY
Peter Gianaros, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA

The baroreflex is a homeostatic mechanism that constrains blood pressure around a regulatory set point by modulating autonomic outflow to the myocardium and vasculature. The sensitivity of the baroreflex can be suppressed by many behavioral states, particularly those engendering stressful experiences. Of clinical relevance, measures of suppressed baroreflex sensitivity (BRS) predict coronary events in epidemiological and patient samples. Although translational animal work demonstrates that a distributed corticolimbic brain circuitry, encompassing medial prefrontal and cingulate cortices and thalamic and brainstem cell groups, is instrumental for linking stressful experiences with baroreflex suppression, comparable human evidence is lacking. Here, beat-by-beat changes in blood pressure and heart rate were monitored in 42 healthy adults who performed a standardized multi-source interference stressor task to elicit changes in baroreflex sensitivity, as measured with a Finometer device and quantified by the canonical sequence method. In a separate protocol, individuals
performed the same stressor task during functional magnetic resonance imaging at 3-Tesla. As expected, stressor task performance decreased (suppressed) BRS compared with baseline, t(41)=3.40, P=0.002. Moreover, statistical parametric mapping analyses executed in SPM8 demonstrated that greater stressor-evoked BRS suppression covaried with greater activation in the bilateral rostral anterior cingulate cortex (BA32), medial prefrontal cortex (BA10), medial thalamus, and bilateral insula. Further, greater stressor-evoked BRS suppression covaried with greater deactivation in the medial subgenual anterior cingulate cortex (BA24), medial orbitofrontal cortex (BA10/11), dorsal insula, andpons. These findings provide novel human evidence for the corticolimbic circuits involved in linking stressor processing with baroreflex suppression.

Individual Abstract Number: 1345
FMRI IMAGING OF SOCIAL EVALUATIVE THREAT: CORTICAL-SUBCORTICAL MEDIATORS OF CARDIOVASCULAR EFFECTS AND IMPAIRMENTS IN WORKING MEMORY
Tor D. Wager, Ph.D., Psychology, Columbia University, New York, NY
Social threat is a key component of mental ‘stress’ and a potent generator of BRS compared with placebo, t(41)=3.40, P=0.002. Moreover, statistical parametric mapping analyses executed in SPM8 demonstrated that greater stressor-evoked BRS suppression covaried with greater activation in the bilateral rostral anterior cingulate cortex (BA32), medial prefrontal cortex (BA10), medial thalamus, and bilateral insula. Further, greater stressor-evoked BRS suppression covaried with greater deactivation in the medial subgenual anterior cingulate cortex (BA24), medial orbitofrontal cortex (BA10/11), dorsal insula, andpons. These findings provide novel human evidence for the corticolimbic circuits involved in linking stressor processing with baroreflex suppression.

Individual Abstract Number: 1344
CORTISOL EFFECTS ON HUMAN DECISION MAKING
Israel Liberon, M.D., Psychiatry Department and Ann Arbor VA Health System, University of Michigan, Ann Arbor, MI
Stress can alter decision making under risk, and cortisol is one likely mediator of this process. However, neurocircuity involved in cortisol modulation of decision making is unknown. To date no study has used fMRI to document the neurocorrelates subserving the effect of cortisol on decision-making under risk (DM). We investigated effects of exogenous cortisol administration on emotional and cognitive processes of DM. We administered 100 mg hydrocortisone (HCT) in a double dissociation between brain substrates of the two parameters. Our results begin to delineate modulatory effects of cortisol, a major stress hormone, on decision making, and link behavioral effects of cortisol on DM with their brain substrates.

Individual Abstract Number: 1343
AN fMRI STUDY OF CYTOKINE-INDUCED DEPRESSION AND SOCIAL PAIN
Naomi Eisenberger, Ph.D., Psychology, University of California, Los Angeles, CA
Although research has demonstrated a relationship between proinflammatory cytokine activity and depressive symptoms, few studies have examined whether cytokine activity influences the social or affective neural processes that increase risk for depression. Based on the hypothesized overlap in the neural systems underlying physical pain and ‘social’ pain—the painful feelings resulting from broken social bonds—we examined whether the inflammatory response, which increases physical pain sensitivity, inadvertently recruited systems involved in social pain, increasing social pain sensitivity and potentially increasing vulnerability to depressed mood. In this study, participants received either low-dose endotoxin (which increases proinflammatory cytokine activity) or a safe nano-particle placebo through intravenous injection. Levels of the proinflammatory cytokine, IL-6, were repeatedly assessed through hourly blood draws; self-reported depressed mood and self-reported feelings of social disconnection were assessed hourly as well. Two hours post-injection, participants completed a neuroimaging session in which they were socially excluded. Replicating previous research, individuals exposed to endotoxin, compared to placebo, showed increases in IL-6 levels and depressed mood over time. Interestingly, endotoxin (vs. placebo) subjects also showed significant increases in feelings of social disconnection over time. Neural analyses demonstrated that among females exposed to endotoxin, but not males, IL-6 increases were associated with greater social pain-related neural activity to social exclusion, and this neural activity mediated the relationship between IL-6 increases and depressed mood increases. Implications of these findings for understanding the social and affective consequences of inflammation will be discussed.

Symposium 1116
PATIENTS’ ILLNESS PERCEPTIONS AND OUTCOMES IN CARDIOLOGY
Keith J. Petrie, PhD, Psychological Medicine, University of Auckland Medical School, Auckland, Auckland, New Zealand, John Weinman, PhD, Health Psychology Section, Institute of Psychiatry, Kings College London, London, London, United Kingdom, Ronan E. O’Carroll, PhD, Department of Psychology, University of Stirling, Stirling, Scotland, United Kingdom, Elizabeth A. Broadbent, PhD, Keith J. Petrie, Psychological Medicine, University of Auckland Medical School, Auckland, Auckland, New Zealand, Robert Horne, PhD, Department of Practice and Policy, The School of Pharmacy, University of London, London, London, United Kingdom
This symposium brings together four international experts in the area of illness perceptions to present their latest work in the cardiology area. Two of the papers examine the relationship between illness perceptions and functional outcome following cardiac surgery. The first looks at cardiac valve replacement patients and shows illness perceptions to predict outcome, including depression, at a one year follow-up. The second cardiac surgery study provides evidence that illness perceptions measured prior to surgery predict functional outcome at a 2 year follow-up. The third paper reports an association between illness and medication perceptions and self-reported and assay verified adherence to immunosuppressive medication in heart transplant patients. The fourth study looks at the illness perception beliefs of MI patients classified as Type-D. This study points to the fact that the strikingly negative illness perceptions may explain some of the poorer outcomes of these patients. All of the presentations have implications for how illness perception interventions may have potential to improve outcome in cardiac illness.
DELINATING THE INTERACTIONS BETWEEN COGNITION AND EMOTION IN RECOVERY FROM CARDIAC VALVE SURGERY

John Weinman, PhD, Matthew Hankins, PhD, Helen Rimington, PhD, Health Psychology Section, Institute of Psychiatry, Kings College London, London, London, United Kingdom

Objective: Since both illness perceptions (IPs) and depression have been found to influence outcome in cardiac patients, the present study was partly designed to examine possible interactions between patients' cognitions and emotions to gain an understanding of possible causal links between them. Thus its purpose was to assess the extent to which baseline illness perceptions predict subsequent depression, and vice-versa, in recovery from cardiac valve surgery. Methods: The study sample consisted of 225 patients having first time cardiac valve replacements, with a mean age of 67 years. Each patient's illness perceptions (IPQ-R) and mood (HADS) were assessed by questionnaire immediately pre-surgery and 1 year later. Patients were also assessed for severity (NYHA), ambulation (6 minute walk), cardiac function and quality of life on both occasions. Pearson correlations were used to examine associations between illness perceptions and depression, and structural equation modelling (SEM), using both cross-lagged and reciprocal models, was used to examine the extent to which baseline IPs predicted 1 year depression and vice versa. Results: Both IPs and depression predicted one year outcomes. All IPs, except timeline, were concurrently associated with depression pre-op and at 1 year, with consistently stronger associations at one year. The results from the cross-lagged and reciprocal models showed that baseline depression is significantly associated with patients' 1 year perceptions of personal and treatment control as well as their emotional representation of the condition. In contrast, two baseline illness perceptions (perceived consequences and illness coherence) significantly predicted depression scores at 1 year. Conclusion: These findings therefore indicate which illness perceptions could be targeted to reduce depression and improve one year outcome in cardiac valve surgery patients.

PATIENTS' PERCEPTIONS OF THEIR HEART CONDITION PREDICT SPEED OF RETURN TO FUNCTIONING AND HEART-RELATED DISABILITY FOLLOWING CARDIAC SURGERY

Keith J. Petrie, Unique Weber, MS, Emma MacDonald-Laur., Psychological Medicine, University of Auckland Medical School, Auckland, Auckland, New Zealand, Paget Millsom, FRACS, Cardiothoracic Surgery, Chris J. Ellis, MD, Cadiology, Auckland City Hospital, Auckland, Auckland, New Zealand

Objective: To determine whether illness perceptions predict functional outcome following cardiac surgery. Methods: We assessed 102 patients prior to undergoing GABG or valve replacement surgery. Patients completed the Brief Illness Perception Questionnaire and demographic and medical data were collected from the patient medical file including left ventricular ejection fraction (LVEF) and length of post-surgical stay. Two years later patients completed a phone interview to assess angina and shortness of breath, speed of returning to normal activities as well as heart-related disability using the physical functioning subscale of the SF-36. Results: 75 patients completed the phone interview at 2 years. 20% of patients reported significant problems with angina or shortness of breath while carrying out ordinary activities. Using hierarchical regression analysis we found LVEF was a significant predictor of the speed patients resumed household chores and leisure activities. However, in both cases illness perceptions (notably low perceived illness coherence) added significantly to the model explaining a greater proportion of variance. Heart-related disability at 2 years was not related to any of the pre-surgery clinical or demographic variables but was significantly associated with greater emotional distress about their heart condition as measured by the Brief Illness Perception Questionnaire. Conclusions: Illness perceptions measured prior to cardiac surgery are an important predictor of both speed of return to function and heart-related disability at 2 years. Consistent with previous research, different illness perceptions are important in predicting different functional outcomes. There may be potential to change illness perceptions prior to surgery to reduce subsequent disability.

NON-ADHERENCE TO IMMUNOSUPPRESSANT MEDICATION IN HEART TRANSPLANT PATIENTS: THE ROLE OF ILLNESS AND TREATMENT PERCEPTIONS

Elizabeth A. Broadbent, PhD, Mary Kung, MS, Psychological Medicine, University of Auckland Medical School, Auckland, Auckland, New Zealand, Liz Painter, MS, Cardiology, Auckland City Hospital, Auckland, Auckland, New Zealand

Objectives: Non-adherence to immunosuppressant medication is associated with increased morbidity and mortality in solid-organ transplant patients, yet research indicates rates of non-adherence between 20% and 50%. Reasons behind non-adherence are poorly understood, and this research aimed to investigate how heart transplant patients’ perceptions about their condition and about immunosuppressant treatment were associated with non-adherence to immunosuppressant medication. Methods: 87 heart transplant patients completed the Brief Illness Perception Questionnaire, the Beliefs about Medicines Questionnaire, the Transplant Effects Questionnaire, and two items about the effects of treatment on susceptibility to cancer and infections. Adherence was assessed by self-reports using the Immunosuppressant Therapy Adherence Instrument and Transplant Effects Questionnaire adherence factor, as well as from the percentage of immunosuppressant blood assay levels that were out of therapeutic range collected from medical records over the past year. Results: Self-reported non-adherence was significantly associated with higher perceptions of immunosuppressant harms and concerns, lower necessity beliefs, lower perceptions that the medication could prevent rejection, a belief that more doses could be missed without worry, and higher distress about the condition. These findings were supported by blood assay results, showing patients with more doses out of therapeutic range had significantly lower necessity beliefs about immunosuppressants, higher worry about their transplant, and perceptions that immunosuppressants caused higher susceptibility to infections and cancer (all p values < .05). Conclusions: These results support the importance of illness and treatment perceptions for adherence to immunosuppressant medications in the heart transplant population. Interventions that target these perceptions may help to increase adherence in non-adherent patients, and decrease complications.

TYPE D PERSONALITY IS ASSOCIATED WITH WIDESPREAD PATHOGENIC ILLNESS PERCEPTIONS IN POST- MYOCARDIAL INFARCTION PATIENTS

Ronan E. O’Carroll, PhD, Lynn Williams, PhD, Rory C. O’Connor, PhD, Department of Psychology, University of Stirling, Stirling, Scotland, United Kingdom, Eric Grubb, MRCP, Cardiovascular Research, University of Edinburgh, Edinburgh, Scotland, United Kingdom

Objectives: To determine if Type D personality is associated with pathogenic illness cognitions in post-myocardial infarction (MI) patients. Methods: One hundred and ninety two MI patients participated. They completed measures of Type D personality scale and the Brief Illness Perceptions Questionnaire 1 week post-MI. Using standard cut-off points, one third of patients were classified as Type D. Results: Type D patients were significantly different from non-Type D patients on every illness perception. Type D individuals thus believe that their illness has significantly more serious consequences, will last significantly longer, will be significantly less controllable by them or through treatment, and experience significantly more symptoms that they attribute to their illness. In addition, they are significantly more concerned about their illness, experience significantly more emotions as a result, and find their illness to be less comprehensible compared to non-Type D individuals. Conclusion: Type D individuals possess widespread pathogenic illness cognitions, which may help explain the adverse affect of Type D on health outcomes.
CURRENT PERSPECTIVES ON STRESS, SLEEP AND HEALTH: EVIDENCE FROM EXPERIMENTAL STUDIES AND RANDOMIZED CLINICAL TRIALS

Martica Hall, Ph.D., Psychiatry and Psychology, University of Pittsburgh, School of Medicine, Pittsburgh, PA, Allen T. Ellis, MA, Clinical Psychology, University of British Columbia, Vancouver, B.C., Canada, Anne Germain, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Julian F. Thayer, Ph.D., Psychology, Ohio State University, Columbus, OH, Martica H. Hall, Ph.D., Psychiatry, Psychology, University of Pittsburgh, School of Medicine, Pittsburgh, PA

Although compelling, the hypothesis that sleep mediates the effects of psychological stress on health and functioning has not been widely explored. Each of the presentations in this symposium will use a different approach to evaluate components of this hypothesis. The first will describe results from a quasi-experimental study of sleep as an indicator of delayed recovery from acute stress in healthy undergraduates. Although cardiovascular recovery profiles (e.g., heart rate, blood pressure) did not predict subsequent sleep, hostility predicted shorter and more fragmented sleep on the night following the experimental stressor. The second presentation will describe results from a recently-concluded RCT targeting stress and sleep behaviors in dementia caregivers, with the goal of improving overall health and functioning in this high-risk population. Results indicate that a non-pharmacological, multi-component stress management plus health sleep practices intervention may attenuate some, but not all, of the adverse health effects of caregiver strain in older adults. The discussant will consider these data in relation to the hypothesis that sleep is an important biobehavioral pathway through which psychological stress impacts health and functioning. In the context of highlighting future research directions and their translational implications, the discussant will suggest promising biobehavioral mechanisms that might contribute to the adverse health effects of stress-related sleep disturbances, including moderators of these relationships.

STRESS AND SLEEP: PREDICTORS OF FAILURE TO RECOVER

Alena T. Ellis, MA, Wolfgang Linden, PhD, Psychology, University of British Columbia, Vancouver, B.C., Canada

BACKGROUND: Delayed recovery after cardiovascular response to a stressor is currently being recognized as a marker and likely contributing factor in the development of cardiovascular disease. Interestingly, the psychological variables that predict delayed recovery appear similar to those associated with disturbed sleep including subjective sleep complaints, decreased sleep duration and depth, and increased fragmentation of sleep. As such, disturbed sleep may be viewed as another index of delayed recovery. This study attempted to expand the relationship between psychological predictors of recovery and sleep and determine whether these outcomes do, in fact, share common predictors. METHODS: One hundred and thirty six participants were subjected to a mental stress task coupled with harassment after which speed of recovery was assessed. Sleep duration was measured by wrist actigraphy on the night following the laboratory stress protocol. RESULTS: Although indices of cardiovascular recovery (e.g., heart rate, blood pressure) were unrelated to actigraphy-assessed sleep duration, lower rates of cardiovascular recovery were associated with greater anger rumination (p < 0.05), however, with identifiable gender effects. Actigraphy-assessed sleep duration was predicted by hostility in the overall sample and by higher rates of worry in male participants (p values < 0.05). CONCLUSIONS: Results were not in support of our overall hypothesis. Among young, healthy undergraduates, sleep duration as measured by wrist actigraphy does not appear to be a sensitive measure of delayed cardiovascular recovery to acute stress.

EFFICACY OF BEHAVIORAL AND PHARMACOLOGICAL SLEEP TREATMENTS IN MILITARY VETERANS WITH POST-DEPLOYMENT ADJUSTMENT DISORDERS: PRELIMINARY FINDINGS

Anne Germain, PhD, Eric A. Nofzinger, M.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA

BACKGROUND: Sleep disturbances are prevalent in combat-exposed military veterans who experience post-deployment adjustment difficulties, including posttraumatic stress disorder (PTSD). The objective of this ongoing clinical trial is to evaluate and compare the efficacy prazosin (PRZ) and a behavioral sleep intervention (BSI) targeting insomnia and nightmares on primary sleep outcomes, and secondary outcomes of daytime symptoms compared to placebo (PBO). Preliminary findings will suggest promising biobehavioral mechanisms that might contribute to the adverse health effects of stress-related sleep disturbances, including moderators of these relationships.

EFFICACY OF A STRESS MANAGEMENT AND HEALTHY SLEEP PRACTICES INTERVENTION FOR IMPROVING HEALTH AND FUNCTIONING IN DEMENTIA CAREGIVERS

Martica Hall, Ph.D., Psychiatry, Psychology, University of Pittsburgh, Pittsburgh, PA

BACKGROUND: Although caring for an ill spouse can be rewarding, caregiving can also lead to increased morbidity and mortality. Observational evidence suggests that stress and sleep disturbances are two pathways through which caregiving may adversely impact health and functioning. METHODS: We conducted a randomized clinical trial to evaluate the efficacy of a multi-component stress management plus healthy sleep practices (SM+HSP) intervention compared to an attention-only control condition for improving mental and physical health in a sample of dementia caregivers. By eligibility criteria, all participants indicated that caregiving was a significant emotional or physical strain and exhibited clinically-significant sleep disturbances as measured by self-report or in-home polysomnography (PSG). Interventions (both conditions) consisted of 8 in-home sessions with a master's level mental health clinician. Measures of stress, sleep and health were assessed at baseline, immediately post-intervention and at 6 and 12 months post-intervention. RESULTS: Compared to participants randomly assigned to the control condition, participants randomized to SM+HSP showed significant decreases in clinician-assessed symptoms of depression and anxiety and salivary cortisol (p values < 0.05). Indicators of health and functioning not impacted by the intervention include markers of inflammation (IL-6, TNF-alpha) and cognition (executive functioning, short-term memory) (p values > 0.05). CONCLUSIONS: These results suggest that non-pharmacological interventions for reducing stress and sleep disturbances may attenuate some of the adverse health effects of caregiver strain in older adults. From a mechanistic standpoint, results are consistent with the hypothesis that stress and/or sleep mediate the impact of caregiving on health and functioning.
**STRESS AND HEALTH IN BLACK SOUTH AFRICANS: THE SYMPATHETIC ACTIVITY AND AMBULATORY BLOOD PRESSURE IN AFRICANS (SABPA) STUDY.**

Leoné Malan, PhD, Physiology, Nutrition and Consumer Sciences, North-West University, Potchefstroom, Potchefstroom, South Africa

Eco J. de Geus, PhD, Biological Psychology, VU University Amsterdam, Amsterdam, The Netherlands

Johan Potgieter, PhD, Health Sciences, Leoné Malan, PhD, Physiology, Nutrition and Consumer Sciences, North-West University, Potchefstroom, Potchefstroom, South Africa, Brian H. Harvey, PhD, Pharmacology, North West University, Potchefstroom, Potchefstroom, South Africa, Mark Hamer, PhD, Epidemiology and Public Health, University College London, London, London, United Kingdom

South Africa is facing an epidemic of vascular disease and hypertension in black Africans, although the mechanisms remain poorly understood. The main aim of our work is to better understand the psychosocial mechanisms that might account for this excess disease burden in black Africans. Numerous studies have indicated that the social environment (rural or urban) in which a person finds him/herself is of great importance to his physiological and psychological well-being. Continuous behavioral adjustment and difficulty to exercise control can be described as psychosocial stressors. Although it is not known to elicit increased sympathetic nervous system (SNS) physiological response patterns resembling those of participants threatened by an adverse event and who are unable to cope effectively or exercise control over it. In our previous epidemiological studies in black Africans, urbanization as a psychosocial stressor was associated with the more negative spectrum of health effects such as changes in stress hormone profiles, coping tendency, obesity, hypertension prevalence, and increases in SNS markers e.g., vascular responses, and other risk factors for non-communicable diseases. The goal of this symposium is to present initial findings from the first well-controlled psychophysiological stress testing study in a unique population of urbanised black Africans. The first presentation will focus on the role that different coping strategies play in stress-experience and psychological well-being. The second presentation will examine the association between active coping and risk markers including metabolic syndrome, SNS activity and end organ damage. The third speaker will present data on co-involvement of inflammatory, cardiovascular and metabolic markers in depression, with all contributing to an overall imbalance in cellular redox as well as neurotrophin release. Lastly, we will present data that examines the association between psychophysiological response patterns and sub-clinical atherosclerosis.

**Individual Abstract Number: 1125**

**STRESS, COPING BEHAVIOUR AND THE PSYCHOLOGICAL WELL-BEING OF A GROUP OF SOUTH AFRICAN TEACHERS: THE SABPA STUDY.**

Johan Potgieter, PhD, Health Sciences, North-West University, Potchefstroom, Potchefstroom, South Africa

The effect of a variety of coping strategies and behaviours on the stress-levels and psychological well-being of 200 urbanized African teachers from the North West Province was determined. A cross sectional design was used, and instruments administered included the Coping Strategy Indicator (CSI), the Africultural Coping Systems Inventory (ACSI), the Mental Health Continuum (MHC-SF) and the 20-item Teacher Stress Inventory (TSI). Data analysis revealed these participants’ working environment to be perceived by them as highly stressful, confirming Western literature in this regard. Correlation results indicated significant associations to exist between the psychosocial well-being of these individuals, and the coping strategies and behaviors that they typically engaged in. Although blood levels of nicotine and liver enzymes were high for the group as a whole, individuals who reported regular use of so-called dysfunctional coping strategies such as smoking and alcohol reported significantly lower stress levels. Structural equation modeling (SEM) that was performed in order to get an indication of the causal relationships between measured variables, interestingly showed certain coping strategies like problem solving to increase stress-perception, while at the same time leading to improved self-reported psychosocial well-being. Results also emphasized the protective role that certain specific coping strategies like seeking social support could play in this traditionally collectivistic cultural setting. These results might inform and help shape practice in the changing and challenging South African environment.

**Individual Abstract Number: 1126**

**ACTIVE COPING, STROKE RISK FACTORS AND TARGET ORGAN DAMAGE: THE SABPA STUDY.**

Leoné Malan, PhD, Physiology, Nutrition and Consumer Sciences, North-West University, Potchefstroom, Potchefstroom, South Africa

Psychosocial stress has been associated with increased vascular responses and metabolic syndrome indicators in African men with a physiological active coping (AC) style. To assess if an AC style may additionally be associated with stroke risk and target organ damage (TOD), 106 overnight fasted urban black Africans (aged 30-62 years) were stratified with the Amirkhan coping strategy indicator into AC and passive coping (PC) gender groups. Baseline stroke risk factors included: smoking, ECG myocardial infarction (MI) events, 24h hypertension prevalence (HT), diabetes, sympathetic nervous system (SNS) activity profile and TOD marker, high ultrasound resolution, carotid intima media thickness (IMT). Data revealed that 24h blood pressure (BP), waist circumference and glucose levels of both AC and PC women (p < 0.05) AC men had a 59 % HT, increased microalbuminuria and revealed higher SNS with increased resting heart rate and QTc dispersion values (p = 0.07), reporting higher depression compared to PC men. AC women were obese, showed changes in sympathovagal balance (time domain 24h heart rate variability (HRV) and reported more depression in comparison to PC women. In AC men, multiple linear regression analyses showed that IMT was associated with glucose and depression (p < 0.05), independent of confounders. In AC women, IMT was associated with 24h HRV. To conclude, urban black Africans with an AC coping style demonstrate more depressive symptoms coupled to higher metabolic and SNS markers, and increased TOD.

**Possible Resilience and Susceptibility Factors Related to Oxidative Stress and the Development of Depression in Male and Female Black Africans: the SABPA Study.**

Brian H. Harvey, PhD, Pharmacology, North West University, Potchefstroom, Potchefstroom, South Africa

Co-involvement of inflammatory, cardiovascular and metabolic disorders is now evident in depression and contributes to an overall imbalance in cellular redox as well as neurotrophin release. Brain-derived neurotrophic factor (BDNF) is important for neuronal maintenance, survival as well as synaptic plasticity whilst lower levels of BDNF are associated with depression. We assessed the association between clinical depression and markers of oxidative stress, metabolic syndrome (Mets), liver enzymes as well as BDNF levels, in black Africans. Our groups were stratified into depressed (men, 12; women, 23) and non-depressed (men, 28; women, 15) according to DSM-IV criteria (validated for Africans). Independent of confounders (body mass index (BMI), Mets, estradiol cholesterol was increased in depressed men (p < 0.05) whilst we observed marginally lower (p = 0.08) high density lipoprotein and triglycerides in depressed women. Multiple linear regression analyses showed a positive association between BDNF levels and waist circumference in depressed men (B = 0.72, SE 0.26), [adjusted R2 for model: 0.46; p < 0.05], which was independent of age, Mets, BMI, estradiol, ketin, oxidative stress, liver enzymes, glucose, C-reactive protein. In depressed women BDNF was positively associated with reduced glutathione (B = 0.53, SE 0.15) and CRP (B = 0.72, SE 0.26), [adjusted R2 for model: 0.57; p < 0.01], which was independent of age, Mets, BMI, estradiol, ketin, oxidative stress, liver enzymes, glucose. Neurotrophin release thus represents a resilience factor in men that is positively associated with a metabolic factor, while in depressed women, BDNF (and resilience) is positively associated with redox state and inflammation.
Individual Abstract Number: 1128

PLASMA RENIN RESPONSES TO MENTAL STRESS AND CAROTID INTIMA MEDIA THICKNESS IN BLACK AFRICANS: THE SABPA STUDY
Mark Hamer, PhD, Epidemiology and Public Health, University College London, London, London, United Kingdom
Black Africans tend to be characterized by higher vascular reactivity that may explain an increased prevalence of hypertension. Renin is secreted during sympathetic nervous system activation and contributes to vasoconstriction, thus may play an important role in CVD progression. We examined the association between plasma renin responses to stress and a marker of sub-clinical atherosclerosis. Participants were 142 black men and women (43.1 +/- 7.7 yrs) drawn from a study of Sympathetic Activity and Ambulatory Blood Pressure in Africans (SABPA). After an overnight fast, participants completed two mental stressors consisting of Stroop and cold pressor tasks administered in a counter balanced order. Blood samples were drawn during baseline and 10 min after each task for the assessment of plasma renin activity. Carotid intima media thickness (IMT) was measured using high resolution ultrasound. Approximately 40% of the sample responded to the tasks with an increase in renin activity. Multiple linear regression analysis revealed an association between the mean task renin response and carotid IMT (B = 0.038, 95% CI, 0.010-0.067). In summary, heightened release of renin during reactive protein, glucose, mean daytime ambulatory blood pressure, use of ACE inhibitors, and basal levels of renin activity (R2 for model=0.37). In summary, heightened release of renin during laboratory stressors was associated with a marker of sub-clinical atherosclerosis, thus may be a potential mechanism in explaining CVD risk in black Africa.

Symposium 1023

HOW CAN WE IMPACT COMMUNITY CLINICAL PRACTICE? THE CHALLENGE OF DISSEMINATION
Joan E. Broderick, PhD, Psychiatry, Stony Brook University, Stony Brook, New York, Karina W. Davidson, PhD, Medicine & Psychiatry, Columbia University Medical Center, New York, New York, Wayne Katon, MD, Psychiatry, University of Washington, Seattle, WA, Joan E. Broderick, PhD, Psychiatry, Stony Brook University, Stony Brook, New York, Thomas McClaughlin, ScD, University of Massachusetts Medical Center, Steven E. Locke, MD, Psychiatry, Harvard University, Wayland, MA
Health care reform efforts are an opportunity for the integration of behavioral science and practice into primary and specialty care. This symposium reviews the current evidence base of clinical behavioral medicine interventions. Efficacy research is the starting point for outcomes research. Generating the data to convince public policy makers and health care insurers of the value of behavioral medicine interventions in community practice requires progression to effectiveness and dissemination research. Currently, these are not common forms of outcome research in our field, a fact that is probably impeding our impact on community medicine. The unique characteristics of efficacy, effectiveness, and dissemination research will be discussed with a focus on the conclusions that can be drawn from each. Several examples of effectiveness and dissemination research in behavioral medicine will be used as illustrations.

Individual Abstract Number: 1088

WHERE IS THE EVIDENCE-BASE FOR BEHAVIORAL MEDICINE INTERVENTIONS?
Karina W. Davidson, PhD, Medicine & Psychiatry, Columbia University Medical Center, New York, New York
A synthesis is needed of contemporary research that supports the efficacy of behavioral medicine interventions to improve the physical health and well-being of patients. How have other areas of health fared, and how did they build their evidence base? Where are the gaps in evidence for behavioral medicine high prevalence diseases? What are the next steps we should take to move to dissemination? In this presentation, these areas will be covered. 1) Intervention for another putative behavioral CHD risk factor will be reviewed. 2) A report on Medline searches for Behavioral Medicine CHD interventions will be presented. 3) A mini-Cochrane comparison of medication and psychological interventions will be discussed. 4) Finally, gaps in research and dissemination will be identified for the next generation of behavioral medicine interventions.

Individual Abstract Number: 1101

IMPACTING THE MARKETPLACE: DISSEMINATION RESEARCH
Joan E. Broderick, PhD, Psychiatry, Stony Brook University, Stony Brook, New York
Clinical outcome research is designed to demonstrate the clinical utility of behavioral medicine interventions. Variations in study design and methods are available depending upon the research question. Efficacy research is the starting point for outcomes research. Generating the data to convince public policy makers and health care insurers of the value of behavioral medicine interventions in community practice requires progression to effectiveness and dissemination research. Currently, these are not common forms of outcome research in our field, a fact that is probably impeding our impact on community medicine. The unique characteristics of efficacy, effectiveness, and dissemination research will be discussed with a focus on the conclusions that can be drawn from each. Several examples of effectiveness and dissemination research in behavioral medicine will be used as illustrations.

Individual Abstract Number: 1130

SHOW ME THE SAVINGS
Thomas McLaughlin, ScD, Department of Pediatrics and Psychiatry, University of Massachusetts Medical School, Worcester, MA
A major factor in the adoption of medical innovations by individuals and the organization is whether the innovation addresses the ‘pain of the organization’. Often this entails a financial return on investment but other incentives driving adoption are common. These include public relations or a relatively better HEDIS measure that improves competitiveness in the marketplace. Cost effectiveness approaches have become the standard in contemporary clinical trials oftentimes with little impact on adoption. Should we be adopting this standard? Who are the users of these cost effectiveness data? And why do they so infrequently lead to quality improvement? Cost effectiveness data are obviously important in using scarce resources. But a more comprehensive, interdisciplinary approach to the identification of implementation strategies aimed at transporting innovation into the community and populations may be needed. Health decision makers typically make choices in an environment characterized by differences in financial and non-financial incentives, including time lines, political pressure, competing needs and demands and many other factors. Implementation research that aims to identify adoption strategies unique to the decision-making context that goes far beyond costs need to be systematically addressed.

Individual Abstract Number: 1100

ARE THERE EXAMPLES OF SUCCESSFUL IMPLEMENTATION OF COLLABORATIVE CARE MODELS?
Wayne Katon, MD, Psychiatry, University of Washington, Seattle, WA
A recent meta-analysis reviewed 37 trials of collaborative depression care and found that, when compared to usual primary care, this model was associated with a two-fold higher rate of adherence to antidepressant medication as well as improvements in depressive symptoms that persisted for two-to-five years. This intervention model integrates two new team members into primary care: a depression case manager (DCM) and a psychiatrist to do caseload supervision. In addition, psychologists often provide training of DCMs in motivational interviewing, problem-solving and brief evidenced-based depression psychotherapy. This model of care has been found to cost about $100 to $2500 more per year in uncomplicated patients with depression. However, in patients with depression and diabetes, panic disorder and
depression, and those with persistent depression 8 weeks after a primary care physician initiates therapy, collaborative care was shown to save total ambulatory medical costs and improve outcomes compared to usual primary care. Dissemination programs to integrate collaborative care into large primary care systems are now ongoing, including the VA system, Kaiser, the Minnesota DIAMOND project, the Hogg Foundation project in Texas and uninsured patients attending federally funded primary care clinics in the State of Washington. These dissemination programs will be described in this lecture.

Symposium 1310

MEDICALLY UNEXPLAINED SYMPTOMS: NEW EVIDENCE FROM SYMPTOM PERCEPTION RESEARCH

Omer Van den Bergh, PhD, Psychology, University of Leuven, Leuven, Belgium, Jos F. Brosschot, PhD, Psychology, Leiden University, Leiden, Zuid-Holland, The Netherlands, Lukas Van Oudenhove, PhD, Pathophysiology, University of Leuven, Leuven, Vlaams-Brabant, Belgium, Esther E. Meerman, Master of Science, Clinical, Health and Neuropsychology, Leiden University, Leiden, NH, The Netherlands, Omer Van den Bergh, PhD, Department of Psychology, University of Leuven, Leuven, Belgium, Richard J. Brown, PhD, Clinical Psychology, University of Manchester, Manchester, Greater Manchester, United Kingdom

Bodily symptoms without a clear correlation with physiological dysfunction, or medically unexplained symptoms (MUS), are highly prevalent constituting a major theoretical, clinical and socio-economic challenge. In this symposium new findings from symptom perception research are presented conveying on the idea that somatic information is processed differently in persons with MUS. At the perceptual level, data from analogue and clinical studies using a novel Somatic Signal Detection Task (SSDT) show that illusory touch experiences may be a laboratory analogue of MUS, as well as a marker of the tendency to develop MUS and other somatic distortions. At the level of central nervous system processing, it is shown that patients with functional dyspepsia compared to controls exhibit different brain activations. The interoceptive (SI/SII, insula) and affective/cognitive pain modulatory regions (MCC, PFC) brain regions and are characterized by failing pain inhibitory processes, when challenged with gastric distensions, that correlate with anxiety. Also encoding of symptom episodes in memory is different: memory of aversive somatic experiences is typically dominated by the intensity at the peak and at the end with a relative duration neglect, resulting in symptom episodes being evaluated less unpleasant when they end gradually compared to abruptly, even if they last longer (peak-end effect). However, this effect is strikingly absent in patients with MUS. In addition, it is shown that illness-related memory can be primed unconsciously and influence pain tolerance, suggesting that illness-related memory may be chronically over-activated in MUS patients. These findings from highly controlled experimental manipulations using neurobiological and/or behavioral methods document the relevance of perceptual, cognitive and affective processing of somatic sensations to understand MUS. The discussion will focus on the match between neurobiological and behavioral data and on the relevance of the observed differences for pathogenic and treatment models of MUS.

Individual Abstract Number: 1393

SYMPTOM REPORTING AND ILLUSORY TOUCH IN THE SOMATIC SIGNAL DETECTION TASK: IMPLICATIONS FOR MEDICALLY UNEXPLAINED SYMPTOMS

Richard J. Brown, PhD, Kirsten J. McKenzie, PhD, Ellen Poliakoff, PhD, Donna M. Lloyd, PhD, School of Psychological Sciences, University of Manchester, Manchester, Greater Manchester, United Kingdom

Purpose. Theory suggests that medically unexplained symptoms (MUS) are associated with aberrant perceptual processing of the body but there is a paucity of research in this area and the available data are inconsistent. Method. The Somatic Signal Detection Task (SSDT) is a novel paradigm designed to elucidate the role of somatic perception in symptom reporting and MUS. During the SSDT, participants judge whether they have been presented with a weak tactile pulse across a series of trials where the presence of the pulse is varied. In addition to providing estimates of perceptual ability and response criteria, the task reliably induces touch reports on a significant proportion of trials where no tactile stimulus has been delivered (i.e. false alarms). Subjective ratings indicate that these false alarms are genuine tactile experiences, a phenomenon we term illusory touch. We have shown that there are stable individual differences in the tendency to report illusory touch, and that these are associated with physical symptoms in non-clinical participants. The current study extends this research to patients undergoing investigations for chronic abdominal pain. Results. A significant correlation (r = .37, p < .01; n = 55) between illusory touch and physical symptom reports was found. Medical explanation was unrelated to illusory touch, however. There was a trend (p = .061) for tactile sensitivity to be lower in patients with MUS (d prime = 1.88; n = 30) compared to medical controls (d prime = 2.33; n = 25) when controlling for relevant covariates. Conclusion. These findings suggest that (a) the tendency to report large numbers of physical symptoms (somatization) is associated with a tendency to experience distortions in bodily awareness more generally; (b) MUS patients may be less able than illness controls to discriminate tactile stimuli; and (c) the SSDT is a useful tool for studying perceptual processes associated with symptom reporting and MUS.

Individual Abstract Number: 1318

ABNORMAL BRAIN ACTIVITY IN INTEROCEPTIVE AND PAIN MODULATORY REGIONS IN FUNCTIONAL DYSPESIA

Lukas Van Oudenhove, PhD, Jan Tack, PhD, Pathophysiology, University of Leuven, Leuven, Vlaams-Brabant, Belgium

Pain perception research are presented converging on the idea that somatic perception research are presented converging on the idea that somatic dysfunctions like functional dyspepsia (FD) which is influenced by psychological processes, but its neurobiological basis has hardly been studied. In the present study, our aim was to compare 1. FD patients brain activity and affective/cognitive pain modulatory regions (MCC, PFC) to gastric distension and sham distension in FD with healthy controls, as well as 3. to study the relationship between anxiety and brain activity in FD. Subjects/Methods Brain H215O-PET was performed in 25 FD patients during 3 conditions: baseline, painful gastric balloon distension & sham (distension anticipated, not delivered). Results were compared against 11 healthy controls. Statistical threshold was set at puncorrected<0.001 (whole brain) and pFWE-corrected<0.05 (regions of interest). Results Discomfort threshold was lower and epigastric sensation scores in all conditions were higher in FD than controls. 1. Baseline activity was higher in SII/SI, insula, midcingulate (MCC), dorsolateral- and vIPFC in controls; activity in occipital cortex was higher in FD. 2. Activations (activity during distension > baseline) were similar to controls, except for a lack of pACC activation in FD. Deactivations (activity during distension < baseline) were similar to controls, but patients showed no amygdala deactivation during sham. 3. Anxiety correlated negatively with pA/MCC and positively with dorsal pons/midbrain activity. In conclusion, FD patients fail to activate pACC during distension and to deactivate amygdala during sham; pA/MCC activity correlates negatively with anxiety. This may represent arousal/anxiety-driven failing pain inhibition. Differences in baseline activity (independent of any interoceptive stimulation) between FD and controls are found in interoceptive (SI/SII, insula) and affective/cognitive pain modulatory (MCC, PFC) brain regions.

Individual Abstract Number: 1352

CHANGING PAIN TOLERANCE WITH UNCONSCIOUS ILLNESS MEMORY

Esther E. Meerman, M.Sc., Bart Verkuil, M.Sc., Jos F. Brosschot, Ph.D., Clinical, Health and Neuropsychology, Leiden University, Leiden, ZH, The Netherlands

Purpose: Pain complaints without organic pathology are highly prevalent and an important personal and economic burden. Therefore, tactile and illness-related memory may cause reporting of symptoms by changing perception and interpretation of bodily signals.

A-21
Methods/sample: Participants were healthy students (n=66; mean age=21.57 years, SD=3.45; 84.8% female). We used a subliminal priming technique to test whether activating memory related to illness without conscious awareness leads to increased reporting of pain. The subliminal priming task consisted of a simple computer task during which words were shown for a short duration (34 ms). Participants were divided over four different conditions, with prime words describing either (a) health complaints (HC), to activate an illness-related memory, or three control categories: (b) neutral words (NEU), (c) words describing bodily sensations (SEN) and (d) negative valence words (NEG). The latter two conditions were added to test whether reduced pain tolerance would already be observed after the semantic activation of these two components or correlates of health complaints. For pain stimulation, we used a cold pressor task (CPT). We hypothesized that participants primed with health complaint words would show less pain tolerance (PT) compared to participants primed with neutral words. Results: Participants in the HC group (n=15; mean PT=77.9 s, SD=79.7) showed reduced pain tolerance compared to participants in the NEU group (n=17; mean PT=127.2 s, SD=92.5), t(30)=-1.963, p=.027 (one-tailed). Participants in either the SEN group (n=17; mean PT=95.9 s, SD=75.3) or the NEG group (n=17; mean PT=95.4 s, SD=77.8) did not significantly differ in pain tolerance from participants in the NEU group, respectively t(32)=-0.581, p=.282 (one-tailed) & t(32)=-0.859, p=.197 (one-tailed). Conclusion: Pain complaints can be involuntary produced by activated illness-related memory. This memory is thought to be chronically over-activated in MUS patients. This would explain why they have complaints without observable bodily pathology and thus without a medical explanation.

Individual Abstract Number: 1353

ABERRANT PERCEPTUAL-COGNITIVE PROCESSING OF DYSPNEIC EPISODES IN PATIENTS WITH MEDICALLY UNEXPLAINED DYSPNEA
Omer Van den Bergh, PhD, Katleen Bogaerts, PhD, Steven De Peuter, PhD, Ilse Van Diest, PhD, Department of Psychology, University of Leuven, Leuven, Belgium
Purpose: Encoding of unpleasant experiences is dominated by intensity at the peak and at the end with a relative duration neglect (peak-end effect). This results in symptom episodes being evaluated less unpleasant when they end gradually compared to abruptly, even if they last longer. We investigated the peak-end effect in patients with medically unexplained dyspnea (MUD) compared to healthy controls. Sample and methods: The Rebreathing Test was administered to a clinical sample with MUD and a matched healthy control group (total N=58). All participants received two subsequent rebreathing trials in randomized order consisting of a baseline (60 s room air breathing) and a rebreathing phase (150 s), which gradually increased ventilation, PaCO2 and dyspnea. In one trial, the breathing system (mouthpiece) was removed immediately after peak dyspnea. In the other trial, breathing was switched to room air after peak dyspnea and continued in the breathing system for 150 s. Respiratory behavior was continuously monitored and dyspnea was rated every 10s. Afterwards, a series of forced choice questions was asked to measure relative evaluation and preference for one of the trials. Results: Patients with MUD showed deficient recovery of dyspnea compared to controls that could not be explained by differences in respiratory behavior. Whereas two-thirds of the healthy group preferred to repeat the longer trial (peak-end effect), patients with MUD did not show such preference. Conclusion: Both effects, slowed recovery in perceived dyspnea and absence of the peak-end effect, suggest important differences in perceptual and cognitive processing of dyspnea in patients with MUD compared to healthy controls.
CITATION POSTERS

1) Abstract 1718

EFFECTIVE CONNECTIVITY BETWEEN CORticalimbic BRAIN AREAS DURING STRESS PREDICTS MAGNITUDE OF BAROREFLEX SUPPRESSION

Israel C. Christie, PhD, Lei K. Sheu, PhD, Ikehruchu Onyeawenyi, BS, Peter J. Gianaros, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

The baroreflex buffers variability in blood pressure through negative-feedback control mechanisms, and its sensitivity can be suppressed during stressful behavioral states. In a companion report by our group, we identified corticolimbic and midbrain areas where stressor-evoked activation [rostral anterior cingulate (BA32), left middle frontal gyrus, bilateral posterior insula, thalamus] and deactivation [medial orbitofrontal cortex (BA10/11), right insula, midbrain] by a standardized multi-source interference task covaried with baroreflex suppression. Here, we explore the manner in which the effective connectivity of this circuitry (i.e., causal relationships between brain areas) predicts baroreflex suppression across individuals. Connectivity was assessed using Granger causality analysis, which models the extent to which one time series, x(t), predicts future values of a second time series, y(t), after removing any linear relationship between x(t) and y(t) alone. Connectivity analyses were performed on time series extracted from the above areas from 42 subjects, and relationships between areas were expressed as Granger causality difference scores (i.e., the mathematical sum of bidirectional causal estimates, which reflect the direction of net causal influences among pairs of areas). Changes in baroreflex sensitivity from rest to stressor task performance were regressed onto the Granger causality scores to determine which aspects of effective connectivity predicted baroreflex suppression. Causal influences among three pairs of brain areas were associated with greater baroreflex suppression: 1) middle frontal gyrus-to-thalamus (b = -1.9; p = 0.02; R² = 0.132); 2) left posterior insula-to-right posterior insula (b = -4.2; p = 0.02; R² = 0.132); and 3) rostral anterior cingulate-to-left posterior insula (b = -2.6; p = 0.04; R² = 0.097). Results provide preliminary evidence of the effective connectivity of a corticolimbic circuitry involved in baroreflex suppression, which may reflect a neurobiological process by which stressful experiences impact blood pressure variability and perhaps cardiovascular disease risk.

2) Abstract 1713

OVERWEIGHT & OBESE ADOLESCENTS: WHO BENEFITS FROM STRESS REDUCTION PROGRAMS FOR BLOOD PRESSURE CONTROL?

Mathew J. Gregoski, PhD, Vernon A. Barnes, PhD, Martha S. Tingen, PhD, Yanbin Dong, MD/PhD, Pediatrics, Frank A. Treiber, PhD, Medical College of Georgia, Augusta, GA

Personalized medicine is the aspirational model of future healthcare. The purpose of this study was to examine which type(s) of stress reduction programs in concert with background genetic, personality, behavioral and family functioning characteristics among African American (AA) overweight and obese adolescents resulted in greatest success in improving ambulatory blood pressure (ABP). Stress reduction programs included Breathing Awareness Meditation (BAM), Life Skills Training (LST), or Health Education Control (HEC). Subjects were overweight or obese (i.e., BMI ≥ 25) AA ninth graders (mean age=15.1 ± 0.62 yrs) with resting SBP between the 50th-95th percentile. Interventions were administered for 50 minutes each week for 12 weeks in health education classes by the regular teacher. At pre- and post-intervention 24 hr systolic and diastolic BP (ASBP, ADDBP) were recorded. Potential pre-intervention determinants included ADRB2 T-47C carrier status, self-reported physical activity, anger expression, hostility, family functioning, personal stress, and discrimination. Classification and regression tree (CART) analyses were used to model which factors were associated with subjects who improved (i.e., decreased >3mmHg). Reduction in 24hr ASBP was associated with exposure to BAM and having higher pre-intervention physical activity levels (71% success vs 25% for others, p = .05). Reduction in 24hr ADDBP was associated with exposure to BAM and being a carrier of the ADRB2 T-47C genotype (91% vs 22% success, p = .04). Findings suggest that pre-hypertensive overweight/obese AA adolescents who report being physically active most days of the week or are carriers of the ADRB2 genotype will likely benefit from receiving BAM. If substantiated in future studies, predisposing genetic, and background individual characteristics may be used to increase success rates of behavioral health programs (e.g., BAM, diet, and/or exercise) as part of a personalized model of health care delivery for prevention and/or treatment of overweight/obesity and related chronic disease risk factors.

3) Abstract 1569

IMPACT OF STRESS REDUCTION INTERVENTIONS UPON HOSTILITY AND AMBULATORY SYSTOLIC BLOOD PRESSURE AMONG AFRICAN AMERICAN ADOLESCENTS

Mathew J. Gregoski, PhD, Pediatrics, Medical College of Georgia, Augusta, GA, Lynda Brown Wright, PhD, Educational Psychology, University of Kentucky, Lexington, KY, Martha S. Tingen, PhD, Vernon A. Barnes, Assistant Professor, Harry C. Davis, MS, Pediatrics, Frank A. Treiber, PhD, Medical College of Georgia, Augusta, GA

Previous research has established linkages between hostility and essential hypertension (EH). Pediatric studies have not examined effectiveness of behavioral interventions upon self-reported hostility and whether reductions are related to ambulatory blood pressure (ABP) changes. This study evaluated impact of Breathing Awareness Meditation (BAM), LifeSkills Training (LST) and Health Education Control (HEC) on changes in self-reported hostility and ABP in African American (AA) adolescents at increased risk for development of EH (systolic BP at 50th-95th%-ile for age, sex and height). 121 ninth graders were randomly assigned by school to: BAM (n = 35), LST (n = 42) or HEC (n = 44). Participants engaged in intervention sessions during health class for 3 months. Before, after, and 3 months following intervention cessation, self-reported hostility, and 24 hour ambulatory systolic and diastolic BP (ASBP, ADDBP) were measured. Repeated measures ANOVAs were conducted followed by paired t-tests and correlations within each group between the pre and post, and post to follow-up periods. Self-reported hostility and 24 hour SBP revealed significant group by time interactions (p<.05). Between pre and post intervention, BAM participants displayed significant reductions in both self-reported hostility and 24 hour SBP (p<.05). The correlation results indicated that for BAM, changes in overnight SBP were significantly related to changes in self-reported hostility (r=.48). Participants receiving LST showed a significant reduction from post to follow-up for 24 hour SBP (p<.05) but no significant changes were found for HEC. No significant changes were found for the HEC group on 24 hour SBP or self-reported hostility but these change scores were significantly correlated (r=.45). The results suggest changes in self-reported hostility correspond with changes in ambulatory SBP, but only the BAM intervention significantly reduced both.

4) Abstract 1104

MINDFULNESS-BASED STRESS REDUCTION FOR PREHTERTENSION

Joel W. Hughes, Ph.D., David M. Fresco, Ph.D., Manfred van Dulmen, Ph.D., Psychology, Kent State University, Kent, OH, Linda E. Carlson, Ph.D., Psychology, University of Calgary, Calgary, Alberta, Canada, Richard Josephson, MD, Medicine, Case Western Reserve University, Cleveland, OH, Rodney Myeercough, Ph.D., Psychiatry, Summa Health System, Akron, OH

Purpose of Study. Mindfulness-based stress reduction (MBSR) is an increasingly popular practice demonstrated to alleviate stress, treat depression and anxiety, and treat certain health conditions. MBSR may be useful in treating high blood pressure. Treatment guidelines recommend lifestyle modifications for BP in the prehypertensive range (SBP 120-139 or DBP 80-89), followed by antihypertensives if BP remains elevated or reaches hypertensive levels. Although some stress management therapies and Transcendental Meditation have shown promise in reducing elevated BP, MBSR has not been thoroughly evaluated as a treatment for high BP. Sample and Methods. This feasibility and pilot randomized clinical trial of MBSR for high BP randomized 56 men (43%) and women (57%) averaging 50.3±6.5 years of age (68% Caucasian) with unmedicated high BP in the prehypertensive range to 8 weeks of MBSR or progressive muscle
relaxation training (PMR) delivered in a group format. Clinic SBP and DBP were assessed before and after treatment. Intent-to-treat and completer analyses were conducted. In addition, accrual rates, acceptance of randomization, treatment adherence, treatment fidelity, and patient satisfaction with treatment were evaluated. Results and Conclusions. We successfully enrolled volunteers from the Midwest in MBSR groups for prehypertension, demonstrating the feasibility of larger trials of MBSR for high BP. Groups had similar pre-treatment BP levels (MBSR SBP: 130.2±6.3, PMR SBP: 128.8±6.3). After controlling for pre-treatment BP and gender, patients randomized to MBSR exhibited a 4.8 mm Hg reduction in SBP, which was larger than the 0.7 mm Hg reduction observed for PMR, "R2 = .059, F (1,52) = 6.04, p = .02. Patients randomized to MBSR exhibited a 1.9 mm Hg reduction in DBP, compared to a 1.2 mm Hg increase for PMR, "R2 = .052, F (52) = 7.2, p = .01. Results of completer analyses were similar. Design considerations for future trials were identified. Retention was lower in the PMR group (61%) compared to the MBSR group (75%). Nevertheless, this pilot study had promising results, as MBSR resulted in a reduction in clinic SBP and DBP compared to PMR.

5) Abstract 1604

ENDOTHELIAL FUNCTION: THE IMPACT OF OBJECTIVE AND SUBJECTIVE SOCIOECONOMIC STATUS ON FLOW MEDIATED DILATION
Denise C. Cooper, Ph.D., Milos S. Milic, M.D., Ph.D., Paul J. Mills, Ph.D., Wayne A. Bardwell, Ph.D., Michael G. Ziegler, M.D., Joel E.Dimsdale, M.D., Psychiatry and Behavioral Medicine, University of California San Diego, La Jolla, CA

Purpose of the Study: Objective and subjective indicators of lower socioeconomic status (SES) show associations with higher cardiovascular risk. However, little is known about the relationship between SES and endothelial dysfunction. Impaired functioning of the endothelium often precedes cardiovascular disease. This study examined how objective and subjective measures of SES relate to brachial artery flow mediated dilation (FMD), a non-invasive measure of endothelial function. Subject Sample and Statement of Methods: Participants were 72 healthy, employed adults (mean age: 36 years). Ultrasound measurements of the brachial artery during baseline and for 60 minutes after sublingual nitroglycerin were used to calculate FMD (i.e., maximum percentage change in brachial artery diameter). The MacArthur Scales of Subjective Social Status were used to assess respondents' perceived social standing in the U.S. (SSS-U.S.) and in their local community (SSS-Community). Objective measures of SES included annual income and scores on the Hollingshead Two Factor Index of Social Position (i.e., education/occupation). Summary of Results: Regressions revealed that decreasing SSS-Community scores were related to decreasing endothelial function (p<.05), with subjective social standing in the local community explaining 8% of the variance in FMD after adjustment for age, mean arterial pressure, exercise frequency, and socially desirable response bias. Other measures of SES was significant for FMD. Exploratory analyses showed that the association between FMD and SSS-Community remained significant (p<.01), even after controlling for objective measures of SES (income, education/occupation) and other covariates. Conclusions: Lower subjective social status in one's community might be linked to cardiovascular disease via impaired vasodilation. Findings illustrate the importance of considering participants' perceptions of their social standing when studying the relationship between social class and cardiovascular disease.

6) Abstract 1508

POSTTRAUMATIC GROWTH DURING RECOVERY FROM HEMATOPOIETIC STEM CELL TRANSPLANTATION
Eric S. Costanzo, PhD, Ashley M. Nelson, BS, Meredith S. Bourne, BS, Psychiatry, Mark B. Juckett, MD, Hematology/Oncology, Christopher L. Coe, PhD, Psychology, University of Wisconsin-Madison, Madison, WI

The recovery from hematopoietic stem cell transplantation (HSCT) is marked by physical and emotional challenges, but cancer patients who undergo this difficult treatment may also experience psychological growth. We investigated trajectories of growth among HSCT recipients reporting higher levels of posttraumatic growth (all p values <.05). Cognitive avoidance was also associated with higher PTGI scores initially, z=2.32, p=.02, but individuals who low in avoidance showed marked increases in growth scores while those high in avoidance experienced little change over the year, z=2.39, p=.02. Other avoidance measures were not associated with growth. In a set of exploratory analyses, we found that HSCT recipients reporting higher levels of growth had a better lymphocyte recovery as indicated by higher lymphocyte counts during the first 6 months post-transplant, z=2.19, p=.03. In summary, results indicate that HSCT recipients experience significant posttraumatic growth fairly early in the post-transplant period. Those who engage actively with cancer-related emotions and thoughts report more growth. Exploratory analyses further suggest that these psychological processes could have implications for the immunological recovery following HSCT.

7) Abstract 1198

THE IMPACT OF PROLONGED EXPOSURE THERAPY ON SUBJECTIVE HEALTH REPORTS IN AN HIV POSITIVE POPULATION
Maria L. Pacella, Bachelor of Arts, Jessica Boarts, PhD, Aaron Armelie, Masters, Douglas L. Delahanty, PhD, Psychology, Kent State University, Kent, Oh

Persons living with HIV (PLWH) often present with complex trauma histories, significant posttraumatic stress symptoms (PTSS), and variation in physical and mental health outcomes. Early intervention of psychological symptoms may significantly improve general health and perceived pain, and allow PLWH to function at higher levels. The current study examined the efficacy of prolonged exposure (PE) at reducing PTSS, depression, negative posttraumatic cognitions, and pain. We also hypothesized that PE recipients would report increases in general health and medication adherence as a secondary outcome of treatment. Participants were randomly assigned to either receive PE (N=48) or to serve as wait-list controls (N=24). All participants were assessed at pre-treatment, and at 6-weeks and 3-months post-treatment. A repeated measures ANCOVA, covarying for depression, revealed that PE recipients reported significantly fewer PTSS (p <.04) than controls on the PTSD Symptom Scale-Interview. Similar analyses controlling for PTSS revealed that PE participants reported fewer depressive symptoms (p < .001) than controls on the Center for Epidemiological Studies-Depression Scale. Further, after controlling for both depression and PTSS, PE participants demonstrated significantly fewer negative posttraumatic cognitions than controls (p <.03) as measured by the Posttraumatic Cognitions Inventory. Results from a repeated measures ANOVA revealed an increase in general health (SF-36) for the PE group 6-weeks post-treatment (p <.04). Similar analyses revealed a trend for a decrease in pain 6-weeks post-trauma (SF-36) for the PE group (p = .06). Medication adherence (assessed by self-report and electronic monitoring) was not significantly impacted by the intervention (p > .05). Overall, results revealed that PE led to improvements that persisted over time, although improvements in general health and pain were not maintained at the 3-month follow-up.

8) Abstract 1667

DOES SLEEP AGGRAVATE TENSION-TYPE HEADACHE?: A STUDY USING ACTIGRAPHY AND ECOLOGICAL MOMENTARY ASSESSMENT
Hiroyó Kikuchi, MD, PhD, Kazuhiro Yoshiuchi, MD, PhD, Stress Sciences and Psychosomatic Medicine, Yoshikazu Yamamoto, PhD, Educational Psychology, Akira Akabayashi, MD, PhD, Stress Sciences
and Psychosomatic Medicine, The University of Tokyo, Tokyo, JAPAN

Both insufficient sleep and oversleep have been reported as precipitating and aggravating factors of tension-type headache (TTH). However, previous studies relied on self-report and the relationship has not been confirmed prospectively and objectively in daily lives. Recently, ecological momentary assessment (EMA) using electronic diaries, i.e., computerized EMA, has been proposed as an appropriate method to record subjective symptoms avoiding recall bias and faked compliance in daily settings. In addition, actigraphy has become an established method to assess sleep outside laboratories. Therefore, the aim of this study was to investigate the within-individual relationship between sleep and momentary headache intensity in TTH patients during their daily lives utilizing EMA and actigraphy. Patients with TTH (22 women and 9 men, 38.4 +/- 10.4 years) wore watch-type computers as electronic diaries for one week and recorded their momentary headache intensity using visual analog scale of 0-100 approximately every 6 hours, when waking up, when going to bed, and at headache exacerbations. Physical activity was continuously recorded with actigraph equipped inside the computers. Activity data were analyzed by previously validated algorithm to obtain total sleep time and sleep efficiency for each night. Multilevel modeling was used to analyze the effect of them on headache intensity on the next day. Total sleep time and sleep efficiency were significantly positively associated with headache intensity (p = 0.004 and p = 0.0141, respectively), which indicated that longer and more efficient sleep was related with more intense headache on within-individual basis. The results suggest that oversleep may be a precipitating or aggravating factor of TTH.

9) Abstract 1199

PAIN-RELATED FEAR AND STRENGTH PERFORMANCE FOLLOWING DELAYED-ONSET MUSCLE SORENESS
Zina Trost, MS, Psychology, University of Washington Medical Center, Seattle, WA, Christopher R. France, PhD, Psychology, Ohio University, Athens, OH, Jane M. Lange, MS, Biostatistics, University of Washington, Seattle, WA, James S. Thomas, PhD, School of Physical Therapy, Ohio University, Athens, OH

Pain-related fear is predictive of disability at acute, subacute and chronic stages of back pain. Pain-related fear may play an important role in the development of chronic low back pain and disability through exaggerated perception of threat during activity and maladaptive avoidance of movement or physical exertion. The current study examined voluntary strength performance in a sample of thirty healthy college students (16 male, 14 female; Mean age = 20, SD = 1.0) who were asked to perform maximal isometric trunk extension both prior to and following induction of Delayed Onset Muscle Soreness (DOMS) of the lower back. Maximal force production (lbs) was recorded using a load cell. Pain-related fear (measured using the Pain Anxiety Symptom Scale) was unrelated to maximal force production prior to DOMS induction (B = .08, p = .68). However, following induction of DOMS, pain related fear significantly predicted force production even when controlling for gender, body weight, and current pain intensity (B = -.31, p = .02). Interestingly, pain intensity was not associated with maximal force production following DOMS. These results support previous findings of voluntary activity avoidance among high fear individuals following DOMS. Importantly, this is the first demonstration of activity avoidance specifically relevant to mechanisms of injury to the lower back.

10) Abstract 1643

THE ROLE OF CENTRAL ADIPOSITY AND EPINEPHRINE IN THE HOSTILITY TO GLUCOSE ASSOCIATION
Anna L. Georgiadis, PhD, Redford B. Williams, MD, James D. Lane, PhD, Stephen H. Boyle, PhD, Beverly H. Brunner, PhD, Ilene C. Siegler, PhD, John C. Barefoot, PhD, Cynthia M. Kuhn, PhD, Richard S. Survit, PhD, Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC

Studies have shown a consistent relationship between the personality trait cynical hostility and fasting glucose in women. Counterregulatory hormones such as epinephrine (EPI) have been proposed to mediate this association. Recent results by our group suggest that EPI is associated to fasting glucose levels, but only when high central adiposity (CA) is present. These findings suggest that the hostility to glucose association may be driven by a moderated mediation, i.e. that the mediating effects of EPI in the hostility to glucose association are moderated by level of CA. Two hundred women (mean age=29.0(8.5) years) underwent a standardized research protocol including an oral glucose tolerance test, a dual energy X-ray absorptiometry (DEXA) scan and anger recall protocol during which EPI levels were assessed. EPI residualized change scores were calculated as change in EPI from baseline to anger recall controlling for baseline level. Hostility was independently associated to CA (p<0.009) and baseline EPI levels (p<0.005). Interaction analysis confirmed an EPI x CA effect on fasting glucose (p<0.03). A median split approach was conducted to divide the women into groups of high (>30% trunk fat) and low (<30% trunk fat) CA groups. In the high CA group, hostility was significantly related to both baseline EPI (r=0.25, p=0.02), EPI change (r=0.26, p=0.01) and fasting glucose (r=0.26, p=0.01). Further analysis revealed that the hostility to glucose association was partly mediated by baseline EPI levels. In the women with low CA, there was a significant association of hostility to glucose (r=0.23, p=0.01) but no significant associations of hostility to EPI or association of EPI to glucose. These results suggest that the mediating effect of EPI in the hostility to glucose association is moderated by CA level. Further studies are needed to establish how psychological traits relate to individual variability in adrenergic activity as well as central obesity and how these psychobehavioral factors interact in the development of dysregulated glucose metabolism.

11) Abstract 1186

DEPRESSION IS A RISK FACTOR FOR INCIDENT MYOCARDIAL INFARCTION IN DIABETIC PATIENTS
Jeffrey F. Scherrer, PhD, Patrick J. Lustman, PhD, Psychiatry, St. Louis VAMC and Washington University, St. Louis, MO, Lauren D. Greenwald, MPH, Public Health, Saint Louis University, St. Louis, MO, Kenneth E. Freedland, PhD, Robert M. Carney, PhD, Psychiatry, Washington University, St. Louis, MO, Timothy Chrusciel, MPH, Angelique Zeringue, MS, Research, St. Louis VAMC, St. Louis, MO, Richard Owen, MD, Psychiatry, University of Arkansas, Little Rock, AR, Kathleen K. Bucholz, PhD, Psychiatry, Washington University, St. Louis, MO, William R. True, PhD, St. Louis VAMC and Brown School of Social Work, St. Louis VAMC and Washington University, St. Louis, MO

Purpose of the Study: We computed the risk for incident myocardial infarction (MI) among diabetic patients with and without depression. Subject Sample and Statement of Methods: Using electronic Veterans Administration (VA) patient records, we abstracted a cohort free of cardiovascular disease in fiscal years 1999 and 2000, aged 25-80, who had an ICD-9-CM code indicating a diagnosis of diabetes in 2000 (baseline) (n=55,084). Incident MI was defined as any ICD-9-CM code for MI between 2001 and 2006. Age adjusted Cox proportional hazard models were computed before and after adjusting for the following time dependent variables: gender, race, hypertension, hyperlipidemia and nicotine dependence. Summary of Results: Univariate models indicated that depressed diabetics were at greater risk of incident MI as compared to non-depressed diabetics (HR=1.28; 95%CI[1.19-1.38]). After adjusting for covariates, depression remained a significant predictor of MI (HR=1.18; 95%CI[1.09-1.27]). Over a 7 year follow-up, depression significantly contributed to risk of MI in diabetic patients free of diagnosed cardiovascular disease at baseline.

12) Abstract 1313

CHILDHOOD AND ADULTHOOD PROSPECTIVE RISK MARKERS FOR IRRITABLE BOWEL SYNDROME IN THE 1958 BRITISH BIRTH COHORT
Laura Goodwin, PhD, Peter D. White, FRCPsych, Centre for Psychiatry, Barts & The London, Queen Mary University of London, London, U.K., Matthew Hotopf, PhD, MRCPsych, Department of Psychological Medicine, Institute of Psychiatry, King's College London, London, U.K., Stephen A. Stansfeld, PhD, FRCPsych,
Charlotte Clark, PhD, Centre for Psychiatry, Barts & The London, Queen Mary University of London, London, U.K.

Objectives: Irritable bowel syndrome (IBS) is a common and debilitating gastrointestinal disorder with unknown aetiology. This study examines childhood illness and adversity, and child- and adulthood psychological distress, as predictors of IBS, compared to healthy controls. Existing research has found that childhood adversity and psychological distress are associated with IBS, however, the majority of these data are retrospective. The association between childhood illness and adulthood IBS requires investigation. Methods: The longitudinal data were from the 1958 British birth cohort (N=11,419) and IBS was self-reported at 42y. Childhood psychological distress was measured by the Rutter Scales at 7y, 11y and 16y; adulthood distress was measured by the Malaise Inventory at 23y and 33y. Prospective measures of childhood adversity included neglected appearance and being in care. Parental physical abuse and parental sexual abuse were examined retrospectively at 45y. Childhood illness was reported at 7, 11 and 16y by the mother and cohort member. Logistic regression analyses were conducted to examine the associations between these risk markers and IBS. Further analyses will examine the mediating effect of adulthood psychological distress on these associations. Findings: The prevalence of IBS was 5% (95%CI 8.2-8.6). Childhood adversity (OR= 1.15, 95%CI 1.02-1.29) and psychological distress at 25y (OR= 1.94, 95%CI 1.59-2.33, OR= 2.96 95%CI 2.26-3.87) were associated with an increased risk of IBS. Childhood illnesses, including somatic (OR = 1.25, 95%CI 1.05-1.48) and gastrointestinal symptoms (OR = 1.38, 95%CI 1.15-1.65), persistent sore throats (OR = 1.23, 95%CI 1.05-1.44) and headaches (OR= 1.36, 95%CI 1.10-1.68), were associated with an increased risk of IBS in adulthood. Conclusions: Childhood adversity and psychological distress in adulthood are risk factors for IBS. This study has shown that children who persistently report somatic symptoms may be at risk of IBS. The non-specificity of these childhood illness effects suggests that IBS is not solely predicted by early onset symptoms of this gastrointestinal disorder.

13) Abstract 1807

GENETIC VARIATION OF 5-HT3 RECEPTOR DIFFERENTIATES BRAIN ACTIVATION IN RESPONSE TO RECTAL DISTENTION
Shin Fukudo, MD, PhD, Behavioral Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan, Norio Ozaki, MD, PhD, Psychiatry, Nagoya University Graduate School of Medicine, Nagoya, Japan, Rica Akhis, MS, Tomoko Mizano, PhD, Satoshi Watanabe, PhD, Michiko Kano, MD, PhD, Motoyori Kanazawa, MD, PhD, Behavioral Medicine, Masashi Aoki, MD, PhD, Neurology, Tohoku University Graduate School of Medicine, Sendai, Japan

Background & Aims: Serotonin (5-HT)-related genes are the psychological distress in adults are risk factors for IBS. This study suggests that IBS is not solely predicted by early onset symptoms of this gastrointestinal disorder.

A-26
of social encounters was associated with changes in MR in young women over time. Method: One-hundred thirty-three teenage girls had MR assessed at 0, 12, and 24 months (fasting blood sample, BP, waist circumference, and Beck Depression Inventory (BDI)). Metabolic risk was calculated by converting the MR criteria (SBP, DBP, HDL, triglycerides, glucose, and WC) into z-scores (reverse coding HDL), and summing the z-scores. Social interactions were assessed over 6 days between the 0 and 24 month sampling through palm pilots that prompted participants to rate quality of social encounters at 4 and 14 hours after waking. Separate positive and negative social interaction scores were calculated by summing positive and negative responses for each reported encounter, then averaging across all encounters. Hierarchical Linear Modeling was used to determine if quality of social interaction predicted change in metabolic risk scores over time, controlling for BDI, ethnicity and age. Results: Perceived negative social encounters significantly predicted changes in MR over time (coefficient = 0.017, SE = 0.007, p = 0.018), such that girls who had less negative encounters tended to have a decrease in MR over time. Perceived positive encounters did not significantly predict changes in MR over time (coefficient = 2.4x10^{-4}, SE = 0.003, p = 0.948). Fewer negative social encounters may provide some protection against MR.

16) Abstract 1102

STABILITY OF RELATIONSHIPS PREDICTS MIDLIFE MORTALITY IN THE UNC ALUMNI HEART STUDY
Ilene C. Siegler, Ph. D., M.P.H., Beverly H. Brunnett, Ph. D., Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC

The UNCAHS started in 1986–87 and enrolled persons who had their midlife mortality assessed from 20 year survival. In this cohort of Boomers, losing a partner without replacement increases mortality at midlife and puts one at higher risk than remaining single. Variable patterns during the same time were not different from long-term marriage. This research was supported by grants from the Marchonneau Foundation and R01-HL55356 and R01-AG12458.

17) Abstract 1515

THE LIFE EVENTS ASSESSMENT PROFILE (LEAP): PRELIMINARY PSYCHOMETRIC ANALYSIS
Barbara P. Anderson, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA, Elaine Wethington, Ph.D., Human Development, Cornell University, Ithaca, New York, Thomas W. Kamarch, Ph.D., Psychology and Psychiatry, Todd Bear, Masters, Public Health, Lucy Lubinski, Bachelors of Science, Teresa Steigerwalt, Bachelor's of Arts, Psychology, University of Pittsburgh, Pittsburgh, PA

Checlist measures of life events are unreliable, especially for capturing temporal aspects of stressor exposure. The best interview-based alternative (Life Events and Difficulties Schedule; LEDS) is highly reliable but is time-consuming. We are developing a structured interview for quantifying stressor exposure, derived from the LEDS, with the goal of enhancing efficiency. The Life Events Assessment Profile (LEAP), employs a series of behavior-specific probes relevant to event attributes (e.g., severity of event or chronic stressor; temporal features of stressor exposure including length of exposure), along with an objective algorithm-based scoring procedure. We measured 12-month exposure to life stress in 84 men and women, ages 30-50, using the LEAP, the LEDS, and the Psychiatric Epidemiology Research Interview (PERI), a checklist measure. The LEDS and LEAP produced comparable results in terms of total numbers of severe and non-severe life events, and there were no demographic differences with respect to scores extracted across the two instruments. Correspondence between these two instruments was quite good (r=.84 for severe events, and .74 for non-severe events), even with more temporally-sensitive scores such as the number of chronic (> 1 month) stressors reported over the past year (e.g., r=.75 for total number of severe chronic stressors). In contrast, the PERI evoked significantly fewer events than the LEDS for non-severe events (p < .001), was overly inclusive for severe events (p < .04), and did not produce results that corresponded well with the LEDS. r=.08 for severe events and r=1.5 for non-severe events (p < .001). The LEDS (n=25) and PERI (n=29) were re-administered 6 weeks apart to 54 respondents; test-retest reliability is forthcoming. Results suggest that the LEAP, while more standardized and requiring less training than the LEDS, extracts information which is comparable to that from the LEDS, information that cannot be extracted using standard checklist tools. We are in the process of completing and testing a web-based computer administration and data management format for the LEAP.

18) Abstract 1296

NEURAL CORRELATES OF SOCIAL STATUS IN THE LAB RAT
Matthew W. Reid, BA, Psychology, Behavioral Neuroscience, Kat B. Saxton, MPH, Public Health, Darlene D. Francis, PhD, Psychology/Neuroscience/Public Health, University of California, Berkeley, Berkeley, CA

In humans virtually any measure of socioeconomic status (SES), i.e. income, education level, has an inverse association with both physical and mental health outcomes, especially in early life, possibly resulting from resource inequality. It is precisely these variables (environment and resources) that confound our current understanding of the neural underpinnings associated with social status. Much of the information we have regarding the neural correlates of social status is derived from nonhuman adult organisms put in transient social environments where rank is determined by the outcomes of aggressive confrontation. This research is primarily concerned with the effect of rank on the organism, not the underlying factors that may contribute to differences in rank generally. Therefore, environmental differences prior to these group formations are largely ignored. Keeping environmental experience equal before group formation, and resource availability equal as far as common theories allow us to identify brain areas implicated in processing stressful stimuli. Preliminary results suggest that a main effect of rank exists in frontal association cortex levels of oxytocin receptor binding (p=.009) and frontal histone deacetylation RNA levels (p=.036). Additionally, we will report on other epigenetic mechanisms as well as levels of Gabaa, and vasopressin 1a receptor binding in brain areas including the hippocampus, amygdala, lateral septum, and others.
19) Abstract 1256

COGNITIVE HOSTILITY AND SUICIDE: RESULTS FROM THE FRENCH GAZEL COHORT STUDY
Cédric Lemogne, MD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, FRANCE, Philippe Fossati, MD, PhD, CNRS USR 3246, Pitié-Salpêtrière Hospital, Paris, FRANCE, Frédéric Limosin, MD, PhD, Psychiatry, Cochin-Cellon Hospital, Issy Les Moulineaux, FRANCE, Hermann Nahi, MD, Sébastien Bonenfant, MSc, INSEMM U687-IFR69, Paul Brousse Hospital, Villejuif, FRANCE, Gaëlle Enczren, PhD, INSEMM U897, Victor Segalen University, Bordeaux, FRANCE, Pierre Ducimetière, PhD, INSEMM, Paul Brousse Hospital, Villejuif, FRANCE, Silla M. Consoli, MD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, FRANCE

Hostility may play a role in attempted and, presumably, completed suicide. This study aimed to determine whether a specific component of hostility (i.e., cognitive or behavioural) may predict completed suicide in a prospective design, controlling for depressive mood. Questionnaires were mailed in 1993 to the 20,625 members of the French GAZEL cohort to assess depressive mood (Center of Epidemiologic Studies Depression Scale, CESD) and hostility (Buss and Durkee Hostility Inventory, BDHI). The association between psychological variables and suicide was measured by the Relative Index (Ri). Participants were recruited through a longitudinal study of members of the GAZEL cohort (10,819 men, mean age = 48.99 years; 3,933 women, mean age = 46.20 years) completed the CESD and at least one BDHI subscale (i.e. cognitive or behavioural hostility). During a mean follow-up of 12.8 years, 25 participants completed suicide. Suicide was predicted by depressive mood [RII (95% CI) = 6.18 (1.42-26.86)] and cognitive hostility [RII (95% CI) = 8.11 (1.80-36.56)]. After adjustment for cognitive hostility, depressive mood was no longer significantly associated with suicide, with a RII reduction of only 28.8%. These results suggest that cognitive rather than behavioural hostility is associated with an increased risk of suicide, independently of baseline depressive mood. Preventive and therapeutic interventions to reduce the risk of suicide associated with depressive mood could be refined by considering cognitive hostility (i.e. a combination of resentment and suspicion) as a potential mediating variable.

20) Abstract 1213

MATERNAL TRAUMATIC STRESS AND CHILD REGULATION: POTENTIAL PATHWAYS TO CHILD HEALTH OUTCOMES
Michelle Bosquet Enlow, Ph.D., Robert L. Kitts, M.D., Psychiatry, Children's Hospital Boston; Harvard Medical School, Boston, MA, Rosalind J. Wright, M.D., Channing Laboratory, Brigham and Women's Hospital; Harvard Medical School, Boston, MA

Data suggest an association between maternal trauma and offspring mental and physical health problems (e.g., Posttraumatic Stress Disorder [PTSD], atopic disorders). One possible mechanism is the impact of maternal traumatic stress on offspring regulation, which has been implicated in the etiology of various physical and mental health disorders. The purpose of this study was to investigate whether maternal traumatic stress is associated with infant emotional, behavioral, and physiological regulation in a sample of mother-infant dyads. Participants were recruited from a longitudinal study of 340 mother-infant dyads. Mothers completed self-report measures of lifetime trauma exposure (Life Stressor Checklist -Revised) and current PTSD symptoms (PTSD Checklist -Civilian Version) and a measure of infant temperament (Infant Behavior Questionnaire -Revised; IBQ-R). At 12 months, maternal PTSD symptoms were associated with greater infant externalizing (r=.45, p=.009), internalizing (r=.34, p=.04), and dysregulatory (r=.40, p=.01) symptoms on the ITSEA. The data support the hypothesis that maternal traumatic stress may impact infant emotional, behavioral, and physiological regulation, which may in turn influence child mental and physical health outcomes.

21) Abstract 1395

PRE-DEPLOYMENT HOSTILITY AND SELF-DIRECTEDNESS PREDICT LEVELS OF PTSD SYMPTOMS SIX MONTHS AFTER RETURN FROM DEPLOYMENT: A PROSPECTIVE STUDY
Mirjam van Zuiden, Master of Science, Cobi J. Heijnen, PhD, Laboratory of Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, the Netherlands, Arthur R. Rademaker, PhD, Eric Vermetten, PhD, Research Centre, Military Mental Health, Ministry of Defence, Utrecht, the Netherlands, Annemieke Kavelaars, PhD, Laboratory of Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, the Netherlands, Elbert Gooren, PhD, Research Centre, Military Mental Health, Ministry of Defence, Utrecht, the Netherlands

Few studies have examined the predictive value of pre-trauma personality on the development of posttraumatic stress disorder (PTSD). Cross-sectional studies have shown that high levels of hostility are associated with PTSD. In addition, personality characteristics such as harm avoidance, self-directedness, cooperativeness, and transcendent also have been found to be related to PTSD. The aim of the current study was to prospectively investigate whether personality characteristics measured before military deployment could predict levels of PTSD symptoms six months after return from deployment. Analyses were performed in 437 male soldiers as part of a large prospective study on biological and psychological aspects of the deployment of stress-related disorders after a 6-month deployment to Afghanistan. Hostility (Cook-Medley Hostility Scale [Barefoot, 1989]), other personality characteristics (Short-form Temperament and Character Inventory [Cloninger, 1994]) and PTSD symptoms (Self-Rating Inventory for PTSD [Hovens, 1994]) were measured before and six months after return from deployment. Multiple linear regression analysis was performed to predict levels of PTSD symptoms six months after deployment using pre-deployment hostility, personality characteristics from the TCI and possible confounding pre-deployment sample characteristics as predictors. The final multiple regression model explained 20.5% of the variance in PTSD symptoms six months after deployment (p=.000). Both pre-deployment high levels of hostility (Beta = .246) and low levels of self-directedness (Beta = -.193) were found to significantly predict PTSD symptoms six months after deployment. Repeated measures ANOVA confirmed higher hostility levels (p=.000) and lower self-directedness levels (p=.000) both before and after deployment for participants with high levels of PTSD six months after deployment. These results indicate that pre-trauma high hostility and low self-directedness may represent vulnerability factors for the development of PTSD after deployment.

22) Abstract 1566

ANXIETY AND DEPRESSIVE SYMPTOMS DURING ADOLESCENCE AND FUTURE DEVELOPMENT OF FATIGUE
Maite ter Wolbeek, Ph.D., Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, The Netherlands, Lorentz J. van Dunnen, Ph.D., Clinic and Health Psychology, Utrecht University, Utrecht, The Netherlands, Annemieke Kavelaars, Ph.D., Cobi J. Heijnen, Ph.D., Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, The Netherlands

Fatigue is a common complaint among otherwise healthy adolescents and often co-occurs with psychological symptoms like anxiety and depression, and symptoms associated with chronic fatigue syndrome (e.g., such as myalgia, headaches, and unrefreshing sleep). It is, however, unknown to what extent fatigue is a stable person
characteristic or due to change in fatigue-sensitive persons. In the current longitudinal study we examined short and long term fatigue stability in 633 females by questionnaires. Subsequently, we investigated whether self-reported anxiety, depressive symptoms and CFS side symptoms measured at the age of 12 to 17 years predicted fatigue development 6 and 12 months (short term) and 3½ to 5½ years (long term) after the first measurement. Short term fatigue stability was high (6 months: r=.65, p<.000; 12 months: r=.60, p<.000). Even fatigue severity assessed at long term significantly correlated with the initial fatigue levels (r=.37, p<.000). We selected a subgroup of 82 participants showing low levels of fatigue at inclusion but reporting a significant increase in fatigue 3½ to 5½ years later. This increased-fatigued subgroup was compared with 204 participants reporting constant low levels of fatigue. Both groups had equal (low) levels of initial fatigue. The increased-fatigued subgroup reported more anxiety (p<.000) and depressive symptoms (p<.002) at the beginning of the study than non-fatigued participants. Fatigue development 6 and 12 months after inclusion was also predicted by initial anxiety and depression levels. CFS side symptoms predicted fatigue after 6 (p<.005) and 12 months (p<.009), but not long term fatigue development. Long term changes in fatigue significantly correlated with changes in depressive symptoms (r=.28, p<.008) and in anxiety (r=.31, p<.009). The latter finding suggests that on the one hand these symptoms cluster from covarying in time but on the other hand that anxiety and depression as traits are risk factors for the development of fatigue. Our results imply that prevention and treatment of psychological symptoms during adolescence may avert fatigue development later on.

23) Abstract 1331

THE ASSOCIATION OF DEPRESSION WITH CARDIAC AND ALL-CAUSE MORTALITY IN THE 10 YEARS AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

Ingrid Connerney, DrPH, Quality and Safety, University of Maryland Medical Center, Baltimore, Maryland, Richard P. Sloan, PhD, Behavioral Medicine, Emilia Bagiella, PhD, Biostatistics, Peter A. Shapiro, MD, Psychiatry, Columbia University, New York, NY

PURPOSE Depression is associated with mortality after myocardial infarction. For coronary artery bypass graft surgery (CABG), reports are less consistent. We conducted this study to determine if depression is independently associated with cardiac and all-cause mortality 10-years after CABG surgery. METHOD: A prospective research design was utilized to collect data on 309 patients hospitalized after CABG surgery. Prior to discharge, patients were assessed for depression using the Diagnostic Interview Schedule and the Beck Depression Inventory (BDI). Mortality data were obtained from National Center for Health Statistics, and supplemented with phone interviews. RESULTS: Sixty three patients (20%) met modified DSM-IV criteria for major depressive disorder (MDD) and 87 (28%) had BDI score >10 indicating depressive symptomatology. Time-to-event or last follow-up phone contact ranged from 9 days to 11.5 years (median 9.3 years). The overall mortality rate was 37.9% (117 of 309), with 20.1% (62 of 309) due to cardiac causes. Cox proportional-hazard modeling showed that age (hazard ratio (HR) 1.04, p<.01), ejection fraction (EF) <0.35 (HR 3.65, p<.001), EF 0.35-0.49 (HR 1.9, p<.05), and MDD (HR 1.8, p<.05) were independent predictors of cardiac mortality. Age, EF, and diabetes predicted all-cause mortality, but MDD did not. We examined the relationship between the cognitive/affective symptoms and the somatic symptoms of depression from the BDI with mortality, and found that the cognitive/affective symptoms significantly associated with cardiac mortality (p<.01) but not all cause mortality, whereas the somatic symptoms were not significantly associated with cardiac mortality in multivariate analysis. CONCLUSION: Depression, assessed both in structured interview and with the BDI, was a significant predictor of elevated cardiac mortality but not all-cause mortality 10 years after CABG surgery.

24) Abstract 1261

POSTTRAUMATIC STRESS DISORDER AFTER IMPLANTATION OF AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR

Henneke Versteeg, MSc, Department of Medical Psychology, Tilburg University, Tilburg, The Netherlands, Dominic A. Theuns, PhD, Ruud A. Erdman, PhD, Luc Jordans, MD, PhD, Department of Cardiology, Thoraxcenter, Erasmus Medical Center, Rotterdam, The Netherlands, Suzanne S. Pederson, PhD, Department of Medical Psychology, Tilburg University, Tilburg, The Netherlands

Background: Previous research has shown that subgroups of patients are at risk of developing posttraumatic stress disorder (PTSD) after a cardiac event. However, little is known about the impact of receiving an implantable cardioverter defibrillator (ICD) on the development of PTSD. We examined the prevalence and associated risk factors for PTSD after ICD implantation, using a prospective study design.

Design: Consecutively implanted ICD patients (N=301; 80.7% men; mean age=57.97±12.0) from the Erasmus Medical Center Rotterdam completed the 14-item Type D Scale and the ICD Patients Concerns Questionnaire one day before implantation, and the Posttraumatic Diagnostic Scale 3 and 6 months after implantation. Clinical variables were obtained from the patients’ medical records.

Results: At 3 months post implantation, 35 (11.6%) patients qualified for a diagnosis of PTSD. At 6 months, 21 (60%) of these patients still had PTSD and 13 patients had developed new onset PTSD, resulting in a total of 34 (11.3%) patients with PTSD. Multivariable logistic regression analysis showed that OR=4.85; 95% CI:1.41-16.61; P=.01), Type D personality (OR=3.38; 95% CI:1.53-7.47; P=.003), and high levels of pre implantation ICD concerns (OR=2.63; 95% CI: 1.21-5.68; P=.01) were independently associated with a diagnosis of PTSD at 3 months. Only ICD concerns (OR=3.86; 95% CI:1.79-8.31; P=.001) remained significantly associated with PTSD diagnosis at 6 months, adjusted for demographic and clinical factors. Of the 14 patients whose PTSD symptoms remitted between 3 and 6 months, 42.9% had a Type D personality and 35.7% experienced shocks. Of the patients with new onset PTSD during this period, 69.2% had high levels of ICD concerns pre implantation. Conclusion: A subgroup of ICD patients is at risk of developing symptoms of PTSD following implantation. Particularly, patients with high levels of pre implantation ICD-related concerns are at increased risk for lasting PTSD symptoms. Psychosocial intervention might be beneficial for these patients, as PTSD in ICD patients has been associated with an increased risk of mortality.

25) Abstract 1669

EARLY CHILDHOOD SOCIOECONOMIC STATUS IS ASSOCIATED WITH CIRCULATING INTERLEUKIN(IL)-6

Judith E. Carroll, M.S., Psychology, University of Pittsburgh, Pittsburgh, PA, Jeffrey A. Horenstein, Ph.D., Psychology, Carnegie Mellon University, Pittsburgh, PA, Arie A. Prather, M.S., Psychiatry and Behavioral Science, Duke University, Durham, NC, Jacqueline Fury, B.S., Psychology, Diana Ross, M.S., R.N., Nursing, University of Pittsburgh, Pittsburgh, PA, Sheldon Cohen, Ph.D., Psychology, Carnegie Mellon University, Pittsburgh, PA, Anna L. Marsland, Ph.D., R.N., Psychology, University of Pittsburgh, Pittsburgh, PA

Growing evidence suggests that socioeconomic attributes of childhood confer risk for cardiovascular morbidity and mortality. In this study, we examine the association of a marker of early childhood socioeconomic status (SES) with serum levels of interleukin-6, a marker of systemic inflammation that has been associated with increased risk for a range of age-related health problems, including cardiovascular and metabolic disease, frailty, and functional decline. Subjects were 105 community volunteers (60% female, 88.6% white), 40-60 years of age. Early childhood SES was indexed by father's occupation during the first 2 years of the individual's life. Serum concentrations of IL-6 were determined from blood samples obtained following overnight fast. Results of multivariate analyses show that after controlling for age, race, gender, body mass index, individual educational attainment, and current family income, individuals who had fathers in blue collar jobs had significantly higher levels of IL-6 than those who had fathers in white collar jobs (p's < .05). Of the individual markers of SES, only family income was significantly associated with IL-6 (r = -.22, p < .05), however this association was no longer significant after controlling for
age, race, gender, and BMI. Independent of individual markers of SES, mid-life adults whose fathers had blue collar jobs when they were very young exhibited higher levels of circulating IL-6 than those whose fathers had white collar jobs. This association may help explain the increase risk of diseases of aging conferred by low childhood SES (Supported by grant NR008237 (ALM)).

26) Abstract 1743
PERCEIVED FAMILIAL SOCIAL STATUS MODULATES THE NEURAL RESPONSE TO VIEWING EMOTIONAL FACIAL EXPRESSIONS IN ADOLESCENTS
Keely A. Muscatell, BA, Baldwin M. Way, Ph.D., Naomi I. Eisenberger, Ph.D., Psychology, UCLA, Los Angeles, CA, Jennifer H. Pfieffer, Ph.D., Psychology, University of Oregon, Eugene, OR, Mirella Dapretto, Ph.D., Psychiatry and Biobehavioral Sciences, UCLA, Los Angeles, CA
Research has demonstrated that subjective perceptions of low social status are related to a number of negative outcomes, including increased risk of mortality, and greater physiological stress reactivity following a socially threatening event. Recently, the potential neural mechanisms of these effects have been explored. In particular, it was demonstrated that young adults perceptions of their parent's social status were associated with amygdala activity when viewing threatening facial expressions, such that individuals whose parents were lower status showed greater amygdala activity. In the present study, we sought to determine if a similar effect occurred in adolescents. Specifically, we predicted that adolescents' perceptions of their family's social status would modulate the neural response to viewing threatening facial expressions. To test this prediction, 27 adolescents (age 13 years) completed a revised version of the MacArthur Subjective Social Status Scale, in which they were asked to indicate where their family stood on a ladder intended to represent the hierarchy in American society. Participants also underwent an fMRI scan while they observed faces that displayed threatening expressions (anger, fear). Results revealed that, while viewing angry faces, adolescents who rated their families as lower in social status exhibited greater neural activity in the dorsal anterior insula (x = 42, y = 18, z = -10, T > 3.71, p = .001) and anterior insula (x = 42, y = 18, z = -10, T > 3.01, p = .002), regions involved in processing the distress of physical and social pain. Thus, as has been found with adult samples, low familial social status is associated with increased neural sensitivity to social threat in adolescents. Given that long-term activation of threat-processing brain regions is associated with negative health outcomes, activity in such regions may be a possible mediator of the relationship between status and health.

27) Abstract 1477
PERSISTING EFFECTS OF EARLY LIFE SOCIAL CLASS ON GLUCOCORTICOID SENSITIVITY
Alvin Lim, BSc, Sherlyynn Chan, BA, Edith Chen, PhD, Gregory E. Miller, PhD, Psychology, University of British Columbia, Vancouver, British Columbia, Canada
Persisting Effects of Early Life Social Class on Glucocorticoid Sensitivity Research shows that low socioeconomic status (SES) in early life increases risk for heart disease later in life. To explain these patterns, we argued that low early SES programs monocytes to be insensitive to cortisol, promoting mild, ongoing, inflammatory activation and decreased glucocorticoid sensitivity. They demonstrated that young adults perceptions' of their family's social status would modulate the neural response to viewing threatening facial expressions. To test this prediction, 27 adolescents (age 13 years) completed a revised version of the MacArthur Subjective Social Status Scale, in which they were asked to indicate where their family stood on a ladder intended to represent the hierarchy in American society. Participants also underwent an fMRI scan while they observed faces that displayed threatening expressions (anger, fear). Results revealed that, while viewing angry faces, adolescents who rated their families as lower in social status exhibited greater neural activity in the dorsal anterior insula (x = 42, y = 18, z = -10, T > 3.71, p = .001) and anterior insula (x = 42, y = 18, z = -10, T > 3.01, p = .002), regions involved in processing the distress of physical and social pain. Thus, as has been found with adult samples, low familial social status is associated with increased neural sensitivity to social threat in adolescents. Given that long-term activation of threat-processing brain regions is associated with negative health outcomes, activity in such regions may be a possible mediator of the relationship between status and health.

28) Abstract 1741
EVERYTHING IN MODERATION: TOO MUCH OR TOO LITTLE SLEEP IS ASSOCIATED HIGHER EVENING CORTISOL LEVELS
Natalia Dmitrieva, M.S., David M. Almeida, Ph.D, Human Development and Family Studies, Pennsylvania State University - University Park, University Park, PA
A high evening level of cortisol may represent an inability to disengage from events at the end of the day, and has been conceptualized as a precursor to illness (e.g., Fries, et al., 2005; Miller, et al., 2007). Lack of sleep, which has an adverse effect on self-reported and objective health indicators, may be one health behavior contributing to endocrine system dysregulation at the end of the day. Recent studies indicate that sleep duration appears to have a curvilinear relation with self-reported health, such that poor health outcomes are associated with both relatively short and long sleep, and that the best health outcomes are related to moderate sleep length (e.g., Krueger & Friedman, 2009). This study assessed a non-linear relation between sleep duration and bedtime cortisol levels among a national sample of U.S. respondents. Participants (N=2,022, 33-84 years old, 57% female, 86% participated in saliva collection) from the second wave of the National Study of Daily Experiences (a satellite study of the National Survey of Midlife in the United States) reported the amount of sleep they received the previous night and provided cortisol levels prior to bedtime for 4 days. Analyses demonstrated that after controlling for time of cortisol collection, demographic variables, cigarette smoking, and use of hormone, steroid and antidepressant medications, sleep duration was associated with lower bedtime cortisol levels (beta = -0.06, p < .05). Moreover, a quadratic effect of sleep was significant (beta = .00, p < .001), indicating that both lack of sleep and long sleep duration are linked with higher bedtime cortisol levels. Results suggest that relatively short and long sleep length are associated with poorer endocrine functioning at the end of the day.
29) Abstract 1039

THE IMPACT OF HATHA YOGA ON CORTISOL LEVELS IN PREGNANCY

Svetlana Bershadsky, M.A., Ilona S. Yim, PhD, Huna Yim, B.A., Psychology and Social Behavior, University of California, Irvine, Irvine, CA

Pregnancy-induced changes in the activity and reactivity of the hypothalamic-pituitary-adrenal (HPA) axis have been associated with the development of postpartum depression (PPD). However, little is known about the effectiveness of relaxation techniques on cortisol trajectories during pregnancy. The current pilot study investigated whether the practice of Hatha yoga during pregnancy is associated with a reduction in cortisol levels and an improvement in mood. Twenty-four pregnant women (mean age = 33.67, SD = 4.75) were recruited from prenatal yoga classes. All women were assessed twice, once at a mean of 15.13 (SD = 1.30) and again at a mean of 26.72 (SD = 2.08) weeks’ gestational age (GA). At each GA, participants were assessed twice, on a yoga day and a comparison home day two days after the yoga day. A saliva sample was collected and mood was assessed (DASS-DEROGATIS, 1975) before and after the 90-minute yoga session and at identical time points on the comparison day. Cortisol was significantly lower on yoga than on home days, both at 15 weeks’ GA, F(1,22) = 5.15, p = 0.03, 2 = 0.19, and at 27 weeks’ GA, F(1,15) = 15.66, p = 0.001, 2 = 0.51. In addition, cortisol decreased significantly in response to the yoga session at both time points; 15 yrs, t (22) = 2.13, p = 0.04, 2 = 0.17, 27 yrs, t (17) = 2.95, p < 0.01, 2 = 0.34. On the comparison days, a significant decrease in cortisol was only observed at 15 weeks’ GA, t (23) = 3.77, p = 0.001, but not at 27 week’s GA, t (16) = 1.73, p = 0.10. Furthermore, the yoga session resulted in a significant decrease in negative mood, at 15 weeks; GA, t (20) = 4.47, p < 0.001 and at 27 weeks’ GA, t (18) = 4.41, p = 0.001. An increase in positive mood was only observed at 27 weeks’ GA, t (18) = 3.46, p = 0.005. Ongoing data collection includes a postpartum assessment of depression in a sample of Portuguese patients with heart failure (HF) patients, and varied by the use of questionnaires versus diagnostic interview and New York Heart Association (NYHA) defined HF severity. More objective measures of HF severity were less frequently related to depressive symptoms. The purpose of this study was to examine how the different measures of severity of HF influence the symptoms of depression in a sample of Portuguese patients with HF. Population and Methods: 51 patients, male 66.6%, mean age 72.94 years, with HF, were included. We analysed the perception of several symptoms and concerns in four dimensions (i.e. physical, psychological, social and existential) with the Structured Interview of symptoms and Concerns (SISC). The depression was categorized in two groups, non-depressed (72.6%) and depressed (27.5%) patients by the Depression Scale (CES-D) and the Perceived Stress Scale (PSS) were used to assess depression and stress. Tracking coefficients for IL6 were

(p=0.05), high NT-pro-BNP (p=0.03) high heart rate (p=0.04) and hiponatremia (p=0.02) were associated with depression. NYHA (p=0.712) was not. In addition, the severity of HF measured by NYHA class was also associated with resilience (p=0.026). Conclusion: Both subjective and objective parameters of HF severity were associated with depression in this sample of Portuguese HF patients.

31) Abstract 1210

THE INFLUENCE OF CHRONIC WORK STRESS ON CHANGES IN LYMPHOCYTE SUBSETS AND LYMPHOCYTE PRODUCTION OF CYTOKINES IN RESPONSE TO ACUTE PSYCHOSOCIAL STRESS IN A SAMPLE OF HEALTHY WORKING SCHOOL TEACHERS

Silja Bellingrath, PhD, Health Psychology, Jacobs University Bremen, Bremen, Germany, Nicolas Rohleder, PhD, Health Psychology, Brandeis University, Waltham, MA, Brigitte M. Kadielka, PhD, Health Psychology, Jacobs University Bremen, Bremen, Germany

To test whether chronic work stress is accompanied by altered immune functioning, changes in lymphocyte subsets and in lymphocyte production of cytokines were examined in reaction to acute psychosocial stress. Work stress was measured according to Siegrist’s effort-reward-imbalance model. ERI reflects a lack of reciprocity between costs and gains at work, whereas overcommitment (OC) is conceptualized as a dysfunctional coping pattern mainly characterized by the inability to withdraw from work obligations. Fifty-five healthy teachers (34 women, 21 men, 29-63 yrs., mean age 50.0±8.47 yrs.) were exposed to the Trier Social Stress Test (TSST), a standardized laboratory stressor. Lymphocyte subset counts and lymphocyte production of numerous cytokines (e.g. TNF alpha/IL-10, INF-gamma/IL-10) were measured before and after challenge. High levels of ERI were associated with lower natural killer (NK) cell (CD 16+/56+) increases (p=0.01) whereas high levels of OC were related to lower NK cell numbers at both time points (p=0.02) and to a lower increase in T-helper cells (CD4+) after TSST exposure (p=0.04). Furthermore, subjects with higher ERI showed a lower overall pro-inflammatory activity, with higher TNF-alpha levels at both time points (p=0.03) and elevated pre-stress IL-6 levels (p=0.04). IL-10 levels decreased with higher ERI after stress (p=0.02). The ratios of TNF-alpha/IL-10 (p=0.003) and IL-6/IL-10 (p=0.002) were significantly increased in subjects high on ERI. Finally, OC was associated with higher IL-2 levels post stress (p=0.03). The present findings suggest a dampened innate immune defence, reflected in lower NK cell numbers together with an increased pro-inflammatory activity in teachers high on ERI/OC. Such pathways could partly be responsible for the increased vulnerability for stress-related diseases in individuals suffering from chronic work stress.

32) Abstract 1699

ASSESSMENT OF TRACKING COEFFICIENTS FOR THE DEVELOPMENT OF INTERLEUKIN 6 WITH STRESS AND DEPRESSION AS PREDICTORS

Bruce R. Wright, MD, Celestina Barbosa-Leiker, PhD, Health & Wellness Services, Washington State University, Pullman, WA, Trynke Hoekstra, Msc., Department of Health Sciences, VU University, Amsterdam, The Netherlands, Ashley J. Miller, BS, College of Nursing, Washington State University, Spokane, WA, Jos Twisk, PhD, Department of Health Sciences, VU University, Amsterdam, The Netherlands

While inflammatory markers like Interleukin 6 (IL6) have been implicated as emerging risk factors for cardiovascular disease, little is known about how IL6 tracks over time (time 1 value predicting the development over times 2-4) and if perceived stress and depression predicted the development of IL6. Participants were 98 college students who entered the study as freshman (40% male, 18 yrs. old) and returned for at least 1 additional visit. Data was collected yearly for 4 years. The Center for Epidemiologic Studies Depression Scale (CES-D) and the Perceived Stress Scale (PSS) were used to
examine using Generalized Estimating Equations in 3 models: a crude model with IL6 at time 1 predicting the development of IL6 over times 2-4, a lifestyle model with IL6 at time 1, smoking status and oral contraceptive use for females at time 1, and a BMI model with IL6 and BMI at time 1. Lastly, a model with CES-D and PSS scores at time 1 and times 2-4 predicting IL6 at times 2-4 was examined. IL6 tracked for males (IL6 tracking B=0.29, p<.001) and females (IL6 tracking B=0.24, p<.001). Lifestyle variables and BMI did not influence how IL6 tracked in males or females. For females, those with higher CESD scores over time had higher IL6 values over time (B=0.29, p=.017), yet those with lower PSS scores over time had higher IL6 values over time (B=-0.046, p<.001). For males, those with higher PSS scores at time 1 had higher IL6 values over time (B=0.070, p=0.001), yet males with lower PSS scores over time had higher IL6 values over time (B=-0.050, p=0.001). In conclusion, IL6 tracked for males and females and was not influenced by lifestyle variables or BMI. Depressive over time was positively related to the development of IL6 in females, as was baseline stress for males. Conversely, longitudinal stress was negatively related to the development of IL6 in males and females. Our findings suggest that depression is associated with the progression of inflammation over time.

33) Abstract 1490

COMPOSITE RISK SCORES AND DEPRESSION AS PREDICTORS OF MORTALITY, CLINICAL IMPROVEMENT, AND OTHER WAITING-LIST OUTCOMES: THE WAITING FOR A NEW HEART STUDY

Gerdi Weidner, PhD, Biology, San Francisco State University, Tilton, California, Heike Spaderna, PhD, Psychology, University of Mainz, Mainz, Germany, Daniela Zahn, PhD, Psychology, Mainz University, Mainz, Germany, Jan Beyersmann, Medical Statistics, Freiburg University, Freiburg, Germany, Jacqueline M. Smits, MD, Eurotransplant, Leiden, Netherlands, Mario C. Deng, MD, Cardiac Transplantation, Columbia University, New York, New York

To improve the prognosis of heart transplant candidates, prediction of waiting-list outcomes is needed. The purpose of this study was to evaluate two composite risk scores, (Heart Failure Survival Score; HFSS; German Transplant Society Score; GTSS), and depression as predictors of mortality and competing waiting-list outcomes [high-urgency transplantation (HU-HTx), elective transplantation, delisting due to clinical improvement] in newly listed heart transplant (HTx) candidates. A multi-center prospective study (17 hospitals in Germany and Austria) was conducted with 318 patients (18% female; aged 53±11) newly registered with Eurotransplant. Demographic variables and depression (HADS-D) were assessed by questionnaires. Variables to compute HFSS and GTSS, age, medications, and outcomes were provided by Eurotransplant. At 12 months, 33 patients died, 83 received urgent HTx, 30 elective HTx, and 17 were delisted due to improvement. Applying cause-specific Cox regressions, only the HFSS was significantly associated with 1-year mortality (HR=0.64 [0.43; 0.95], P=0.029). The GTSS was the strongest predictor of HU-HTx (HR=1.02 [1.01; 1.02], P<0.001) and was also related to clinical improvement (HR=0.99 [0.98; 1.00], P=0.027). Low depression contributed significantly to clinical improvement, even after adjusting for age and risk scores (HADS-D: HR=0.12 [0.02, 0.89], P=0.039). These findings confirm the usefulness of composite risk scores for the prediction of waiting-list outcomes, validating both scores for their intended use. Depression among HTx candidates deserves further attention, as it appears to reduce the chance for clinical improvement independent of disease severity. Prediction of waiting-list outcomes may benefit from considering patients’ psychological attributes in addition to their medical characteristics.

34) Abstract 1687

TRYPTOPHAN PATHWAY METABOLITES AND CARDIOVASCULAR REACTIVITY TO EMOTIONAL STRESS

Stephen H. Boyle, PhD, Psychiatry, Duke University Medical Center, Durham, North Carolina, Anastasia Georgiadou, PhD, Beverly H. Brunmett, PhD, Irene C. Siegler, PhD, Psychiatry, Duke University Medical Center, Durham, NC, Wayne Patterson, PhD, Systems Biology, Bedford VA Medical Center, Bedford, Massachusetts, Cynthia Kuhn, PhD, Pharmacology and Cancer Biology, Katharine Gricnuk, MD, Mark Stafford-Smith, MD, Anesthesiology, Bedford Williams, MD, Roma Kaddah-Daouk, PhD, Psychiatry, Duke University Medical Center, Durham, NC

CVD risk is elevated in persons who are prone to frequent, large increases in blood pressure during times of emotional stress. Understanding how neurotransmitter metabolic pathways in the brain affect CV responses during times of stress could point the way to better preventive measures. Elements of the tryptophan (TRYP) metabolic pathway, such as serotonin (5HT) and kynurenic acid are known to influence stress-induced blood pressure and heart changes in various animal species, but little is known about their role in regulating blood pressure during times of stress in humans. The current study examined the associations of cerebrospinal fluid levels of 5-hydroxytryptophan (5HTP, the precursor to 5-HT), Kynurenine (KYN, the precursor to Kynurenic Acid), and other key metabolites of the TRYP pathway to blood pressure and heart responses to anger and sadness recall and neutral reading tasks in 62 healthy men and women. Concentrations of TRYP pathway metabolites in CSF obtained the previous day were measured by an electrochemistry based metabolomics platform. Systolic (SBP) and diastolic blood (DBP) pressures and heart rate (HR) were measured every minute during rest, two five minute sadness and anger recall tasks, and two five minute neutral reading tasks. The BP and HR readings were adjusted separately for anger and sadness recall and reading tasks. Partial correlations, controlling for age, height, race, gender, and baseline were used to analyze data. 5HTP was positively associated with SBP (r = 0.30, p < 0.03) and DBP (r = 0.32, p < 0.03) reactivity, but only during emotion recall. In contrast, KYN was negatively associated with SBP and DBP reactivity during both emotion (SBP r = -0.36, p < 0.01 and DBP r = -0.32, p < 0.02) and neutral tasks (SBP r = -0.32, p < 0.02 and DBP r = -0.33, p < 0.02). These findings are in-line with previous animal studies that suggest 5HT and KYN acid influence BP responses during times of stress. Individuals with high basal 5HT or low production of KYN may be predisposed to larger blood pressure responses during times of stress. (Supported by NHLBI grant P01HL036877)

35) Abstract 1473

POSTTRAUMATIC STRESS CAUSED BY MYOCARDIAL INFARCTION PREDICTS NON-FATAL CARDIOVASCULAR OUTCOME: A 3-YEAR FOLLOW-UP STUDY

Roland von Känel, MD, Roman Hari, BS, General Internal Medicine, Jean-Paul Schmidt, MD, Hugo Saner, MD, Cardiology, University of Bern, Bern, Switzerland, Ulrich Schnyder, MD, Psychiatry, University of Zürich, Zurich, Switzerland, Stefan Begré, MD, General Internal Medicine, University of Bern, Bern, Switzerland

Background: PTSD prospectively increases the risk of incident cardiovascular disease (CVD) independent of other risk factors in otherwise healthy individuals. Between 10-20% of patients develop PTSD among HTx candidates (10-20% of patients) and HTx candidates (10-20% of patients). The purpose of this study was to evaluate the role of PTSD on CVD outcomes. The purpose of this study was to evaluate the role of PTSD on CVD outcomes.

Conclusions: Elevated levels of PTSD symptoms caused by myocardial infarction (MI) predict adverse cardiovascular outcomes. Methods: We studied 330 patients (61±10 years, 84% men) who self-rated PTSD symptoms attributable to a previous index MI. Non-fatal CVD-related hospital readmissions (i.e., recurrent MI, elective and non-elective intraocular stenting, bypass surgery, pacemaker implantation, cardiac arrhythmia, cerebrovascular event) were assessed at follow-up. Cox survival analysis controlled for demographic factors, coronary heart disease severity, major CVD risk factors, cardiac medication, and obtained mental support. Results: Fifty patients (15.2%) experienced an adverse event during a mean follow-up of 2.8 years (range 1.3-3.8). In the fully adjusted model, there was a 47% increased relative risk for a CVD-related hospital readmission for one SD increase in PTSD symptoms (HR=1.47, 95% CI 1.11-1.97). A similar risk increase (95% CI 1.11-2.11) emerged for patients with a major or unscheduled CVD-related readmission (i.e., when excluding patients with elective stenting). Conclusions: Elevated levels of PTSD symptoms caused by MI may adversely impact non-fatal cardiovascular outcome in post MI patients independent of other important prognostic factors. The possible importance of PTSD symptoms as a novel prognostic psychosocial risk factor in post-MI patients warrants further study.
SEX-DEPENDENT COVARIATION BETWEEN CEREBRAL BLOOD FLOW TO CORTICOLIMBIC BRAIN AREAS AND SOCIAL INTEGRATION

Yelvine J. Zanstra, PhD, Lei Sheu, PhD, Psychiatry, CH Kauan, Stephen B. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA; Sheldon Cohen, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA; Peter J. Gianaros, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Social integration is often defined as being socially active and maintaining social connections of quality and meaning. It is a multidimensional aspect of social behavior implicated in resiliency against ill health. At present, however, nearly nothing is known about the neurobiological pathways potentially linking measures of social integration with health outcomes. Accordingly, in a healthy community sample of 114 participants (45 men, aged 30-54 yrs), we tested for associations between two indicators of social integration (network diversity and size) and resting regional cerebral blood flow (rCBF) determined non-invasively by arterial spin labeling. Our primary results were that social network diversity and size were both associated with rCBF in corticollimbic brain areas, but observed associations were sex-dependent. Hence, in men, network diversity was more positively associated with rCBF to the amygdala than with the rostral anterior cingulate cortex than in men. These associations paralleled those for network size: in men, network size was more positively associated with rCBF to the rostral anterior cingulate than in men. All associations between social integration measures and rCBF were executed using statistical parametric mapping software with covariate control for age and total cerebral blood flow, and with whole-brain significance and cluster extent thresholds of P<0.005 and k=20, respectively. Finally, neither network diversity ([t(112]=1.56, P=.12)) nor network size ([t(112]=0.94, P=0.97) differed between men and women, suggesting that our observations were unconfounded by sex-dependent variance in social integration. In men, but not women, network diversity was more positively associated with rCBF to the rostral anterior cingulate than in women. Conversely, in women, network size was more positively associated with rCBF to the rostral anterior cingulate than in men. All associations between social integration measures and rCBF implicated a sex-dependent covariation between social integration and corticollimbic activity, which may have implications for understanding the neurobiological pathways linking social behaviors and health outcomes related to brain function.

PROBLEM BEHAVIOR OF DEMENTIA PATIENTS PREDICTS PROCOAGULANT ACTIVITY IN CAREGIVERS

Rolf von Känel, MD, General Internal Medicine, University of Bern, Bern, Bern, Switzerland; Brent T. Maushach, PhD, Joel E. Dimsdale, MD, Paul J. Mills, PhD, Thomas L. Patterson, PhD, Sonia Ancoli-Issael, PhD, Psychiatry, Michael G. Ziegler, MD, Medicine; Susan K. Roepke, MS, Psychiatry, Matthew Allison, MD, Family and Preventive Medicine, Igor Grant, MD, Psychiatry, University of California San Diego, La Jolla

Background: The chronic stress of dementia caregiving has been associated with a procoagulant state that might partially explain the increased cardiovascular disease risk in Alzheimer's caregivers. In this study, we determined the specific components of dementia caregivers' stress contributing to this procoagulability. Methods: 108 subjects (mean age 74±8 yrs, 70% women) with primary care for their spouse with Alzheimer's disease were examined. Caregivers were interviewed about the number of predefined patient problem behaviors in the previous week (range 0-24) and how upset or bothered (i.e. distressed) the caregiver felt in response to these behaviors (total score 0-120). Standardized z-scores of plasma levels of D-dimer (indicating fibrin formation), von Willebrand factor, Fibrinogen, and Plasminogen activator inhibitor-1 (inhibitor of fibrin dissolution) were measured. Hip pressure on the middle fingers of patients for 10 seconds with a calibrated clothespin (Clothespin-Algometer, 12N/5mm) and recorded pain sensitivity on a visual analogue scale were also taken. Results: Greater number of problem behaviors (p=0.025, deltaR2=.044) predicted a greater procoagulant index in two separate models controlling for age, gender, alcohol consumption, smoking, body mass index, exercise, systolic blood pressure, depressive symptoms, and years of caregiving. Greater age and body mass index were also significantly associated with a greater procoagulant index. Post-hoc analysis revealed a positive association between the number of problem behaviors and D-dimer (p=.025, deltaR2=.042), while caregiver distress was not significantly associated with any procoagulant factor individually. Conclusions: Dementia patients' problem behavior and their negative appraisals by the caregiver appear to contribute to a procoagulant state. Interventions to change stress appraisal might reduce the procoagulant state and the associated cardiovascular risk in Alzheimer's caregivers.

RELATIONSHIP AMONG PSYCHOMETRIC CONSTRUCTS RELATED TO ARTERIAL CARDIOVASCULAR DISEASE RISK IN PATIENTS WITH VENOUS THROMBOEMBOLISM A FACTORIAL ANALYSIS

Paul S. Lukas, lic. phil., René Krammenacher, M.D., General Internal Medicine, Bern University Hospital, Bern, Bern, Switzerland; Brigitte M. Kudielka, PhD, Jacobs Center for Lifelong Learning, Jacobs University Bremen, Bremen, Bremen, Germany; Stefan Begré, M.D., Roland von Känel, M.D., General Internal Medicine, Bern University Hospital, Bern, Bern, Switzerland

Introduction: Psychometric characteristics are established risk factors of arterial cardiovascular disease. Increasing evidence suggests that psychological factors contribute also to the risk of venous thromboembolism (VTE). Commonly used psychosocial questionnaires seem to overlap in several features raising the question whether they form discriminative constructs or not. Methods: We enrolled 213 patients ≥3 years after a venous thromboembolic event (i.e., deep venous thrombosis and pulmonary embolism). Approximately 10 days prior to blood collection for thrombophilia work-up, quality of life, anxiety, depression, vital exhaustion, effort-reward-imbalance, overcommitment, type D personality, and social support were assessed by standardized questionnaires. Pearson correlation and rotated factor analysis using varimax method were used to determine intercorrelations and factorial structure. Results: The correlation matrix showed low-to-moderate correlations for the variable measures of psychosocial constructs. Our analysis revealed 10 interpretable factors accounting for 54.7% of the common variance and reflecting most of the originally used scales. Conclusion: Our results support the assumption of distinguishable and independent, but partially overlapping psychological concepts.

HYPERSENSITIVITY IN SOMATOFORM DISORDERS

Marie-Louise Gander, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland; Nicole Klingler, MS, Inselspital, University Hospital of Bern, Psychosomatic Division, Bern, Switzerland; Rafael J. A. Cámara, MD, Roland von Känel, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland; Michelle Curatolo, MD, Anesthesiology Division, Inselspital, University Hospital of Bern, Bern, Switzerland; Elizabeth Marti, MD, Orthopedics Departement, Inselspital, University Hospital, Bern, Switzerland; Niklaus Egloff, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland

Background and Aims: Both ICD-10 and DSM-IV stress the role of psychological factors in the etiology of somatoform pain disorder. Yet another important aspect of pain disorders is the hypersensitivity to somatic-nociceptive stimuli. We tested the pain sensitivity using two algometric instruments. Our hypothesis was that pain sensitivity would be higher in patients with somatoform pain compared to those with somatic pain. Methods: At the Bern University Hospital we examined 73 adults with somatic pain and 47 patients with somatoform pain disorder (following ICD-10 and DSM-IV criteria). A physician blinded to diagnoses applied pressure on the middle fingers of patients for 10 seconds with a calibrated clothespin (Clothespin-Algometer, 12N/5mm) and recorded pain sensitivity on a visual analogue scale (VAS). The pain threshold was measured with a Somedic®-Algometer and noted in kilopascal. We performed an analysis of covariance controlling for age, gender, and pain duration to estimate the relation between pain category (somatic/somatoform) and pain sensitivity, respectively pain threshold. Results: Pain sensitivity was higher in patients with somatoform pain than in those with somatic pain and higher in women than in men. Age and pain duration did not add to the
model, Somedic®-Algometer: Sex (F = 24.6; p < 0.001) and diagnosis (F = 4.9; p = 0.029) explained 23.0% of the variance of the pain threshold as measured on the right and 22.6% as measured on the left middle finger (F = 21.4; p < 0.001 and F = 6.9 < 0.010, respectively). Clothespin-Algometer: Sex (F = 11.3; p = 0.001) and diagnosis (F = 26.6; p < 0.001) explained 28.3% of the variance of pain sensitivity as measured on the right middle finger and 28.6% as measured on the left middle finger (F = 10.0; p = 0.002 and F = 28.9; p < 0.001, respectively). Conclusions: Somatoform pain is associated with higher pain sensitivity than somatic pain as tested by pressure algometry. Female sex accentuates the difference between somatoform and somatic pain. Hypersensitivity to somatic-nociceptive stimuli seems to be an important factor for the understanding of somatoform pain disorders.

40) Abstract 1114

PSYCHOLOGICAL STRESS PREDICTING ADVERSE EVENTS IN CROHN’S DISEASE

Rafael J. A. Câmara, M.D., General Internal Medicine, Psychosomatics Division, Inselspital / Bern University Hospital, Bern, Switzerland, Pascal Juillerat, M.D., Gastroenterology and Hepatology, Valerie Pittet, Ph.D., Social and Preventive Medicine, University of Lausanne, Lausanne, Switzerland, Alain M. Schoepfer, M.D., Digestive Health Research, McMaster University, Hamilton, Ontario, Canada, Stefan Beigrè, M.D., Roland von Känel, M.D., General Internal Medicine, Psychosomatics Division, Inselspital / Bern University Hospital, Bern, Switzerland

Background & Aims: A better understanding of the pathophysiology of Crohn’s disease (CD) seems necessary to predict and more favorably influence the disease course. We aimed to define if psychological stress is associated with subsequent adverse events representing active disease. Methods: Design: We addressed the issue in an observational prospective multi-centre study. Setting: The major recruiters and data collectors were tertiary university centers from Basel, Bern, Geneva, Lausanne, St Gall, and Zurich. Participants: We observed a consecutive sample of 319 adult CD patients for one year. Eligibility criteria were regular treatment in Switzerland and diagnosis established at least 4 months prior to inclusion based on Lennard-Jones criteria. Main Measures: At inclusion patients completed the Inflammatory Bowel Disease QoL Questionnaire (disease specific; range 32 to 224 QoL points) and the Short Form-36 Health Survey (non-disease specific; range 35 to 145 QoL points). During follow-up we recorded adverse events including flares, extraintestinal manifestations, complications, and non-response to therapy. Analysis: We performed binary logistic regression models to estimate the relation between stress and the odds of adverse events. Results: The odds of experiencing adverse events was multiplied by 0.977 (0.960; 0.994) with each additional disease specific and by 0.948 (0.919; 0.976) with each additional non-disease specific QoL point (parentheses indicate 99% confidence intervals). Conclusions: CD patients with lower disease specific and non-disease specific QoL more likely experienced adverse events. Given the close association between QoL and subsequent adverse events, we recommend the assessment of QoL in therapeutic monitoring.

42) Abstract 1389

HEALTH-RELATED QUALITY OF LIFE IN DIASTOLIC DYSFUNCTION IS AFFECTED BY NT-PROBNP AND MR-PROADM - RESULTS FROM THE COMMUNITY BASED DIAST-CHF STUDY

Frank Edelmann, M.D., Rolf Wachter, M.D., Friederike Polzin, Cardiology, University of Göttingen, Göttingen, Germany, Götz Gelbrich, PhD, Coordination Center for Clinical Trials, University of Leipizig, Leipizig, Germany, Gerd Hansenfuss, Professor, Cardiology, University of Göttingen, Göttingen, Germany, Burkert M. Pieske, Professor, Cardiology, University of Graz, Graz, Austria, Christoph Herrmann-Lingen, Professor, Psychosomatic Medicine, University of Göttingen, Göttingen, Germany

Background: Until now, in the growing patient population suffering from diastolic dysfunction (DD) the impact of multifaceted neurohormonal activation on health-related quality of life (QoL) is not investigated so far. Methods: Patients with risk factors for development of DD and healthy age-matched controls were prospectively included. A common baseline data set was obtained. DD was defined as echocardiographically determined LVEF ≤50% and E/e10. NT-proBNP and adrenomedullin (MR-proADM) was measured and log transformed (mean±SD). Groups were compared by t-test for independent variables. Correlations were tested using Spearman coefficient. Results: n=1948 patients were included. n=1697 had preserved LVEF: n=1016 with E/e <10 (Controls, C), n=581 with E/e10 (DD). Patients with DD had a reduced six-minutes-walk-distance (493±118m vs. 526±106m, p<0.001). NT-proBNP (2.13±0.47pg/ml vs. 1.93±0.45pg/ml, p<0.001) and MR-proADM (-0.21±0.13pmol/l vs. -0.26±0.13pmol/l, p<0.001) were higher in DD. Patients with DD had reduced physical dimension of SF-36. Groups did not differ regarding mental and depressive items (mental sum: 49.7±10.4 vs. 50.3±10.3, p=n.s.; PHQ sum: 5.0±4.0 vs. 4.7±4.2, n.s.). In DD we found significant correlations of MR-proADM and NT-proBNP to physical function score (r=-0.26±0.13pmol/l, p<0.001; physical function: 69.2±25.2 vs. 77.3±23.1, p<0.001), but groups did not differ regarding mental and depressive items (mental sum: 49.7±10.4 vs. 50.3±10.3, p=n.s.; PHQ sum: 5.0±4.0 vs. 4.7±4.2, n.s.). In DD we found significant correlations of MR-proADM and NT-proBNP to physical function score (r=-0.30, p<0.001 and r=-0.28, p<0.001) to physical function score (r=-0.30, p<0.001 and r=-0.28, p<0.001). Correlations were tested using Spearman coefficients. Results: n=1948 patients were included. n=1697 had preserved LVEF: n=1016 with E/e <10 (Controls, C), n=581 with E/e10 (DD). Patients with DD had a reduced six-minutes-walk-distance (493±118m vs. 526±106m, p<0.001). NT-proBNP (2.13±0.47pg/ml vs. 1.93±0.45pg/ml, p<0.001) and MR-proADM (-0.21±0.13pmol/l vs. -0.26±0.13pmol/l, p<0.001) were higher in DD. Patients with DD had reduced physical dimension of SF-36. Groups did not differ regarding mental and depressive items (mental sum: 49.7±10.4 vs. 50.3±10.3, p=n.s.; PHQ sum: 5.0±4.0 vs. 4.7±4.2, n.s.). In DD we found significant correlations of MR-proADM and NT-proBNP to physical function score (r=-0.30, p<0.001 and r=-0.28, p<0.001) to physical function score (r=-0.30, p<0.001 and r=-0.28, p<0.001). Correlations were tested using Spearman coefficients.
43) Abstract 1232

BASELINE AND RECOVERY PULSE RATE IS LOWER IN INDIVIDUALS WITH A BALANCED OUTLOOK ON LIFE STRESSORS

Annie T. Ginty, BS, School of Sport and Exercise Sciences, University of Birmingham, Edgbaston, Birmingham, United Kingdom, Sarah M. Conklin, PhD, Psychology and Neuroscience, Allegheny College, Meadville, PA

Excessive cardiovascular reactions to stress can have adverse health consequences. However, reactivity is dependent on the perception of situations as a threat and there has been scant research on how exposure measures of stress relate to the perception of stress and to cardiovascular reactivity. We hypothesized that individuals who perceived their lives as less stressful than their actual stress exposure implied would show attenuated reactivity to acute stress. Participants (N=100) were undergraduates who completed the Perceived Stress Scale (PSS) and the Undergraduate Stress Questionnaire (USQ); the latter identifies 82 common life stressors for undergraduates. They also undertook a mental arithmetic stress task in the laboratory. Blood pressure and pulse were measured at baseline, during and after the stress task. Reactivity was difference between stress and baseline values. A perceived stress difference score (PSDS) was calculated by subtracting USQ T-scores from PSS T-scores. T-scores were divided into tertiles of low, middle, and high PSDS score. There were no significant differences among tertiles in reactivity. However, PSDS tertiles differed on baseline and recovery pulse rate (F(3,96)=4.41, p=.016, eta2=.11, and F(3,96)=3.82, p=.027, eta2=.10). Individuals in the middle PSDS tertile had lower baseline and recovery pulse than individuals in the low PSDS and high PSDS tertiles. Thus, those who have a balanced perception of stress have lower baseline and recovery pulse rates than those who perceive their lives more or less stressful than their actual stress exposures would indicate.

44) Abstract 1358

MARITAL QUALITY AND RISK FACTORS FOR CHD

Julianne Holt-Lunstad, PhD, Patrick R. Steffen, PhD, Paige Pickard, Psychology, Jonathan Sandberg, PhD, Marriage and Family Therapy, Walker Pederson., Psychology, Brigham Young University, Provo, UT

Background and Purpose: Research has demonstrated marital quality or distress is associated with coronary heart disease (CHD). Therefore, marital quality should also be associated with relevant established risk factors. Sample: To test our hypothesis, 31 married couples (n=62; including normotensive, pre-hypertensive, and un-medicated hypertensive) seeking marital therapy were recruited via advertisement from the community or at clinic intake. Method: The Dyadic Adjustment Scale (DAS) and risk factors for CHD were obtained at a baseline assessment. The total score on the DAS and satisfaction subscale were used in analyses to assess level of marital distress and satisfaction respectively. Risk assessments included 24-hour ambulatory blood pressure (ABP) and a blood draw to obtain physiological markers related to cardiovascular disease including high sensitivity C-reactive protein (hs-CRP), cholesterol, and fasting glucose. Results: Analyses reveal that lower marital adjustment (marital distress) was associated with significantly higher 24-h SBP (B=-.26; p<.05), glucose (B=-.30; p<.01), hs-CRP (B=-.23; p=.05), and a trend toward higher 24-h DBP (B=.24; p<.10), total cholesterol (B=.16; p=.10), very-low-density lipoprotein (VLDL; B=-.18; p=.06), triglycerides (B=-.17; p=.10), and Chol/HDL ratio (B=-.19; p=.06). Conversely high marital satisfaction was significantly associated with lower 24-h SBP (B=-.27; p<.05), glucose (B=-.34; p<.01), hs-CRP (B=-.29; p<.05), VLDL (B=-.23; p<.05), Chol/HDL ratio (B=-.23; p<.05); and a trend toward lower total 24-h DBP (B=-.23; p=.10), cholesterol (B=-.17; p<.10) and triglycerides (B=-.18; p<.10). Conclusion: Marital distress and satisfaction are associated with ABP, inflammatory response, glucose, and cholesterol. Empirical investigations are needed to test whether interventions aimed at reducing marital distress or increasing satisfaction might also result in lower risk factors for CHD.

45) Abstract 1558

PSYCHOLOGICAL OUTCOME AFTER ABLATION THERAPY FOR ATRIAL FIBRILLATION

Jane Irvine, D. Phil., Psychology, York University, Toronto, ON, Canada, Brian Baker, M.D., Medicine, Toronto Western Hospital, Toronto, ON, Canada, Lephuong Ong, Ph.D., Department of Psychiatry and Behavioral Sciences, Duke University Medical Centre, Durham, NC, Anil Verma, M.D., Medicine, Annette Nath, BSN, Heart Rhythm Program, Soulethalke Regional Health Centre, Newmarket, ON, Canada, Ana Bilanovic, B.Sc., Sabine Johnson, M.A., Psychology, York University, Toronto, ON, Canada, Yaariv Khaykin, M.D., Medicine, Southlethalke Regional Health Centre, Newmarket, ON, Canada

Psychological distress is prevalent in patients with atrial fibrillation (AF). Patients troubled by AF seek more aggressive treatments, e.g., radiofrequency ablation (RFA), despite only moderate AF success rates (e.g., 62%) and no evidence of improved mortality risk. AIM: to assess psychological outcome 6-months following RFA, and to examine clinical, demographic and psychological predictors of outcome. METHODS: 121 patients (76% male) seeking RFA completed measures of anxiety and depression symptoms (Hospital Anxiety and Depression Scale [HADS]) pre-RFA (T1) and 6-months follow-up (T2). Predictors included demographics, cardiac (ejection fraction, grade, medications), AF type, RFA success, AF symptom severity and baseline psychological vulnerability factors (anxiety sensitivity, symptom preoccupation, optimism-pessimism). Clinical success of RFA, as documented by more than 30 seconds of AF on ECG or Holter monitoring, and patient reported AF symptom severity were measured over 6-month follow-up. RESULTS: Of 82 participants followed up at this time, the RFA success rate was 44%. Improvements were observed on anxiety (M = 5.1, SD = 4.0 to 2.6, SD = 3.6, p < .001) and depression (M = 4.5, SD = 3.0 to M = 2.6, SD = 3.0, p < .001), but prevalence rates for clinically elevated anxiety symptoms remained high at T2 (29% scored above 8 vs. 42% at T1). In regression models, significant predictors of less improvement in anxiety were higher AF symptoms at T2 (Beta = 0.36, 95% Confidence Interval (CI), 0.19 - 0.55, p = .039), greater than highschool education (Beta = 0.28, 95% CI, 0.11 - 0.46, p = .008), and higher AF symptoms at T2 (Beta = 0.20, 95% CI, 0.01 - 0.42, p = .046). CONCLUSION: There is a high prevalence of elevated anxiety symptoms in patients with AF. Improvement in anxiety and depression following RFA is associated more with subjective AF symptom complaints and an optimistic outlook than objective evidence of RFA success.

46) Abstract 1113

RACE DIFFERENCES IN THE RELATION OF HOSTILITY AND DEPRESSIVE SYMPTOMS TO PROGRESSION OF CAC IN MIDLIFE WOMEN

Imke Janssen, PhD, Lynda H. Powell, PhD, John Cursio, MS, Preventive Medicine, Rush University Medical Center, Chicago, IL, Karen A. Matthews, PhD, Psychiatry, Kim Sutton-Tyrrell, DrPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Susan A. Everson-Rose, PhD, Medicine, University of Minnesota, Minneapolis, MN

Hostility and depression are risk factors for CVD and mortality, but their relation to progression of coronary calcification (CAC) in women is unknown. We examined the joint effects of hostility and depressive symptoms on two-year progression of CAC among women at midlife. Data come from 346 women (33% black, 67% white; mean age, 50.8 (+/-2.7) years) who completed psychosocial assessments and two CT scans, on average 2.3 years apart, as part of the Study of Women's Health Across the Nation (SWAN) Heart ancillary study. SWAN is a longitudinal, multi-site study of health and psychosocial factors in women transitioning through menopause. SWAN Heart was conducted from 2001-2005 at the Chicago and Pittsburgh SWAN sites to examine CVD risk factors and subclinical atherosclerosis in women without CVD. Hostility was measured with the 13-item Cook-Medley Cynicism Scale and depressive symptoms were measured with the 12-item CES-D scale. 90, defined as an increase in CAC of 10 Agatston units, was analyzed.
using relative risk (RR) regression. Compared to whites, blacks had higher hostility scores [4.9 (+3.2) vs. 2.9 (+2.5), p<.001] but did not differ on CES-D scores. Hostility and CES-D scores were modeled simultaneously; covariates were age, time between CT scans, race, education, BMI, blood pressure, statin use, smoking, follicle stimulating hormone, and HDL cholesterol. We observed a race x hostility interaction (p<.02) in CAC progression and thus report race-specific results. In blacks, a 1-SD higher hostility score increased risk [RR=1.74 (95% CI=1.04-2.89), p=.034] and a 1-SD higher CES-D score was marginally related [RR=1.35 (95% CI=0.98-1.86), p=.065] to CAC progression. In whites, only CES-D scores were associated with greater risk [RR=1.25 (95% CI=1.02-1.53), p=.029] of CAC progression. In this cohort of women, hostility independently increased risk of CAC progression among blacks only, whereas depressive symptoms were associated with CAC progression in both blacks and whites. (Supported by NIH/DEHS grants AG012505, AG012546, HL065591, HL065591, & HL089862.)

47) Abstract 1753

PSYCHOSOCIAL CHARACTERISTICS PREDICT INCREASED LEFT VENTRICULAR MASS: A SECTIONAL STUDY

Gaston Kapuza, MD, PhD, Pediatrics-Georgia Prevention Institute and Medicine, Medical College of Georgia, Augusta, Georgia, Okwatyalo George, Associate, Pediatrics-Georgia Prevention Institute, Medical College of Georgia, Augusta, GA, Harry Davis, MS, Pediatrics-Georgia Prevention Institute, Medical College of GA, Augusta, GA, Kashala Carter, Associate, Pediatrics-Georgia Prevention Institute, Medical College, Augusta, GA, Gwen Bullock, Associate, Shamina Tolbert, BS, James Halbert, Associate, Sarita Vemulapalli, BS, Sharika Leverett, Associate, Pediatrics-Georgia Prevention Institute, Medical College of GA, Augusta, GA, Gregory Harshfield, PhD, Pediatrics-Georgia Prevention Institute, Medical College of Georgia, Augusta, GA

Increased left ventricular mass is an independent predictor of cardiovascular morbidity and mortality. However, whether psychosocial factors are linked to cardiac structure is not completely established. The goal of this study was to assess the contribution of psychosocial characteristics to cardiac structure in normotensive adults. Thirty (15 Blacks, 15 Whites; 14 males) healthy adults (age range 30 to 50) underwent psychometric evaluation and echocardiography scanning. Significant correlations were found between LVM/Ht 2.7 and scores on the Cohesion subscale of the Family Environment Scale (FES-Coh), (r=0.44, p=0.017), the Cook-Medley (CM) scale (r=0.40, p=0.031), the Educational Disadvantage scale of the City Life Events (CLE-ED) scale (r=0.52, p=0.014), the CLE Financial Strain scale (CLE-FS) (r=0.36, p=0.048), the CLE Neighborhood Unemployment scale (CLE-NU) (r=0.45, p=0.032), and the CLE Neighborhood Disorder scale (CLE-ND) (r=0.56, p=0.004). Stepwise multiple regressions controlling for significant effects of sex, race, and BMI found that LVM/Ht 2.7 was predicted by FES-Coh (R=0.56, p=0.007), CM (R=0.58, p=0.004), CLE-ED (R=0.44, p=0.014), CLE-FS (R=0.51, p=0.008), and CLE-ND (R=0.56, p=0.004). These findings suggest that among adults psychosocial characteristics add substantially to the prediction of cardiac mass after taking in account the contribution of anthropometric characteristics. Further studies of cardiac mass are needed to examine the mechanisms of the beneficial effect of supportive environment and the deleterious effect of chronic stress and undesirable neighborhood.

48) Abstract 1093

CARDIAC SYMPATHETIC ACTIVITY IN MAJOR DEPRESSIVE AND ANXIETY DISORDER: AN IMPORTANT ROLE FOR ANTIDEPRESSANTS

Carmela M. Licht, MSc, Brenda W. Pennix, PhD, Psychiatry, VU University Medical Center, Amsterdam, NH, The Netherlands, Eco J. de Geus, PhD, Biological Psychology, VU University, Amsterdam, NH, The Netherlands

Increased sympathetic activity has been hypothesized to play a role in the increased risk of cardiovascular disease among major depressive disorders (MDD) and/or anxiety disorder patients. To test this hypothesis, we compared the pre-ejection period (PEP), an index of cardiac ionotropic drive, between MDD and/or anxiety disorder patients and healthy controls. From the Netherlands Study of Depression and Anxiety (Nesda) data were available from 540 control subjects, 1319 subjects with a MDD diagnosis and/or anxiety disorder of whom 583 subjects used an antidepressant (mean age of total sample 39.9 years, 66.6% female). The PEP was measured by ambulatory impedance cardiography throughout a 2.5 hour visit to the research centres. Analysis showed that the PEP of depressed/anxious subjects not taking antidepressants did not differ from the PEP of controls. However, subjects with MDD/anxiety disorders using tricyclic antidepressants (TCAs) and combined serotonergic/noradrenergic antidepressants (SNRIs) showed a significantly shorter PEP compared to controls (11.9 ms and 4.9ms shorter with effect sizes of d=0.712 and d=0.202, respectively). In contrast, subjects with MDD and/or an anxiety disorder using selective serotonin reuptake inhibitors (SSRIs) had a longer PEP than the controls (6.6ms longer, effect size d=0.492). This study shows that MDD and/or anxiety disorders are not associated with increased sympathetic activity in comparison with healthy controls, but that TCA and SNRI antidepressants are associated with increased sympathetic activity, whereas SSRIs are associated with decreased sympathetic activity.

49) Abstract 1153

CHARACTERISTICS OF EXHAUSTION AND ASSOCIATED MECHANISMS OF IMMUNE-MEDIATED INFLAMMATION AFTER CARDIAC SURGERY

Pamela S. Miller, PhD, Lynn V. Doering, DNsC, Lorraine S. Evangelista, PhD, Joyce Newman Giger, EdD, School of Nursing, University of California, Los Angeles, Los Angeles, California, Teresa Correa-Tundel, PhD, Research and Development, VA Greater Los Angeles Healthcare System, Los Angeles, California, Otoniel Martinez-Maza, PhD, Microbiology, Immunology, and Molecular Genetics, University of California, Los Angeles, Los Angeles, California

Purpose: Vital exhaustion (VE) may influence the pathogenesis of coronary artery disease (CAD) through immune dysregulation. The cumulative effect of pathogens (pathogen burden [PB]) is associated with pro-inflammatory modulation in CAD. In a prospective, cross-sectional design, we explored characteristics associated with VE, and examined the relationships of PB (IgG antibodies to Herpes Simplex Virus [HSV]-1, HSV-2, Cytomegalovirus and Epstein Barr Virus) and immune-inflammatory markers ( interleukin [IL]-6, IL-10, soluble intercellular adhesion molecule-1 [sICAM-1]) to VE after coronary artery bypass grafting (CABG). Methods: One to two months post-hospitalization, 42 patients were screened for depression using the Patient Health Questionnaire-2. Non-depressed patients were classified as exhausted or non-exhausted using Maastricht Interview scores. Serum levels of immune-inflammatory markers and infectious serology were measured by ELISA. Pathogen burden was stratified by seropositivity: low (0-1), moderate (2-3), and high (4). Data were analyzed by chi square, t-tests, and logistic regression. Results: Compared to non-exhausted patients, patients who were exhausted (n = 17, 40.5%) while in the hospital tended to be younger (63.4 +/- 9.5 vs. 70.1 +/- 13.7 years, p = 0.07), male (100% vs. 84%, p = 0.08) with a higher left ventricular ejection fraction (55.9 +/- 13.3% vs. 49.2% +/- 12.5%, p = 0.10), higher body mass index (28.9 +/- 4.3 vs. 26.8 +/- 3.8, p = 0.10), history of angina (76.5% vs. 48%, p = 0.07) and lower frequency of diuretic use (17.6% vs. 0%, p = 0.03). Compared to exhausted patients, non-exhausted patients had higher levels of insulin use (32% vs. 0%, p = 0.01), and tended to have valvular disease (52% vs. 23.5%, p = 0.06). Presence of moderate PB (OR = 54.35, 95% CI 2.31 - 1277.95, p = 0.01) and increases in sICAM-1 (OR = 111.99, 95% CI 1.26 - 9926.59, p = 0.04) were independent correlates of VE. Conclusion: Findings suggest that demographic and clinical characteristics may be important determinants of VE post-CABG. The modulating effect of PB on VE may be mediated by activated sICAM-1 expression.
50) Abstract 1021

SPOUSES' CARDIOVASCULAR REACTIVITY TO THEIR PARTNERS' SUFFERING
Joan K. Monin, PhD, Richard Schulz, PhD, University Center for Social and Urban Research, J. R. Jennings, PhD, Lynn M. Martire, PhD, Psychiatry, Jennifer H. Lingler, PhD, RN, FNP, Health and Community Systems, Martin S. Greenberg, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Caring for a spouse with a disease or disability can have negative consequences for the physical and psychological health of caregivers. However, there is still much debate about the specific pathways through which this occurs. Most research has focused on the physical demands of providing care, staying vigilant to care recipient needs, and dealing with problem behaviors. We tested the extent to which exposure to suffering uniquely influences cardiovascular reactivity in caregivers and the extent to which the nature of the relationship with the person who is suffering influences reactivity. Fifty three care recipients with osteoarthritis (27 women and 26 men) and their caregiving spouses participated in the study. Systolic and diastolic blood pressure (SBP, DBP) and heart rate (HR) of spouses were monitored during two tasks designed to capture responses to partner suffering. First, spouses watched their partner (and a stranger) carry heavy logs across an 8 ft space for 3 minutes, a task that elicited pain expression. Second, spouses spoke about the suffering of the partner (and also about a typical meal with the partner). Results of repeated measures ANOVAs indicated that there were significant differences between the habituation, stranger, and partner log-carrying conditions for SBP (F(2, 52)=20.95, p<.01), DBP (F(2,52)= 6.45, p<.01), and HR (F(1,44)=8.60, p<.01). As hypothesized, planned contrasts revealed that reactivity was higher in response to watching stranger pain compared to the habituation stimulus (F(1, 52)=12.89, p<.01 for SBP, F(1,44)=8.34, p<.01 for HR), and reactivity was higher in response to watching partner pain compared to stranger pain (F(1,52)=11.34, p<.01 for SBP; F(1,52)=6.67, p<.01 for DBP). T tests also revealed that reactivity was higher in response to talking about partner suffering compared to talking about a typical meal (t(51)=2.46, p<.05 for SBP; t(51)=2.23, p<.05 for DBP). These findings suggest that heightened physiological stress caused by exposure to the suffering of a loved one may be one pathway to increased risk for cardiovascular disease for caregivers.

51) Abstract 1767

NEGATIVE AFFECT FACTORS AND CORONARY ARTERY CALCIFICATION IN RHEUMATOID ARTHRITIS: THE MODERATING ROLE OF DAILY HASSLES
Phillip J. Quartana, Ph.D., Psychiatry and Behavioral Sciences, Jon T. Giles, MPH, Joan M. Bathon, M.D., Rheumatology, Johns Hopkins University School of Medicine, Baltimore, MD

Rheumatoid arthritis (RA) is associated with heightened cardiovascular morbidity and mortality. Associations of negative affect variables with subclinical markers of cardiovascular disease (CVD) risk have not been studied in RA. In light of the role of anxiety, depression and anger in CVD in non-RA populations, we sought to examine the degree to which these factors contributed to coronary artery calcification (CAC), a subclinical risk marker of CVD, in RA above and beyond traditional risk factors and disease duration. We also examined whether associations between negative affect factors and CAC were moderated by degree of daily hassles. RA participants (N=194; M age = 59.4; M duration = 12.4; 59.9% female; 85.8% Caucasian) completed assessments of trait anger and anxiety, depressive symptoms and daily hassles. CAC was determined using computed tomography and treated as a continuous variable (log10 transformed) in hierarchical regressions. Covariates were Education, Framingham Risk Scores, BMI and RA duration. We examined main effects of each negative affect variable, daily hassles and their interaction. Anxiety and depression scores were not related to CAC (p>.10). Interactions between anxiety and depression and hassles were nonsignificant (p>.10). Anger was related to greater CAC (beta = .15, p<.05). The Anger x Hassles effect was also significant (beta = .75, p<.05), such that at high (+1 SD) levels of hassles, anger scores were associated with greater CAC (t=2.3, p<.01). At low (-1 SD) levels of hassles, anger scores were not related to degree of CAC (t = .08, p >.10). These data reveal an association between anger and a subclinical marker of CVD in RA. Anger appears to contribute unique effects on CAC above and beyond other negative affect variables, traditional CVD risk factors and disease duration. Critically, it appears that the pathogenic effect of anger is particularly evident in the context of daily hassles. The importance of anger in shaping cardiovascular outcomes in RA requires further study.

52) Abstract 1201

ANXIETY AND RISK OF INCIDENT CORONARY HEART DISEASE: A META-ANALYSIS OF PROSPECTIVE STUDIES
Annelieke M. Roest, MSc, Elisabeth J. Martens, PhD, Peter de Jonge, PhD, Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands

Background: In contrast to other negative emotions, such as depression and anger, less research has focused on the association of anxiety with coronary heart disease (CHD). Our objective was to investigate the association between anxiety and incident CHD and to assess this association in comparison to traditional cardiovascular risk factors. Methods: A meta-analysis of references derived from MEDLINE, EMBASE and PSYCINFO (1980- May 2009) was performed without language or publication restrictions. Endpoints were cardiac death, myocardial infarction (MI) and cardiac events. The authors selected prospective studies of (non-psychiatric) cohorts of initially healthy persons in which anxiety was assessed at baseline. Results: Twenty studies reporting on incident CHD enclosed 249,846 persons with a mean follow-up period of 11.2 years. Anxious persons were at risk of CHD (hazard ratio (HR) random: 1.26; 95% confidence interval (CI): 1.15-1.39; p=0.0001) and PA cardiac death (HR: 1.48; 95% CI: 1.14-1.92; p=0.003), independent of demographic variables, biological risk factors and health behaviors. There was a nonsignificant trend for an association between anxiety and non-fatal MI (HR: 1.43; 95% CI: 0.85-2.40; p=0.180). Subgroup analyses did not show any significant differences regarding study characteristics, with significant associations for different types of anxiety, short and long-term follow-up and both men and women. Conclusions: Anxiety assessed across the lifespan is an independent risk factor for incident CHD and cardiac mortality. The strength of this association appeared to be somewhat lower compared to the effect of depression but clearly higher than that of anger. Future research should examine the association between anxiety and CHD with valid and reliable anxiety measures and focus on the mechanisms through which anxiety may affect CHD.

53) Abstract 1403

THE ASSOCIATION OF BRACHIAL FLOW AND METABOLIC SYNDROME WITH CARDIOVASCULAR RESPONSES TO PHYSICAL STRESS
A. Rossi, MBMC/Exercise Science/Psychology, E. Davies, K. L. Lavie, J Garland, A Arsenault, B Pelletier, S. L. Bacon, MBMC/Exercise Science/Psychology, Montreal Heart Institute/Concordia Uni/McGill/UQAM, Montreal, Quebec, Canada

Both metabolic syndrome (MS) and endothelial dysfunction (ED) have been implicated in the development and progression of cardiovascular disease (CVD). However, the precise mechanism by which they impact CVD is unknown and data on the synergistic or additive effects of these two variables on CVD is limited. Altered cardiovascular responses to exercise have not only been shown to predict future CVD events but are also an indicator of the state of an individual's autonomic nervous system. The current study assessed the impact of MS and brachial artery reactivity (as a proxy of ED) on peak exercise-induced cardiovascular changes. Method: A total of 309 women and men undergoing a standard nuclear medicine exercise stress were assessed for MS (using American Heart Association guidelines). All patients underwent a Forearm Hyperaemic Reactivity test, which measures brachial artery reactivity, and were considered to have dysfunctional reactivity if their Relative Uptake Ratio (RUR) was < 3.55. Blood pressure (BP) and heart rate (HR) were measured at rest and at peak exercise during the stress test. Reactivity was calculated as the difference between peak and resting measures. Results: Analyses, controlling for age, sex, resting HR, total METS, and presence of CVD, revealed a main effect of MS (F=5.70, p=0.018) and RUR (F=6.81,
PURPOSE: This study examined the associations between a number of analyses to test the univariate associations between log-transformed lipids, and pressure in the normal range. We first conducted regression (SD=7.1) years, BMI of 25.6 (SD=4.8), and average fasting glucose, demographic, biological, and psychosocial factors and the Stockholm Female Coronary Risk Study. They were generally healthy SAMPLE AND METHODS: Participants were 300 women from the with CRP after controlling for demographic and biological covariates. FL, Kristina Orth-Gomer, MD, Public Health Sciences, Karolinska Institutet & Free and Humboldt University, Stockholm, Sweden PURPOSE: This study examined the associations between a number of demographic, biological, and psychological factors and the inflammatory marker of C-reactive protein (CRP) in a group of 300 generally healthy women. Specifically, we were interested in whether stressful life events, depression, and anger were significantly associated with CRP after controlling for demographic and biological covariates. SAMPLE AND METHODS: Participants were 300 women from the Stockholm Female Coronary Risk Study. They were generally healthy and free of chronic or severe health conditions, with a mean age of 56 (SD=7.1) years, BMI of 25.6 (SD=4.8), and average fasting glucose, lipids, and pressure in the normal range. We first conducted regression analyses to test the univariate associations between log-transformed CRP and each demographic, biological, and psychosocial variable that has been shown to be related to CRP in the literature. After identifying the significant demographic, biological, and psychosocial correlates of CRP, we tested their significance in multivariate models. RESULTS: In univariate analyses, age, socioeconomic status, marital status, BMI, HDL and LDL cholesterol, and blood pressure were not significantly related to CRP, whereas higher fasting glucose (beta=-.36, p<.001), lower apolipoprotein A1 (Apo A1) (beta=-.26, p<.001), and greater waist circumference (beta=.13, p=.024) were significantly associated with CRP. In psychological factors, anger expression (beta=.15, p=.013) and number of stressful life events (beta=.20, p<.001) were significantly associated with CRP, while depression (beta=.11, p=.062) was marginally associated. In the multivariate model, in addition to fasting glucose (beta=.34, p<.001) and Apo A1 (beta=-.17, p=.001), stressful life events (beta=.19, p=.001) remained a significant predictor of CRP. Anger (beta=.09, p=.100) became marginally associated, and waist circumference was no longer associated with CRP. CONCLUSION: Stress life events, and anger to a lesser extent, but not depression, appear to be independently associated with CRP. Anger (b=.09, p=.100) was marginally associated with CRP, while depression (b=.11, p=.062) was not significantly associated with CRP. In psychological factors, anger expression (b=.15, p=.013) and number of stressful life events (b=.20, p<.001) were significantly associated with CRP, while depression (b=.11, p=.062) was marginally associated. In the multivariate model, in addition to fasting glucose (b=.34, p<.001) and Apo A1 (b=-.17, p=.001), stressful life events (b=.19, p=.001) remained a significant predictor of CRP. Anger (b=.09, p=.100) became marginally associated, and waist circumference was no longer associated with CRP. CONCLUSION: Stress life events, and anger to a lesser extent, but not depression, appear to be independently associated with elevated inflammation in healthier older women beyond the contributions of other demographic and biological correlates.

ANGER, HOSTILITY, AND INFLAMMATION: A POSSIBLE PATH TO CARDIOVASCULAR DISEASE RISK?

Study Purpose. Among the psychosocial factors that are believed to affect cardiovascular disease (CVD) risk, negative emotions such as anger and hostility appear to play a particularly salient role. Soluble intercellular adhesion molecule-1 (sICAM-1), a biomarker of inflammation, has been linked to increased risk of CVD, including coronary heart disease and ischemic stroke. The purpose of the current study was to investigate whether greater hostility (an antagonistic or oppositional relational view towards others) and anger (an emotional state of displeasure or belligerence) are associated with greater levels of sICAM-1 in a sample of Mexican-American women, an understudied subgroup in which CVD mortality rates are decreasing at a lower rate as compared to the general population. Sample and Methods. A community sample of 204 Mexican-American women aged 40-65 completed a battery of questionnaires, including the Spielberger Trait Anger scale and the Cook-Medley cynicism subscale. Blood plasma levels of sICAM-1, lipids, and glycosylated hemoglobin (HbA1c) were obtained through a fasting venous blood draw; anthropometric measures were also collected. Hierarchical linear regression was used to examine the main effects of hostility and anger on levels of sICAM-1. Covariates included age, socioeconomic status (education, income), nativity (U.S. or Mexico-born), body mass index (BMI), systemic and diastolic blood pressure, lipids, HbA1c, smoking, alcohol use, and exercise frequency/intensity. Summary of Results. Analyses revealed a significant main effect of hostility on sICAM-1 (B=7.74, p<0.03), but no significant effect of anger (p=.10). Hostility accounted for a significant amount of variance in sICAM-1 (R2=.204, p=.03), even after controlling for demographic, physiological, and behavioral factors. For every 1-point increase in hostility endorsed, there was an increase of 7.74 in levels of sICAM-1. Findings underscore the importance of considering inflammation as a potential mechanistic conduit by which negative emotions such as hostility affect CVD. Results also highlight that closely related negative emotions can possibly exert differential impacts on inflammatory mediators of CVD.

SOCIODEMOGRAPHIC AND CLINICAL FACTORS MAY EXPLAIN DIFFERENTIAL RESPONSE TO TREATMENT FOR POST-CABG DEPRESSION
John H. Skupik, MD, University of Pittsburgh Medical Center, Pittsburgh, PA, Beva Herbeck Belnap, DrBiHum, Internal Medicine, Patricia R. Houck, MS, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Sati Mazumdar, PhD, Biostatistics, Psychiatry, University of Pittsburgh School of Public Health, Pittsburgh, PA, Bruce L. Rollman, MD, Internal Medicine, University of Pittsburgh, Pittsburgh, PA

BACKGROUND: Depression is common following CABG surgery, and is associated with poorer clinical outcomes. The NHLBI-funded Bypassing the Blues (BB) trial of telephone-delivered collaborative care (CC) for post-CABG depression reported CC was effective for men but not women compared to primary care physician-led usual care (UC) at 8-month follow-up (HRS-D effect size men: 0.39 (p=.02); women: 0.23 (p=.20); Rollman, et al., JAMA 2009). We conducted a secondary analysis of BtB data to help explain this finding. METHODS: BB enrolled 302 depressed post-CABG patients (inpatient PHQ-2 (+)/2 week follow up PHQ-9 + 9; 41% women) who were randomized to either UC or 8 months of nurse-provided CC. Sociodemographic and clinical data were collected prior to randomization and thereafter by blinded telephone assessors. Baseline data and process measures by gender were compared using two-way ANOVA. RESULTS: Compared to men at baseline, women were more likely to live alone (24% vs. 13%), have smoked in the prior year (31% vs. 24%), meet criteria for an anxiety disorder (38% vs. 24%), have prior treatment for depression (53% vs. 38%), and have a higher cardiac ejection fraction (56% vs. 48%), but were otherwise similar (e.g., mean age 64 years, 91% Caucasian, 81% hypertensive). Among intervention patients (N=150, 46% women) at 8-month follow up, neither number of nurse case manager contacts (median 10, range 0-28) nor referrals to mental health specialists (overall 17%) differed by gender. However, women were more likely to accept antidepressant pharmacotherapy (59% vs. 43%), while men were more likely to complete the study-provided depression self-management workbook (33% vs. 56%; both p <0.05). CONCLUSIONS: Several sociodemographic and clinical characteristics may explain differential treatment response by gender to CC for post-CABG depression. Our findings should encourage further investigation of gender differences in treatment response, and if confirmed, develop more
effective, gender-specific interventions for cardiovascular patients with depression.

57) Abstract 1165

AEROBIC TRAINING DOES NOT ATTENUATE HR OR RR INTERVAL VARIABILITY RESPONSE TO CHALLENGE

Richard P. Sloan, Ph.D, Psychiatry, Richard Sloan, New York, NY, Peter A. Shapiro, M.D, Psychiatry, Ronald E. DeMeersman, Ph.D, Rehabilitation Medicine, Emilia Bagiella, Ph.D, Biostatistics, Columbia University Medical Center, New York, NY, Elizabeth N. Bronzolo, Ph.D, Psychology, St. John's University, Queens, NY, Paula S. McKinley, Ph.D, Caroline M. McKay, Ph.D, Michael M. Myers, Ph.D, Psychiatry, Columbia University Medical Center, New York, NY, Emilia Bagiella, Ph.D, Biostatistics, Columbia University Medical Center, New York, NY, Peter A. Shapiro, M.D, Psychiatry, Ronald E. DeMeersman, Ph.D, Rehabilitation Medicine, Emilia Bagiella, Ph.D, Biostatistics, Columbia University Medical Center, New York, NY.

Many studies have reported cardioprotection and a significant delay in all-cause mortality associated with higher levels of physical fitness and an increase in mortality among those who decrease exercise activity. Among the many proposed mechanisms that may link improved fitness to reduced risk of heart disease is attenuated reactivity to challenge. Evidence for this effect, however, is at best mixed, with VARIOUS studies showing that fitness is associated with reduced reactivity, increased reactivity, or no effect. To address this matter, we conducted a randomized, controlled clinical trial comparing 40 healthy, sedentary, young adults who were randomized to 12-week aerobic or strength training programs and studied before and after training and again after 4 weeks of sedentary deconditioning. The data were analyzed by performing a Group (aerobic vs. strength) by Session (study entry, post-training, and deconditioning) by Period (baseline, post-training, and deconditioning) within-subject 3-way ANOVA. We tested the hypotheses that aerobic but not strength training would lead to attenuated reactivity to challenge, and that deconditioning would reverse this attenuation. As expected, aerobic capacity increased in response to conditioning and decreased in response to deconditioning, in the aerobic but not the strength-training group. However, of 15 tests of the hypothesis that aerobic training would attenuate reactivity, 10 tests showed no significant attenuation (4 measures of RR variability, 4 of HR variability, 2 of HR and 4 of RR variability), only 2 achieved statistical significance. There were no training group differences in recovery from challenge. Stratification by sex did not alter these conclusions. These findings, from the largest study to date, raise doubts about attenuation of HR reactivity as a putative mechanism underlying the cardioprotective effects of aerobic exercise.

58) Abstract 1756

PSYCHOLOGICAL ATTITUDES AND RISK OF CHD AND MORTALITY ACROSS VARYING LEVELS OF RISK FACTOR BURDEN

Hillary A. Tindle, MD, MPH, Division of General Internal Medicine, Yuefang Chang, PhD, Neurosurgery, Karen A. Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Lesley F. Tinker, PhD, Women's Health Initiative Coordinating Center, Fred Hutchinson Cancer Research Center, Seattle, WA, Robert L. Brunner, MD, Medicine, University of Nevada School of Medicine, Reno, Nevada, Judith K. Ockene, PhD, Medicine, Preventive and Behavioral Medicine, University of Massachusetts Medical School, Worcester, MA, Milagros C. Rosal, PhD, Medicine, Preventive and Behavioral Medicine, University of Massachusetts Medical School, Worcester, MA, U. Catherine R. Messina, PhD, Preventive Medicine, Stony Brook University, Stony Brook, NY, Nancy Fugate Woods, PhD, Family and Child Nursing, University of Washington, Seattle, WA, Julie R. Hunt, PhD, Women's Health Initiative Coordinating Center, Fred Hutchinson Cancer Research Center, Seattle, WA, Judith Wylie-Rosett, EdD, RD, Epidemiology and Population Health, Albert Einstein College of Medicine, Bronx, NY, Stephanie A. Connelly, MD, Department of Preventive Medicine, University of Tennessee, Memphis, TN, Lewis H. Kuller, MD, DrPH, Department of Epidemiology, University of Pittsburgh School of Public Health, Pittsburgh, PA

Context: Psychological attitudes such as trait optimism (positive future expectations) and cynical hostility (hostility towards people) are independently related to incident coronary heart disease (CHD) and total mortality in post-menopausal women. Yet results may be complicated by varying levels of disease risk factors (RF). Methods: 97,253 post-menopausal Women's Health Initiative participants (89,259 white, 7,994 African-American, observational study and clinical trial) were free of cancer and cardiovascular disease at baseline. Optimism was assessed by the Life Orientation Test-Revised, and cynical hostility by the cynicism subscale of the Cook- Medley Questionnaire. We calculated age-adjusted rates/10,000 women of incident CHD and death, and constructed age-adjusted Cox proportional hazard models according to 5 standard RF: diabetes, hypertension, high cholesterol, smoking, and body mass index (BMI) > 25. Groups were categorized according to number of RF: 0 (23%), 1 (41%), 2 (28%), 3+ (9%). Results: Prevalence of pessimism and hostility increased with number of RF. Only 21% of women with 0 RF, vs. 31% of those with 3+ RF, were pessimists, while only 17% of women with 0 RF, vs. 30% of those with 3+ RF, had high cynical hostility. For all categories of RF, optimists (vs. pessimists) were less likely to develop CHD: 0 (23 vs. 27, age-adjusted hazard ratio (HR) 0.88); 1 (35 vs. 45, HR 0.78); 2 (61 vs. 75, HR 0.81); 3+ (100 vs. 134, HR 0.75). Optimists (vs. pessimists) were also less likely to die from any cause at all categories of RF: 0 (38 vs. 42, HR 0.91); 1 (42 vs. 54, HR 0.78); 2 (56 vs. 71, HR 0.78); 3+ (65 vs. 113, HR 0.57). Most (vs. least) cynical hostile women were more likely to die at all levels of RF: 0 (40 vs. 36, HR 1.11); 1 (54 vs. 45, HR 1.20); 2 (71 vs. 55, HR 1.56); 3+ (105 vs. 63, HR 1.67), but not to develop CHD. Conclusion: The association between attitudes and risk of incident CHD (optimism only) and total mortality (optimism and cynical hostility) is not confounded by low burden of co-morbid disease. Research should address possible direct pathophysiological mechanisms of disease.

59) Abstract 1437

A LONGITUDINAL ANALYSIS OF DEPRESSION AND ENDOTHELIAL FUNCTION IN A GROUP OF HEALTHY ADOLESCENT WOMEN

Lianne M. Tomfohr, B.A., Psychology, University of California, San Diego, La Jolla, CA, Tara M. Martin, B.A., Psychology, University of British Columbia, Vancouver, BC, Jennifer Munch, B.A., Gregory E. Miller, Ph.D., Psychology, University of British Columbia, Vancouver, BC, Canada

Purpose: Depression has been linked to increased risk of mortality and morbidity from cardiovascular disease (CVD); however, few studies have examined the relationship between endothelial function (EF) and depression in groups of healthy youth. Thus, it remains unclear the extent to which depressive symptoms are related to CVD progression in adolescence and early adulthood. Methods: To address this gap, we investigated the relationship between depressive symptoms (Beck Depression Inventory) and EF (EndoPAT2000) over time. In this study, 117 young women (baseline age range 15 - 21, M = 17.6 years) participated in 3 study visits, each spaced 1 year apart. All participants were free of acute and chronic medical illness at the time of enrollment. At each visit, participants completed questionnaires about current depressive symptoms and health practices and underwent a test of EF. Hierarchical linear modeling (HLM) was used to assess the relationship between depression and EF over the two year period. Daily smoking, average number of alcoholic drinks per week, and average amount of weekly physical activity were entered into the model as covariates. Results: Depressive symptoms and EF varied together over time. On visits where depressive symptoms were higher than normal, EF was lower than normal and vice versa (B=-.02, p=.03). The relationship was unattenuated by health practices. Depressive symptoms at baseline did not predict the trajectory of EF over time, nor did baseline EF predict the emergence of depressive symptoms. Conclusion: In this group of healthy, adolescent women depression and EF changed together over time. When depressive symptoms were higher than normal, EF was negatively impacted. However, when depressive symptoms remitted, EF followed suit. Findings potentially highlight a period where the relationship between depression and EF can be interrupted without longstanding cardiovascular consequences.
DEPRESSIVE SYMPTOMS AND B-TYPE Natriuretic Peptide IN INDIVIDUALS WITH AND WITHOUT HEART FAILURE
Krista C. Van den Broek, PhD, CoRPS - Medical Psychology, Tilburg University, Tilburg, The Netherlands, John S. Gottsdiner, MD, FACC, Stephen L. Seliger, MD, Department of Medicine, Robert H. Christenson, PhD, Department of Pathology, Christopher R. deFilippi, MD, FACC, Willem J. Kop, PhD, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD

Purpose of the study: Both depression and B-type natriuretic peptide (BNP) predict heart failure (HF) progression, but the association between depression and natriuretic peptides is unclear. Depression may be associated with adverse outcomes via increased levels of BNP. The objective of this study was to determine the relationship between depression and amino-terminal pro-BNP (NT-proBNP) in individuals with and without HF from a sample of community-dwelling adults.

Methods: Subjects were participants in the Cardiovascular Health Study without HF at baseline (N=4,114; mean age 72.9±5.5 years; 40.8% male) and with HF at baseline (N=208; mean age 75.2±6.1 years; 49.0% male). Depression was measured using the Center for Epidemiologic Studies Short Depression Scale (CES-D) and NT-proBNP using the Elecsys 2010 system (Roche Diagnostics, Indianapolis, Indiana). Results and Conclusions: Depression was weakly positively correlated with NT-proBNP (r=0.3, p=0.04) in non-HF participants. A similar trend was found when comparing depressed (CES-D ≥ 8) and non-depressed non-HF participants (CES-D < 8) on mean NT-proBNP levels (median=118.3, IQR=61.9-241.9 pg/mL versus median=109.6, IQR=56.2-218.2 pg/mL, t(412)=1.82, p=0.069).

The CES-D item reflecting energy depletion (i.e., ‘everything I do is an effort’) was associated with NT-proBNP levels (beta=0.46, t=2.48, p=0.013). The association between elevated depression and NT-proBNP in multiple linear regression analysis lost significance when adjusting for demographics (depression beta=0.03, p=0.70) and remained non-significant when additionally adjusting for cardiac risk factors, health behaviors, and indices of cardiac disease (beta=0.01, p=0.61). In patients with HF, at baseline, no associations were found between depression and NT-proBNP (r=0.001, p=0.99). Similar, mean NT-proBNP levels did not differ between depressed and non-depressed HF patients (median=496.0, IQR=158.6-1632.0 pg/mL versus median=519.6, IQR=148.4-1715.5 pg/mL, t(206)=0.20, p=0.85). In multivariable analyses, these associations remained non-significant. These results indicate that depression is not associated with NT-proBNP, which is in line with the majority of previous studies on depression and NT-proBNP. Other biobehavioral mechanisms linking depression to adverse outcomes should be explored in future research.

60) Abstract 1642

FATALISM AND PHYSIOLOGICAL DYSREGULATION ASSOCIATED WITH CUMULATIVE STRESS IN MEXICAN AMERICAN WOMEN OF VARIED SOCIOECONOMIC BACKGROUNDS

Background: Fatalism (Roth, 2005) refers to the belief that life events and occurrences that form an individual life are determined by fate. Fatalism is highly prevalent among Mexican Americans and is generally viewed as maladaptive coping mechanism associated with poor health outcomes. However, socially centered perspectives on fatalism stress that among the socioeconomically disadvantaged, fatalism may represent a means to reduce stress and manage uncertainty in the face of adversity (Espinoza de los Monteros et al., 2015).

Methods: A sample of 208 women (mean age = 49.82; Education level: Graduate school diploma/GED = 45 %; median annual income = 39,000) completed a battery of self-report questionnaires including the fatalism subscale of the Multiphasic Assessment of Cultural Constructs (Cueuier et al, 1995). Participants also underwent assessment of allostatic load represented by a composite of neuroendocrine, metabolic, cardiovascular, and inflammatory markers. Hierarchical linear regression analyses indicated that women who endorsed more fatalistic beliefs evidenced higher allostatic load scores (B = .142, R2 change = .020, p <.05) after accounting for age, menopausal status, and socioeconomic position (i.e., education and income). Socioeconomic position did not moderate this relationship. Conclusions: Fatalistic beliefs were associated with stress related to physiological dysregulation in Mexican American women across socioeconomic levels. Increased physiological vulnerability to stress may represent one pathway linking fatalistic beliefs to health outcomes among Mexican American women. Future research should consider the role of fatalism in explaining the health disparities experienced by this at risk population.

62) Abstract 1581

EFFICIENT AND COST-EFFECTIVE ESTIMATION OF THE INFLUENCE OF RISK VARIABLES ON RESPIRATORY SINUS ARRHYTHMIA
Victoria B. Egizio, M.S., Psychology, Michael Eddy, B.S., Matthew Robinson, B.S., Psychiatry, J R Jennings, Ph.D., Psychology & Psychiatry, University of Pittsburgh, Pittsburgh, PA

The stress and health research community is interested in the vulnerability to stress may represent one pathway linking fatalistic beliefs to health outcomes among Mexican American women. Future research should consider the role of fatalism in explaining the health disparities experienced by this at risk population.
patterns of salivary DHEA secretion in healthy female adolescents: relationships with salivary cortisol and developmental markers. The aim of this study was to investigate secretory patterns of the hormones DHEA and cortisol in a sample of healthy female adolescents, and to examine relationships between these hormones and developmental markers. Sixty-one healthy female adolescents aged 9 to 18 years completed salivary samples at awakening, 30 min and 12 h-post awakening on two consecutive weekdays. Five participants had undetectable DHEA at all time points and were therefore classified as pre-adrenarche. The remaining 56 participants exhibited the typical DHEA at all time points and were therefore classified as pre-adolescents. The observed slopes from the respiratory belt and pneumotachography-derived regression equations were positively correlated ($r = 0.93, p < 0.01$); correlations were similar across 2, 4, and 6-minute time courses. These results indicate that the correction procedure may be successfully approximated using the more cost-effective respiratory belt in place of the rather expensive and less physically comfortable pneumotachograph. They also suggest that this technique can be used in experimental protocols of varying length. Our results may provide methodological alternatives to the stress and health research community.

64) Abstract 1532

PATTERNS OF SALIVARY DHEA SECRETION IN HEALTHY FEMALE ADOLESCENTS: RELATIONSHIPS WITH SALIVARY CORTISOL AND DEVELOPMENTAL MARKERS

Andrea Oskis, BSc, Angela Clow, PhD, Lisa Thorn, PhD, Catherine Loveday, PhD, Psychology, Frank Hucklebridge, PhD, Human and Health Sciences, University of Westminster, London, UK.

Patterns of salivary DHEA secretion in healthy female adolescents: relationships with salivary cortisol and developmental markers. The aim of this study was to investigate secretory patterns of the hormones DHEA and cortisol in a sample of healthy female adolescents, and to examine relationships between these hormones and developmental markers. Sixty-one healthy female adolescents aged 9 to 18 years completed salivary samples at awakening, 30 min and 12 h-post awakening on two consecutive weekdays. Five participants had undetectable DHEA at all time points and were therefore classified as pre-adrenarche. The remaining 56 participants exhibited the typical circadian rhythms for both cortisol and DHEA. Mean morning levels of DHEA tended to be associated with the increase in cortisol levels in the first 30 minutes post-awakening ($r=0.255, p = 0.057$). There was also a trend towards a positive correlation between DHEA and cortisol in the evening sample collected 12 hours after awakening ($r=0.233, p=0.084$). However, DHEA secretion could be distinguished from cortisol in three main ways: (1) the lack of any dynamic increase in DHEA following awakening ($F(1, 55)=0.671, p>0.05$); (2) the higher across-sampling day correlations for morning DHEA ($r=0.829, p=0.0005$) and somewhat more moderate across-sampling day correlations for morning cortisol ($r=0.468, p=0.0005$); and (3) a correlation between morning and evening levels of DHEA ($r=0.559, p=0.0005$) but not for cortisol ($r=0.036, p=0.05$). The five pre-adrenarche participants evidenced a comparable first cortisol sample and awakening cortisol dynamic to the post-adrenarche group. Morning and evening DHEA concentrations were associated with increasing age, BMI and menarche status, however cortisol secretion, as assessed at the same sampling points, did not exhibit any relationships with developmental markers. The patterns of salivary secretion and dissociation between DHEA and cortisol secretion provide an insight into the regulatory mechanisms of DHEA and cortisol in the immediate post awakening period. These data also reveal the importance of accounting for developmental markers when investigating DHEA in an adolescent sample.

65) Abstract 1638

TREAT NEGATIVE AFFECT IS ASSOCIATED WITH EARLY ANTIBODY RESPONSE TO HEPATITIS B VACCINATION

Anna L. Marsland, Ph.D., Jackie Fury, BS, Judith E. Carroll, MS, Are A. Prather, MS, Psychology, University of Pittsburgh, Pittsburgh, PA, Matthew F. Muldoon, MD, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, Sheldon Cohen, Psychology, Carnegie Mellon University, Pittsburgh, PA.

A growing literature suggests that psychosocial factors contribute to variability in antibody response to immunization, with the majority of findings showing an inverse association of trait negative affect with magnitude of secondary antibody responses. In contrast, recent animal and human evidence shows that primary immune responses to a novel antigen may be enhanced by exposure to negative emotional states. To further explore the impact of psychosocial factors on primary and secondary antibody responses to a novel antigen, we administered the standard course of 3 hepatitis B vaccinations series to 126 relatively healthy, non-smoking, mid-life adults (mean age = 50 (SD = 5.3) years, 59% female, 15.9% African American, 84.1% European American) and assessed their antibody responses at 4 timepoints, on vaccination days 2 and 3 (prior to receiving the next dose of vaccine) and at 6- and 12-month follow-up. Prior to the first dose of vaccine, participants completed the Profile of Mood States scale, rating the accuracy of the adjectives as self descriptors. As expected, only 25% of the sample mounted detectable levels of antibody following the first dose of vaccine. Individuals who mounted an early antibody response described themselves as significantly higher in trait anger and anxiety and lower in trait calm and well being than their peers who did not mount a detectable initial response ($p<.05$). Contrary to expectations, we did not observe any associations of trait negative emotionality with magnitude of antibody response to doses 2 and 3 of the vaccine; however, individuals who endorsed higher levels of trait negative emotionality, including depression and anxiety, showed larger declines in antibody levels from 6 to 12 months after the vaccination. All findings were independent of age, gender and body mass index. These results suggest that trait negative affect may be associated with an enhanced primary immune response to antigen challenge, but decreased longer term maintenance of the antibody response. Our findings are consistent with recent theories that negative affect may be of short-term survival advantage.
STATE VARIATION IN THE CORTISOL AWAKENING RESPONSE: INTRA-INDIVIDUAL RELATIONSHIPS WITH SLEEP AND PSYCHOSOCIAL VARIABLES
Tobias Stalder, PhD, Psychology, Dresden University of Technology, Dresden, Germany, Phil Evans, PhD, Psychology, Frank Hucklebridge, PhD, Human and Health Sciences, Angela Clow, PhD, Psychology, University of Westminster, London, United Kingdom

The current study examined intra-individual relationships between the cortisol awakening response (CAR) and sleep-related and state psychosocial variables in a pooled design study. 12 healthy female participants (age range: 22-41 yrs.) were examined on 12 study days each, occurring at 3-day intervals. Quantitative diaries capturing sleep-related and psychosocial state variables were filled out on the evening before each study day as well as 45 min post-awakening on the study day. On each study day, salivary free cortisol was determined at 0, 15, 30, and 45 min post-awakening. Relationships between cortisol measures and psychosocial variables were analysed using dummy-variable linear regression models. Intra-individual variability in the CAR (area under increase curve; AUCI) was found to be inversely related to simultaneous variability in awakening time (ß = -.29, p < .005) and positively related to variability in adverse psychosocial state of the day. On each study day, levels of the CAR were also found to decrease linearly over the study period (ß = -1.9, p < .01) and this time trend could not be explained through a relationship between the CAR and any of the examined variables.

FUNCTIONAL CONNECTIVITY OF THE CINGULATE CORTEX JOINTLY COVARIES WITH AGREEABLENESS AND STRESSOR-EVOKED CARDIO-VASCULAR REACTIVITY
John P. Ryan, Ph.D., Lei K. Sheu, Ph.D., Peter J. Gianaros, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA

Exaggerated cardiovascular reactivity to stress is a suspected risk factor for cardiovascular disease. Cumulative neuroimaging evidence demonstrates that individual differences in stressor-evoked cardiovascular reactivity covary with the functionality of a distributed network of corticolimbic brain systems, particularly those encompassing areas of the cingulate cortex. What remains unclear, however, are how dispositional factors associated with cardiovascular risk interact with cingulate and corticolimbic functionality in the prediction of stressor-evoked cardiovascular reactivity. Accordingly, we tested the associations between (i) a particular dispositional risk factor, Agreeableness, (ii) resting state functional connectivity within the cingulate cortex, and (iii) stressor-evoked blood pressure (BP) reactivity. Specifically, participants (N=39, 19 men, aged 20-37 yrs) completed a resting functional connectivity MRI protocol, followed by two tasks that engaged cortisol eliciting BP reactivity. We hypothesized that Agreeableness, which is associated with emotional reactions to conflict, would covary with BP reactivity. In confirmation, Agreeableness covaried positively with BP reactivity across individuals (r=0.41, P<0.05). Moreover, seed-based connectivity analyses demonstrated that a more positive coupling between the posterior cingulate (BA31) and an area localized to the perigenual anterior cingulate (BA32) covaried positively with Agreeableness, t(37)=3.33, P<0.005, k=24, x,y,z = -4,4,16. Comparable connectivity analyses also demonstrated that a more positive coupling between BA31 and an overlapping perigenual cingulate area further covaried positively with BP reactivity, t(37)=3.56, P<0.005, k=34, x,y,z = -2,4,16. Finally, mediation analyses of extracted connectivity values demonstrated that BA31-BA32 coupling statistically mediated the association between Agreeableness and BP reactivity across individuals (r=7.22, P<0.05, by distribution of products test). Functional connectivity within the cingulate cortex appears to link dispositional factors with stressor-evoked cardiovascular reactivity.

THE RELATION BETWEEN PERCEIVED STRESS AND HEALTH RELATED QUALITY OF LIFE AMONG HEALTHY OLDER ADULTS
Megan M. Hosey, MA, Psychology, University of Maryland, Baltimore County, Baltimore, MD, Leslie E. Katz, MD, PhD, Gerontology, University of Maryland Medical Center, Baltimore, MD, Shari R. Waldstein, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD

It is known that perceived stress (PS) is associated with several poor health outcomes. However, few studies have examined the relation between PS and health related quality of life (HRQoL) in the absence of acute and chronic illness. The purpose of this study was to examine the relation between PS and HRQoL in older adults free of major medical, neurological, and psychiatric diseases. Participants were 132 adults [mean age = 66.3(6.7), 54.5% male, mean education = 16.4(2.7 years, 85.6% Caucasian] involved in a study of cardiovascular risk factors, brain, and cognitive function. All participants completed the Medical Outcomes Survey Short Form-36 (SF-36) Health Survey, the most commonly used measure of HRQoL, and the Perceived Stress Scale, a frequently used self-report measure of stress. Hierarchical regression analyses were conducted. Covariates including age, sex, race, average systolic blood pressure, body mass index and scores on the Beck Depression Inventory were entered at the first step and PS was entered at the second step. These analyses revealed significant relations between PS and the Mental Health Component of the SF-36 (R2 change = .14, b=-.43, p=.001) and the Physical Component Score of the SF-36 (R2change = .08, b=-.27, p=.05) such that higher levels of PS were associated with lower levels of HRQoL. Further examination of SF-36 subscales revealed significant relations between higher PS and...
lower vitality (R2change = .07, b=-.15, p<.01), role functioning-emotional (R2change = .04, b=-.04, p<.01), mental health (R2change = .06, b=-.19, p<.03) and bodily pain (R2change = .04, b=-.05, p<.05). Taken together these results suggest that PS is negatively related to HRQoL, particularly constructs related to mental health and pain.

71) Abstract 1299

A SAFE HAVEN: RESPONSIVE SOCIAL SUPPORT BUFFERS CORTISOL REACTIVITY AND IMPROVES PSYCHOSOCIAL RESPONSES TO STRESS
Heidi S. Kane, PhD, Psychology, University of California Los Angeles, Los Angeles, CA, Lisa Jaremka, C.Phil., Nancy L. Collins, PhD, Psychology, University of California Santa Barbara, Santa Barbara, CA

It is widely assumed that social support buffers people from the negative effects of stress. However, experimental studies have revealed weak and even contradictory evidence for the benefits of social support on both physiological reactivity and psychological responses to stress. Based on attachment theory, we argue that social support should have positive effects on the impact of and recovery from a stressful experience, but that the effectiveness of a support effort will depend on the degree to which it is optimally responsive to the needs of the support-recipient. In this experimental study, we investigated the impact of social support from a romantic partner on physiological reactivity (as measured by salivary cortisol) and psychological responses to a stressful laboratory speech task. Sixty-three dating couples who had been dating for at least 6 months came to lab. One member of the couple was assigned to the role of the support-recipient and was asked to complete a stressful speech task. The other was assigned to the role of the caregiver. Mean age of support-recipient was 20.46 (range=18-35). In the experimental condition (n=32), support-recipients received two responsive messages from their partners (before and after the speech task). In the control condition (n=31), support-recipients did not receive any messages and were unaware that messages could be sent. An analysis of variance (controlling for baseline cortisol and gender) revealed that participants who received responsive support had lower cortisol levels during their speech (p=.023) and marginally lower cortisol levels after their speech (p=.065). Analysis of variance also indicated that participants who received responsive support experienced better psychological recovery after the speech task. For example, thirty minutes after the speech they reported higher positive mood (p = .019), more positive ruminations (p>.005), and had marginally higher state self-esteem (p=.07). In summary, responsive support from a romantic partner reduced physiological reactivity to stress and promoted psychological recovery.

72) Abstract 1298

NONLINEAR ASSOCIATIONS BETWEEN TRAJECTORIES OF TOTAL CHOLESTEROL AND COGNITIVE CHANGE OVER TIME: WHAT’S GOOD FOR THE BRAIN MAY NOT ALWAYS BE GOOD FOR THE BRAIN
Carrington R. Wendell, M.A., Shari R. Waldstein, Ph.D., Psychology, University of Maryland, Baltimore County, Baltimore, MD, Luigi Ferrucci, M.D., Ph.D., Alan B. Zonderman, Ph.D, Intramural Research Program, National Institute on Aging, NIH, Baltimore, MD

A sparse prior literature has identified inconsistent longitudinal associations between total cholesterol and cognitive decline. Here we examined prospective relations of coincident trajectories of total cholesterol and cognitive function among persons free of stroke, dementia, and other neurological disease. Up to 1,500 participants from the Baltimore Longitudinal Study of Aging (aged 19 to 93, 51% male, 79% white) underwent fasting cholesterol measurement and completed tests of learning and memory, attention, perceptuomotor speed, confrontation naming, executive functions, and cognitive screening measures on up to 12 occasions (M=3.3, SD=2.0) over up to 19 years (M=6.6, SD=5.3) of follow-up. Mixed-effects regression models were adjusted for age, sex, race, education, mean arterial pressure, body mass index, cardiovascular disease, lipid lowering medication use, smoking, alcohol use, and depressive symptoms. Analyses revealed significant longitudinal associations between quadratic total cholesterol and performance on measures of global mental status, attention, verbal learning, executive function, and confrontation naming (all p's<.05). In general, higher total cholesterol was associated with poorer mid-life cognitive performance, but better late-life cognitive performance. Linear models also revealed lower total cholesterol to be consistently associated with accelerated decline in performance on measures of visual memory. Results indicate differential (i.e., nonlinear vs. linear) longitudinal relations of total cholesterol to cognitive function across different domains of function. Such complex patterns may, in part, explain existing inconsistencies in the cholesterol-cognition literature. Both high and low total cholesterol deserve continued consideration as risk factors for detrimental cognitive changes across the life span. This research was supported in part by the Intramural Research Program of the NIH, National Institute on Aging.

73) Abstract 1658

EMOTIONAL APPROACH COPING: ASSOCIATION WITH EXPECTANCIES AND APPRAISALS IN AN ACUTE STRESSOR CONTEXT
Vanessa Juth, B.A., Sally Dickerson, PhD, Sue Lam, M.A., Peggy Mycek Zoccola, M.A., Psychology and Social Behavior, University of California Irvine, Irvine, CA

Emotional Approach Coping (EAC), which involves the identification, processing and expression of emotion, has been associated with improved psychological, emotional, and physical well-being. However, EAC has primarily been examined in medical contexts (e.g., breast cancer patients) or clinical interventions (e.g., couples therapy); less is known about how EAC may relate to stressors in healthy populations, and further, whether benefits are due in part to overlap with other coping strategies. 124 healthy undergraduates completed the EAC questionnaire (Stanton et al., 2000) and other personality measures during a baseline period. Participants were then told that they would be delivering a speech in front of an evaluative audience. After a 10-minute preparation period, participants delivered a 5-minute speech. Expectancies were assessed after the task instructions were given, and appraisals were assessed immediately after the speech. Results showed that EAC correlated with other positive coping and personality traits. 124 healthy undergraduates completed the EAC questionnaire (Stanton et al., 2000) and other personality measures during a baseline period. Participants were then told that they would be delivering a speech in front of an evaluative audience. After a 10-minute preparation period, participants delivered a 5-minute speech. Expectancies were assessed after the task instructions were given, and appraisals were assessed immediately after the speech. Results showed that EAC correlated with other positive coping and personality traits. The benefits of EAC on cognitive expectancies and appraisals may be partially attributed to a positive personality profile found among individuals who employ this type of coping strategy. Future research should integrate physiological and psychological measures into the study of EAC and stress responses to provide further insight on the mechanisms through which EAC could lead to improved well-being.

74) Abstract 1794

WAYS OF COPING ON THE ANXIETY LEVELS AND DIURNAL CORTISOL PATTERNS OF OLDER ADULT CAREGIVERS
Ronald E. Freche, B.A., Guido G. Urizar, Ph.D., Psychology, California State University, Long Beach, Long Beach, CA, Natara Garovoy, Ph.D., Psychology, Cynthia M. Castro, Ph.D., Abby C. King, Ph.D., Medicine, Stanford University, Stanford, CA

The variety of coping styles that older adults use to deal with their day to day stressors can produce a wide range of mood and health outcomes. This study examined whether coping was associated with the anxiety and diurnal cortisol levels of 54 older adults (54% caregivers; 59% women) as measured by the coping appraisal subscale of the Life Events Scale. For a subsample of caregivers (n = 25), coping style was also assessed via the Revised Ways of Coping Questionnaire. Anxiety levels were assessed via the Taylor Manifest Anxiety Scale (TMAS). Salivary cortisol samples were collected four times/day (awakening, 30
minutely post-awakening, 4pm, and bedtime) over a 48 hour period. Coping appraisals did not have a significant effect on anxiety or cortisol, controlling for caregiver status and gender. For caregivers, as avoidant and emotion-based styles of coping increased (Avoidance: R² = .37, p < .01; Wishful Thinking: R² = .27, p < .05; Blamed Self: R² = .25, p < .05; Blamed Others: R² = .27, p < .05) anxiety also increased, controlling for gender. However, as adaptive coping style increased anxiety decreased (Counting Ones'/s Blessings: R²= .25, p < .05). Despite having higher cortisol levels (R² = .26, p < .05), caregivers that used religious coping when asked to have more normal diurnal cortisol patterns (R² = .23, p = .05). Results suggest that caregivers who use avoidant coping are more likely to experience higher levels of anxiety. However, caregivers who use religious based coping styles are able to maintain normal cortisol patterns. These findings suggest that stress management interventions should consider ways of increasing problem-solving coping techniques while also promoting spiritual and religious ways of coping among older adult caregivers.

75) Abstract 1254

REACTIVITY TO A SOCIAL EVALUATIVE STRESSOR: THE EFFECT OF CAREGIVING FOR A SPOUSE WITH DEMENTIA

Jenifer H. R. Piasecki, Human Development and Family Studies, Pennsylvania State University, University Park, PA, Peggy M. Zoccola, M.A., James Mackay, M.A., Susan T. Charles, Ph.D., Sally S. Dickerson, Ph.D., Psychology and Social Behavior, University of California, Irvine, Irvine, CA

The burden of caregiving for a spouse with dementia is well-documented. Compared to non-caregivers, caregivers are at an increased risk for depression (e.g., Aneshensel), morbidity (e.g., Vitaliano, Young, & Zhang, 2004) and early mortality (e.g., Schulz & Beach, 1999). These adverse outcomes may be the result of caregivers' increased exposure to stressors, and to their increased reactivity when stressors do occur. It is also possible, however, that caregivers may be more reactive to stressors simply because the stressors they encounter are more severe than those encountered by non-caregivers. To examine this possibility, a recent study examined the relative reactivity of caregivers and non-caregivers appraised and reacted physiologically to the same social evaluative stressor. Participants (n = 87) completed the Trier Social Stress Test (TSST) while having their blood pressure monitored. Before and after the task, they also reported their appraisals of the TSST. Caregivers did not differ from non-caregivers in their baseline systolic blood pressure (t(69) = 1.83, n.s.), nor did they differ in their pre- or post-task appraisals of the TSST (all p's > .05). During the task, however, systolic blood pressure was significantly higher among caregivers than it was among non-caregivers (F(1,558) = 4.0, p < .05). These results demonstrate that even when faced with the same stressor, caregivers are more physiologically reactive than are non-caregivers. They also indicate that a heightened physiological response is not necessarily indicative of how people under chronic stress cognitively appraise an acute stressor before or after it occurs. The timing of appraisals may thus be important to take into account when examining the associations between cognitive and physiological processes.

76) Abstract 1635

CAFFEINE DURING PREGNANCY IS ASSOCIATED WITH INFANT STRESS AND IRRITABILITY AND WORSENS EFFECTS OF PRENATAL TOBACCO

Meaghan E. McCallum, BA, Laura R. Stroud, PhD, Centers for Behavioral & Preventive Medicine, The Miriam Hospital, Brown Alpert Medical School, Providence, RI

Maternal perinatal caffeine use is associated with adverse neonatal health outcomes and neurobehavioral deficits. However, prospective studies including multiple neonatal assessments are lacking. Further, caffeine and tobacco use commonly co-occur, and preclinical studies have shown potentiating effects of caffeine on offspring outcomes from prenatal nicotine. Yet, we know of no human studies investigating combined perinatal caffeine and tobacco exposure. The present study is the first prospective study (ongoing) of effects of maternal caffeine and tobacco on repeated neonatal neurobehavioral outcomes. Participants were 83 healthy mother-infant pairs from an ethnically-diverse, low-income sample (59% smokers). Mothers were interviewed prospectively over pregnancy regarding tobacco and caffeine use with Timeline Followback methodology. The NICU Network Neurobehavioral Scale (NNNS) was administered to infants 7 times over the first month. Preliminary analyses revealed significant dose response effects of caffeine and caffeine X tobacco interactions in predicting NNNS subscale scores in the early (days 0-5) and later (days 10-30) neonatal periods. Increased caffeine use was associated with greater signs of stress/abstinence in the early neonatal period (p < .052), and increased asymmetrical reflexes, greater need for external intervention, increased excitability, and worse self-regulation in the later neonatal period (p < .05). Significant caffeine X tobacco interactions revealed that heavy caffeine consumption along with nicotine use led to greater signs of stress and increased non-optimal reflexes in the neonatal period (p < .05) and increased hyperreactivity (p < .004) in the later neonatal period. Preliminary results reveal a profile of poor neurologic functioning and increased stress signs in the early neonatal period, highlighting the possibility of acute infant withdrawal from caffeine. Continued irritability and difficulty in self-soothing in the later neonatal period suggest persistent neurobehavioral dysregulation which may set the stage for more difficult maternal-infant interactions. Infants exposed to caffeine and tobacco may be at greatest risk.

77) Abstract 1284

DEVELOPMENT AND PRELIMINARY RESULTS OF A POSTPARTUM STRESSORS MEASURE

Elyse Park, PhD, Psychiatry, Harvard Medical School, Boston, MA, Christina Psaras, PhD, Psychiatry, Amy Stagg, MD, Obstetrics and Gynecology, Marissa Alert, BA, Kallah Hayden-Karp, Benson-Henry Institute for Mind Body Medicine, Massachusetts General Hospital, Boston, MA, Gregory Frickhione, MD, Psychiatry, Herbert Benson, MD, Harvard Medical School, Boston, MA

Purpose of Study: During the postpartum period women may experience increased stress and decreased capacity for coping with stressors. Stress is a risk factor for postpartum mood and other adverse maternal and infant outcomes, yet a measure of postpartum stress does not exist. Detection of elevated stress at the six-week postpartum visit is critical, since it is often the only opportunity for a new mother to be evaluated. Our objective is to present preliminary results of our postpartum stressors measure. Study Sample and Methods: We conducted a comprehensive literature review, developed a 16-item measure, and pilot tested it with 65 postpartum women at Brigham and Women's Hospital in Boston, MA. Based on these results, we developed a revised 24-item measure; women were asked to rate stressors ('not at all', 'little', 'moderately', or 'very' stressful) experienced since they had their baby. A convenience sample of 71 women at their 6-week postpartum visit at Massachusetts General Hospital in Boston, MA completed it. Item analyses were conducted; 2 items were eliminated based on missingness. Remaining items were summed to create a total stressors score. To explore convergent validity, the stressors score was correlated with the 4-item Perceived Stress Scale (PSS-4). The stressors score was tested for bivariate associations with depression (Patient Health Questionnaire-2), social support (3 items from the MOS Social Support Scale), and weekly hours walking. Summary of Results: The mean age was 32.8 years (sd=5.0); 74% were non-Hispanic White. Half were primiparous. The most frequently endorsed (very/moderately stressful) stressors were 'lack of sleep' (33.8%), 'financial worries' (30.0%), 'adapting to new routines' (29.6%), and 'breastfeeding' (29.5%). The measure demonstrated good reliability (alpha= 0.88) and concurrent validity with the PSS-4. (Pearson r=0.58; p<0.001). The stressors total score was negatively associated with social support (p<0.001) and weekly hours walking (p<0.02); it was positively associated with depressed mood (p<0.001). In conclusion, preliminary results suggest that the postpartum stressors measure developed is reliable, valid, and associated with postpartum mood and stress management behaviors.
78) Abstract 1491

CAN WE DIAGNOSE SOMATOFORM DISORDERS USING ALL BODILY SYMPTOMS RATHER THAN "MEDICALLY UNEXPLAINED" SYMPTOMS?
Francis Creed, MD, Barbara Tomenson, MSc, Psychiatry Research Group, University of Manchester, Manchester, UK

Can we diagnose somatoform disorders using all bodily symptoms rather than 'medically unexplained' symptoms? Francis Creed & Barbara Tomenson on behalf of the DSM-V population project group

Background: The somatoform disorders have been largely ignored by North American psychiatric epidemiologists for the last 20 years partly because of the difficulty of measuring 'medically unexplained' symptoms. The latter are required to diagnose DSM-IV somatisation disorders but their measurement is unreliable. Clinical studies suggest that a simple measure of all bodily symptoms predicts outcome satisfactorily. As part of the preparation for DSM-V, we assessed whether measuring all bodily symptoms by self-administered questionnaire was equally useful. Method: Data were analyses from population-based samples in Germany, Netherlands, and Norway which used both self-administered questionnaires and CIDI interviews (total n=6,156). We compared the correlations of medically explained (current) and unexplained (lifetime) symptoms. Results: In all surveys the number of all reported bodily symptoms was associated with whether measuring all bodily symptoms by self-administered questionnaire is equally useful. Method: Data were analyses from population-based samples in Germany, Netherlands, and Norway which used both self-administered questionnaires and CIDI interviews (total n=6,156). We compared the correlations of medically explained (current) and unexplained (lifetime) symptoms. Results: In all surveys the number of all reported bodily symptoms was associated with whether measuring all bodily symptoms by self-administered questionnaire is equally useful.

79) Abstract 1577

PERSONALITY PREDICTORS THAT DISCRIMINATE MASKED HYPERTENSION FROM "TRUE" HYPERTENSION
Regina Espinosa, MSc, Nicholas M. Rockower, MPH, Biobehavioral Health, The Pennsylvania State University, University Park, PA, United States, Tanya M. Spruill, PhD, Medicine, Columbia University Medical Center, New York, NY, United States, Matthew J. Zawadzki, M.S., Psychology, The Pennsylvania State University, University Park, PA, United States, Thomas G. Pickering, DPhil, Behavioral Cardiovascular Health and Hypertension, Columbia-Presbyterian Medical Center, New York, NY, United States, William Gerin, PhD, Biobehavioral Health, The Pennsylvania State University, University Park, PA, United States

Objective: Masked hypertension (MH) describes persons who present with normal blood pressure (BP) in the doctor's office, but whose BP is in the hypertension (HTN) range during natural activities. As with white coat HTN (WCH), MH represents a diagnostic error, when diagnosis is based solely on office measurements. Virtually nothing is known about MH; underlying mechanisms. Many studies have shown personality differences between normotensives (NT) and hypertensives (Sanz, 2007) and many have looked but failed to find such differences compared to WCH (Gerin et al., 2007). These studies have shed light on the psychosocial mechanisms associated with high BP; we propose to extend this literature to MH. Methods: Diagnostic groupings were based on ambulatory BP and clinic BP (CBP). Criteria were: (1) NT (N=80) CBP and ABP <140/90; (2) True HTN (N=46) CBP and ABP >140/90; (3) WCH (N=19) CBP>140/90, ABP <140/90; and (4) MH (N=22) CBP <140/90, ABP>140/90. The groups were compared on the dimensions of the NEO-Five Factor Inventory (NEO-FFI). Results: We carried out ANCOVAs for each personality factor. Age was included as a covariate, as significant differences in this dimension were observed between the groups. The omnibus test showed that Conscientiousness emerged as a significant discriminator among the groups. As we were comparing all BHPS, there was also a trend showing that MH patients scored higher on Extroversion and Conscientiousness than HTN patients (but not significant: .09 and .06, respectively). Thus, the data suggest that MH patients are more organized, responsible, and hardworking than NTs; and trend to more organized, responsible, and hardworking, as well as sociable and assertive than HTN. These results may contribute to the development of a personality model that will help explain the MH phenomenon.

80) Abstract 1579

PERCEIVED DISCRIMINATION, OPTIMISM AND CYNICISM IN SICKLE CELL PATIENTS: I. EFFECTS ON CARDIOVASCULAR REACTIVITY TO ANGER RECALL
Frederick B. Bartholomew, BA, Micheal V. Stanton, BA, Redford B. Williams, MD, Behavioral Psychiatry, Duke University, Durham, North Carolina

Objective: African Americans (AAs) with high optimism or low cynicism levels who report high perceived discrimination (PD) showed higher cardiovascular reactivity (CVR) and slower recovery to anger recall (AR) tasks than those with lower PD. (Richman et al., 2007) Sickle Cell Disease (SCD) affects AAs through abnormal red blood cells that occlude blood vessels and limit oxygen supply to body tissue. Increases in blood pressure, as evidenced by CVR, may exacerbate lack of oxygen to extremities, causing nerve damage and chronic pain. Methods: We measured optimism (LOT-R), PD (Everyday Discrimination Scale), and CYN (Cook-Medley CYN subscale) on anger recall CVR among 49 (14M, 35F) AA SCD patients in whom CV function was monitored during baseline, AR and recovery periods. Repeated measures ANOVA was used to test effects of LOT-R, PD and CYN on CV reactivity and recovery, controlling for SES, sex and baseline levels. Results: In females, optimism was positively associated with cardiovascular recovery following AR for diastolic blood pressure (DBP) (b=1.36, p=0.026) and mean arterial pressure (MAP) (b=7.1, p=.07) when baseline levels were controlled. PD and CYN were controlled: DBP (b=1.46, p=.032), MAP (b=8, p=.095). Male and female patients with high PD/low CYN displayed reduced DBP (PD x CYN interaction, (F (1, 43) = 4.67, p=.036) and a trend toward reduced MAP (F (1, 43) = 3.38, p=.073) across baseline, AR & recovery periods compared with other PD/CYN combinations. Conclusion: Optimistic females showed poorest cardiovascular recovery following AR, independent of PD. In contrast to previous study of healthy AAs, which found greater reactivity among those with high PD/low CYN, SCD patients with high PD/low CYN exhibited an overall reduced cardiovascular arousal over study periods. Heightened CVR and recovery following everyday stress over time could pose significant health risks to all high PD, highly cynical SCD patients and highly optimistic SCD females. Supported by NHLBI grant 0P1-HL036587

81) Abstract 1503

LIFECOURSE SOCIOECONOMIC STATUS, THREAT PERCEPTIONS, AND ADOLESCENT PHYSIOLOGICAL RESPONSES TO FAMILY CONFLICT
Moonhye Geum, B.A., Elizabeth Chen, Ph.D., Psychology, University of British Columbia, Vancouver, BC, Canada

Previous research shows that lower socioeconomic status (SES) currently is associated with greater perceptions of threat from ambiguous social situations, and these perceptions of threat are in turn associated with heightened cardiovascular responses to standard acute laboratory stressors. The purpose of the present study was to examine how trajectories of SES across a child's lifetime predict threat perceptions, and in turn, how the threat perceptions of one family member may spillover to affect another family member's physiological response to conflict. Two hundred and fifty one children age 9 to 18 (M = 12.76, SD = 2.50) and their parents were studied. SES was coded based on parents' occupations during each year of the child's life. Threat perceptions were assessed by presenting standardized situations using previously established videos depicting a social situation with an ambiguous outcome (e.g. encountering an attentive saleswoman while
82) Abstract 1333

SELF-EFFICACY ASSOCIATED WITH LOWER RESTING BLOOD PRESSURE IN SPOUSAL ALZHEIMER'S CAREGIVERS

Alexandrea L. Harmell, BA, Brent T. Maasbach, PhD, Susan K. Roepke, MS, Psychiatry, University of California San Diego, La Jolla, California, Raeanne C. Moore, MA, Clinical Psychology, Alliant International University San Diego, La Jolla, California, Roland von Känel, MD, General Internal Medicine, University Hospital Berne in Switzerland, Berne, Switzerland, Matthew A. Allison, MD, Psychiatry, University of California San Diego, La Jolla, CA, Thomas L. Patterson, PhD, Psychiatry, University of California San Diego, La Jolla, California, Paul J. Mills, PhD, Michael G. Ziegler, MD, Sonia Ancori-Israel, PhD, Igor Grant, MD, Psychiatry, University of California San Diego, La Jolla, California

Background: Elevated blood pressure has been associated with cardiovascular diseases including myocardial infarction, heart failure, stroke, and kidney disease. Research has shown that the chronic stress of caring for a spouse with Alzheimer's disease places caregivers at increased risk for hypertension when compared with non-caregiving peers. Purpose: To determine if self-efficacy for using problem-focused coping was associated with multiple measures of resting blood pressure in spousal Alzheimer's disease caregivers. Methods: 100 elderly caregivers (mean age = 73.8 ± 8.14 years) providing in home care for a spouse with Alzheimer's disease participated. Participants completed a 13 item short form of the coping self-efficacy scale and underwent in-clinic blood pressure readings of both parents and children at baseline and during the conflict task. Average SES across the lifetime of the child significantly predicted a greater tendency for parents to perceive threat ($\beta = -0.197$, $t = -3.083$, $p = .002$). Furthermore, the parents' tendency to perceive threat significantly predicts the child's HR reactivity during the conflict task, controlling for the child's baseline HR ($\beta = .214$, $t = 2.224$, $p = .030$). These findings suggest that threat perception is a tendency that develops over time and is influenced by both SES at crucial time points, such as a child's early years, and also by lifetime trajectory of SES. Furthermore, parents' interpretation of the social world may play a role in shaping how children respond physiologically to family conflict.

83) Abstract 1303

MASKED AND WHITE COAT HYPERTENSION: EFFECTS OF RACE AND PHYSICAL ACTIVITY

Paul J. Mills, PhD, Lianne M. Tomfohr, MS, Psychiatry, UCSD, La Jolla, CA, Roland von Känel, MD, Psychiatry, University Hospital, Bern, Switzerland, Michael G. Ziegler, MD, Medicine, Joel E. Dimsdale, MD, Psychiatry, UCSD, La Jolla, CA

Purpose of study: Masked hypertension (MH) is defined as normal blood pressure (BP) in the clinic (<140/90 mmHg) but persistently elevated BP (BP>135/85 mmHg) in the daytime ambulatory environment. MH is considered a possible precursor of sustained hypertension and of future cardiovascular events. MH is essentially the opposite of white coat hypertension (WCH), which is defined as elevated BP in the clinic but normal BP in the daytime ambulatory environment. The purpose of this study was to examine predictors of MH and WCH in a cohort of 164 African-American (AA) and 277 Caucasian-American (CA) men and women (mean age 39.9 years, SD=10.7). We also examined relationships between MH and WCH and nighttime BP dipping (daytime ambulatory BP - nighttime ambulatory BP). Methods: Participants had their BP taken at the clinic (average of 3 BP's taken after at least 5 minutes of seated rest) and during 24-hour ambulatory monitoring (SpaceLab model 90207). Data were analyzed by multiple regression, multivariate ANCOVA and Chi-square tests. Summary of results: Consistent with the literature, the overall incidence of MH and WCH in this sample was 8.9% and 8.6%, respectively. The incidence of MH was less in AA (6.7%) vs. CA (10.1%) whereas the incidence of WCH was greater in AA (14%) vs. CA (5.4%) (Chi-square =12.4, $p=0.006$). In multiple regression analysis, BP group was predicted by increasing age ($p<0.01$), increasing body mass index (BMI) ($p<0.01$), and less physical activity ($p<0.01$) but no longer by race. In multiple regression analysis, degree of nighttime BP dipping was predicted by race (AA showed less systolic (10.9 vs. 13.9 mmHg) and diastolic BP (10.5 vs. 13.2 mmHg) dipping compared to CA; $p<0.01$); BP status group (MH showed greater nighttime systolic (16.2 vs. 9.7 mmHg) and diastolic BP (16.5 vs. 9.0 mmHg) compared to individuals with WCH; $p<0.01$); and BMI (heavier participants showed less dipping; $p<0.01$). Conclusion: The findings indicate that as a group, AA have more WCH whereas CA have more MH, but that these effects might be related to differences in BMI and physical activity. We found no evidence that MH was associated with greater cardiovascular risk as assessed by degree of nighttime BP dipping.

84) Abstract 1683

SLEEP DEPRIVATION INCREASES BLOOD PRESSURE IN PERSONS WITH A FAMILY HISTORY OF HYPERTENSION

James A. McCubbin, PhD, Crystal M. Burnette, Hannah Peach, Psychology, Alyssa J. Allen, Counselor Education, Skye Gillespie, James A. McCubbin, PhD, Psychologist, Clemson University, Clemson, SC

Background: Chronic sleep loss is a systemic stressor that has been linked to increased incidence of hypertension and coronary heart disease. We hypothesize that sleep deprivation may contribute to the development of essential hypertension through its effects on autonomic and neuroendocrine control of blood pressure. In a series of studies conducted over several years, we examined the effects of a single night of sleep deprivation on resting blood pressures and cognitive performance. Eighty young adults were recruited for 24 hour total sleep deprivation studies conducted in the Clemson Residential Sustained Operations Laboratory. Blood pressures were obtained throughout the study period. Participants were assessed for hypertension risk by JNC-7 classification of prehypertension as well as by family history of hypertension. When subjects were classified by JNC-7 criteria as normal or prehypertensive, we observed significant main effects for JNC classification, indicating that prehypertensives showed elevated systolic and diastolic blood pressure initially, and throughout the night of sleep deprivation ($p<0.05$). However, when subjects were classified by family history for parental hypertension, there was a significant Time X Family History interaction for diastolic pressure ($p<0.05$). There were no initial differences in blood pressure between family history groups, but diastolic pressure increased across the night of sleep deprivation in persons with hypertensive parents relative to persons with normotensive parents. Interestingly, there was little overlap...
between individual JNC classification and family history classification of risk (r = .07). These family history effects on blood pressure may reflect sleep deprivation-induced changes in autonomic and neuroendocrine function. We conclude that the systemic stress of sleep deprivation increases blood pressure and may contribute to cardiovascular risk in normotensive individuals with a positive family history of hypertension.

85) Abstract 1787
RACIAL/ETHNIC DISPARITIES IN CARDIOVASCULAR HOSPITALIZATION: HISPANICS HAVE LOWER INCIDENCE BUT LONGER STAYS
John M. Ruiz, Ph.D., Psychology, University of North Texas, Denton, Texas, Noel O. Santini, MD, Adult Medicine, Parkland Health & Hospital System, Dallas, Texas, Courtney C. Prather, BA, Lauren M. Smith, MA, Sean Lewis, BA, Erin E. Kaufman, BA, Psychology, University of North Texas, Denton, Texas
Racial and ethnic minorities suffer disproportionate burden of a range of disease conditions relative to Caucasian/Whites. These differences have been most notably explored between Blacks and Whites. Although Hispanics have similar risk factor profiles to other racial minorities, their disease risk on major diseases such as cardiovascular diseases is less well-known. Therefore, the current aim was to examine racial and ethnic differences in cardiovascular-specific hospitalization trends. A multiethnic sample of 22,842 patients (7739 NH White, 7991 NH Black, 7112 Hispanic) admitted to a community hospital (Parkland Hospital, Dallas) in 2008 were included. Hispanic patients were younger (44.1 years) than NH Blacks and Whites (49.4 and 48.0 years, respectively). Logistic regression was used to examine group differences in cardiovascular hospitalization incidence. Sex and age were entered in the first step followed by contrasts for NH White, NH Black, and Hispanics. Consistent with prior findings, NH Blacks and Hispanics were significantly more likely to be hospitalized for cardiovascular issues compared with other groups (860 admits vs. 591 NH White and 405 Hispanic admits; Wald c2 = 17.76, p<.001, 95% CI = 1.300-2.052). In contrast, Hispanics were significantly less likely than both NH Blacks and NH Whites to be admitted for CVD reasons (Wald c2 = 5.34, p<.03, 95% CI = .597-.959). Although this finding suggests a relative cardiovascular benefit for Hispanics the picture is mixed. Hispanic and NH Blacks were significantly more likely to be hospitalized (1.512 and 1.508 admits, respectively) compared to NH Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (1.35 admits), F(2,1849) = 4.46, p<.02.

86) Abstract 1757
SOCIAL ISOLATION MEDIATES CHANGES IN POST-STROKE DEPRESSION FOLLOWING PARTICIPATION IN A 20-WEEK SUPPORT GROUP
Kamala S. Thomas, PhD, Psychology, Pitzer College, Claremont, CA, David Wellisch, PhD, Psychiatry, UCLA, Los Angeles, California, Raymond Newman, Stroke Recovery, Stroke Association of Southern California, Santa Monica, California
Depression is the most common psychiatric condition following a stroke, and it is associated with a higher mortality rate in this group. It is estimated that 30-35% of individuals experience major depression following a stroke, with a range between 20-60% within the first 2 years post-stroke. Studies consistently demonstrate that social isolation and loneliness are related to negative health outcomes. This longitudinal study examined whether social isolation mediated changes in depression over time in a sample of 80 community dwelling adults who had a stroke within the past 2 years and participated in a 20 week social support group sponsored by the Stroke Association of Southern California. Participants consisted of 31 men and 49 women who were between 42-82 years old (Mean age = 66.61, SD=12.57). To measure changes in depressive symptoms over time, participants completed the Geriatric Depression Scale (GDS) at baseline and again immediately after the group ended. Social isolation was measured using a single-item asking participants whether they currently feel isolated from friends and family members. A paired samples t-test was used to examine changes in depression over time. Additionally, path analyses examined whether social isolation mediated changes in depressive symptoms, controlling for age. There was a significant improvement in depressive symptoms following participation in the support groups (t (112) = -3.01, p<.001). At baseline, 80% of the sample reported being moderately depressed (GDS score between 5-9) and 12% reported having clinical significant depression (GDS score > 10). After participating in the support groups, approximately 50% of the sample were moderately depressed and 4% had clinically significant depression. Path analyses revealed that these changes were mediated by social isolation (b = .30, p=.02). Specifically, participants who reported feeling socially isolated from friends and family members were less likely to experience an improvement in depressive symptoms after participating in the support groups. These findings highlight the importance of addressing feelings of isolation from friends and family members in interventions aimed at reducing post-stroke depression.

87) Abstract 1305
THE TRAJECTORY OF AUTONOMIC AROUSAL DURING AN EMOTIONAL EXPRESSION INTERVENTION FOR CAREGIVERS
Shelby L. Langer, PhD, School of Social Work, University of Washington, Seattle, WA, Tom H. Kelly, PhD, Behavioral Science, University of Kentucky, Lexington, KY, Barry Storrer, PhD, Clinical Statistics, Karen L. Syrjala, PhD, Biobehavioral Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA, Thomas F. Keating, PhD, Hematopoietic stem cell transplantation is an aggressive form of cancer treatment. Partners, highly impacted by the process and associated caregiving demands, are known to experience negative emotions. We sought to examine a physiological indicator of emotion among 57 partners enrolled in a randomized emotional expression (EE) intervention trial. EE, the act of translating a stressful experience into language, is thought to reduce autonomic activity. Participants who had a cancer diagnosis and 860 admits vs. 591 NH White and 405 Hispanic admits; Wald c2 = 17.76, p<.001, 95% CI = 1.300-2.052). In contrast, Hispanics were significantly less likely than both NH Blacks and NH Whites to be admitted for CVD reasons (Wald c2 = 5.34, p<.03, 95% CI = .597-.959). Although this finding suggests a relative cardiovascular benefit for Hispanics the picture is mixed. Hispanic and NH Blacks were significantly more likely to be hospitalized (1.512 and 1.508 admits, respectively) compared to NH Whites (1.35 admits), F(2,1849) = 4.46, p<.02. Collapsing across all 2008 admissions per patient, Hispanic were hospitalized significantly more total days (11.42 days) relative to both NH Blacks and Whites (9.92 and 9.10 days). These findings suggest Hispanics are significantly less likely to be hospitalized for CVD but those affected require greater care relative to other racial/ethnic groups.

88) Abstract 1111
SLEEP DISTURBANCE IN OVARIAN CANCER PATIENTS ONE YEAR POST-DIAGNOSIS
Lauren Clevergen, BA, Psychology, Obstetrics and Gynecology, Gina Krueger, BS, Psychology, Koen DeGeest, MD, Obstetrics and Gynecology, University of Iowa, Iowa City, IA, Frank Penedo, PhD, Psychology, University of Miami, Coral Gables, FL, Thomas Buekers, MD, David Bender, MD, Michael Giudiceheart, MD, Obstetrics and Gynecology, University of Iowa, Iowa City, IA, Jonathan Leach, MD, Obstetrics and Gynecology, UM Sylvester, Miami, FL, Luis Mondez,
Purpose: Poor sleep quality was reported in a variety of cancers. However, this has not been systematically explored in ovarian cancer patients. This study investigated self-reported sleep quality in ovarian cancer patients 1 year post diagnosis to explore risk factors for sleep disturbances and effects of sleep on quality of life (QOL). Methods: Women with a pelvic mass suspicious for ovarian cancer were recruited pre-surgically. Of those diagnosed with primary epithelial ovarian cancer, 156 completed surveys at baseline and 84 completed a 1-year follow-up including surveys on QOL, sleep, depression, and social support. Clinical information was abstracted from medical records. Results: Prior to surgery, 64.7% of patients reported poor sleep quality (PSQI > 5). At 1 year follow-up, 62% of patients still reported poor sleep. Poor sleep at baseline was highly correlated with poor sleep at 1 year, r=.38, p=.001. At 1 year, sleep quality among patients receiving chemotherapy (M=6.11, SD=3.22) was not significantly different than that among patients who had completed chemotherapy (M=7.35, SD=4.62, p=.34). Patients using prescribed sleep meds reported significantly worse sleep quality (M=10.00, SD=3.84) than those not using sleep meds (M=6.48, SD=4.15; p=.001). In a regression model controlling for stage of disease (B=.12, p=.22), antidepressants (B=-.16, p=.14), sleep medications (B=.21, p=.07), and performance status (B=.19, p=.12), depression predicted worse (B=.39, p=.005) and social support predicted better (B=.29, p=.017) 1 year sleep quality. Moreover, controlling for stage, antidepressants, sleep meds, performance status, and depression, post-chemotherapy quality of life (QOL), predicted decrements in 1 year QOL (B=-.27, p=.008). Conclusion: A majority of ovarian cancer survivors report sleep disturbances at 1 year. Over and above clinical covariates, depression and social support contributed to sleep quality, which in turn impacts QOL. Screening for sleep disturbances and interventions to improve both depression and sleep quality may contribute to improved quality of life in this population.

89) Abstract 1070
REDUCING DISTRESS DURING CANCER GENETIC RISK ASSESSMENT: A CLASH OF PARADIGMS
Paul D. Bennett, PhD, Nursing and Midwifery, University of Cardiff, Cardiff, UK, Ceri Phelps, PhD, Psychology, Swansea Metropolitan University, Swansea, UK
Purpose: To examine limits to the effect of a simple coping intervention previously found to reduce distress in women undergoing cancer genetic risk assessment. Coping theory suggests the optimum coping response to uncertainties associated with genetic risk assessment may involve the use of emotion-focused strategies such as distraction. Later wave cognitive behavioural interventions suggest the optimal intervention may involve techniques including mindfulness which facilitate emotional habituation to distressing thoughts. These differences may reflect different levels of distress within the theories' scope. Our hypothesis was that a distraction-based coping intervention would be effective for women with raised, but not pathological, levels of worry, but may not benefit those with high levels of worry. Participants and methods: Men and women being assessed for their genetic risk for breast cancer were randomly assigned to normal care or a written coping intervention to use in the month they awaited their risk information. This encouraged them to 'confront' and 'manage' their genetic risk assessment to a limited period each day, and actively distract from distressing thoughts at all other times. Levels of intrusive worries were measured at the beginning (T1) and end of the assessment period (T2), and following risk provision (T3) using the Impact of Event Scale intrusion scale (IES-1). Results: Three hundred and thirteen women completed questionnaires at T3. One-way ANOVA at T2, with baseline scores as covariate, revealed significantly (p=0.02) lower IES-1 scores among participants in the intervention group with moderate levels of intrusive thoughts at baseline (IES-1: 6-12). No such effect was found for those with high levels of intrusion (IES-1: >12). By T3, there were no significant differences in distress levels between control groups. Discussion: The intervention was effective in the short-term for those with moderately high levels of intrusive worries at baseline. There was no rebound effect following risk provision. In addition, it did not work for those with high levels of intrusive worries. They may have found the intervention too difficult to implement, inefficient, or considered it inappropriate to their level of distress. It is possible that they would benefit from different, and perhaps more complex, interventions focusing on mindfulness or acceptance.

90) Abstract 1588
THE DIFFERENTIAL IMPACT OF A MINDFULNESS-BASED STRESS REDUCTION PROGRAM ON SYMPTOMS OF STRESS AND MOOD IN PATIENTS WITH IRITABLE BOWEL SYNDROME AND CANCER
Kristin A. Zernicke, BA, Psychology, University of Calgary, Calgary, Alberta, Canada, Joshua Loumbserry, BA, Psychosocial Resources, Linette Lawlor-Savage, BA, Linda E. Carlson, PhD, Psychosocial Resources - Holy Cross Site, Tom Baker Cancer Centre, Calgary, Alberta, Canada
This study investigated the differential impact of a Mindfulness-Based Stress Reduction (MBSR) program on symptoms of stress and mood in patients with Irritable Bowel Syndrome (IBS) (n=60) and Cancer (n=14) by comparing the two groups. The MBSR group was found to have a significantly higher average of distress at baseline. There was no rebound effect following risk provision. The intervention consisted of a weekly 1.5 hour meditation group for 8 consecutive weeks plus a 3 hour weekend retreat. Patients completed questionnaires pre- and post-intervention as well as at 6-month follow-up. Among the demographics collected, the two groups differed only in the mean age (t=4.24, p<.001) with cancer patients (16.3 years) being significantly more likely to have higher distress (M=4.0). The sample consisted primarily of females (84%) and had a mean of 15 years of education. Preliminary analyses show that at baseline both groups were equally distressed. While no differences were found in the degree of improvement on symptoms of stress or mood, both groups showed significant improvements. These results suggest that MBSR is equally effective in reducing distress for both IBS and cancer patients, and that regardless of severity symptoms, MBSR may be appropriate for a variety of chronic disease populations.

91) Abstract 1548
DISTRESS, MOOD, AND QUALITY OF LIFE CHARACTERISTICS IN AFRICAN-AMERICAN BREAST CANCER SURVIVORS
Lauren M. Hurwitz, High School Diploma, Public Health Studies, Johns Hopkins University, Baltimore, Maryland, Paige G. McDonald, PhD, MPH, Basic and Biobehavioral Research Branch, National Cancer Institute, Bethesda, Maryland, Pamela Carter-Nolan, PhD, MPH, Department of Community and Family Medicine, Howard University College of Medicine, Washington, D.C.
Background: While studies have examined cancer-specific distress, quality of life, and other relevant factors in breast cancer survivors, relatively few have focused on African-American women. This study explores factors associated with distress and quality of life measures for African-American breast cancer survivors. Because African-Americans exhibit the highest breast cancer mortality rate relative to other ethnic populations, studying this group may help to shed light on this disparity and optimize opportunities for intervention. Methods: Demographic, behavioral, and psychological data were obtained from a cross-sectional study of 76 African-American women recently diagnosed with breast cancer. The data were analyzed using the program SPSS and nonparametric methods. The focus was placed on scores from three psychological assessment tools (BSI-18, POMS-5F, IES) and one quality of life measure (FACT-D). Results/Conclusions: 13.3% of women exhibited high cancer-specific distress (M-D) during the IES intrusion subscale, and 20.8% of women were highly distressed according to the avoidance subscale. Age was negatively correlated with the stress measures and positively correlated with quality of life (p<.01), while no associations were found with income or BMI. Women with a family history of breast cancer tended to report less distress (p=.01 for the POMS total mood disturbance score). Future research should examine the contribution of cancer-specific distress to differential recurrence and survival rates experienced by African-American patients.
92) Abstract 1489

RESTING CARDIAC VAGAL CONTROL AND QUALITY OF PARTNER RELATIONSHIP IN WOMEN NEWLY DIAGNOSED WITH BREAST CANCER
Anna Poczner, BCL, John J.B. Allen, PhD, Róisín O’Donnell, BS, Amanda E. Brody, MA, Psychology, Karen L. Weilts, MD, Psychiatry and Family Medicine, University of Arizona, Tucson, AZ

PURPOSE: The present study examined whether resting RSA was related to self-reported partner relationship quality. Cardiac vagal control, as measured by respiratory sinus arrhythmia (RSA), is associated with a variety of indices of health and mental health. Whereas lower resting RSA characterizes a variety of chronic illnesses, higher resting RSA is associated with better affective regulation, social engagement, and coping with life stressors. To date, little is known about the association between RSA and partner relationship quality.

METHODS: The sample included 39 women (Mean age = 52.7) in committed partner relationships who were diagnosed with stage 0, I, II, or III breast cancer (Mean time since diagnosis = 4.6 months), all of whom were free of medications that would affect cardiac function. At the oncology clinic visit, 10 minutes of resting electrocardiographic (ECG) data were recorded: the first 5 minutes from each participant alone, and the second 5 minutes while a companion was touching the participant's forearm, if a companion was present, otherwise both segments were recorded from the participant alone. Participants completed questionnaires on the quality of their committed partner relationships. Results: Although there was no significant interaction between the ECG recording period and companion's presence during visit (F = .27(1, 37), p = .60), higher RSA collapsed between both recording periods was associated with greater relationship satisfaction as measured by the Dyadic Adjustment Scale (DAS) (r = .35, p = .03) and more positive partner interactions on the Social Relationships Inventory (SRI) (r = .34, p = .04). CONCLUSION: These data suggest that resting RSA is associated with higher partner relationship quality as reported by women who are coping with the stress of breast cancer.

93) Abstract 1647

LIFE STRESS AND DIURNAL CORTISOL PRODUCTION IN WOMEN UNDERGOING SURGERY FOR ENDOMETRIAL TUMORS
Deirdre B. Pereira, PhD, Clinical and Health Psychology, University of Florida, Gainesville, FL, Sally E. Jensen, PhD, Kellogg Cancer Care Center, NorthShore University HealthSystem, Evanston, IL, Stacy M. Dodd, MS, Timothy S. Sannes, MS, Stephanie Garey, BS, Seena Parker, BS, Clinical and Health Psychology, Linda S. Morgan, MD, OB-GYN, University of Florida, Gainesville, FL

Surgery is a primary treatment for endometrial cancer, the 4th most common female cancer. The perisurgical period is marked by risk for micrometastases due to surgery-associated immune alterations. Abnormal cortisol production is associated with adverse health outcomes in women with cancer and may be particularly deleterious during the perisurgical period via its suppression of proinflammatory cytokines/cell-mediated immunity. Research has linked life stress with abnormal cortisol production. However, this relationship is poorly understood in women undergoing cancer surgery, a population vulnerable to both stress-induced cortisol dysregulation and micrometastases. This study examined the relationship between life stress and diurnal cortisol in women undergoing surgery for endometrial tumors (N=46, M[SD]age=58[8]yrs), 5s underwent psychosocial and diurnal salivary cortisol assessment immediately prior to surgery (T1) and 6 weeks later (T2). Life stress was assessed using the Life Experiences Survey (LES). T1 and T2 life stress ratings were summed to yield an index of perisurgical life stress. Saliva was collected at 8a, 12p, 5p, and 9p x 3 days at T1 and T2 and assayed using ELISA. Area under the curve (AUC) analysis was used to calculate T2 diurnal cortisol production; change in cortisol per unit time (AUC) was used as a measure of change in circadian output. Controlling for biobehavioral factors associated with T2 cortisol (e.g., cancer stage), greater perisurgical life stress was significantly associated with greater T2 cortisol AUC (B=0.33, p=.02). Specifically, greater life stress was associated with abnormal cortisol production at T1 and T2. Greater perisurgical life stress was associated with greater T2 diurnal cortisol (B=0.31, p=.05) and B=0.33, p=.04, respectively). Perisurgical life stress was not associated with T2 diurnal cortisol slope (B=-0.09, p=.54). These results suggest perisurgical life stress is associated with greater postsurgical cortisol output in endometrial cancer. Future research should examine whether psychological interventions can alter perisurgical stress/cortisol and reduce risk of disease progression in this population.

94) Abstract 1740

EMOTIONAL FACTORS DIFFERENTIALLY AFFECT ADHERENCE TO SHORT- AND LONG TERM MAMMOGRAPHY SCREENING
Heiddis B. Valdimarsdottir, PhD, Department of Health and Education, Reykjavik University, Reykjavik, Iceland, Dana Bovbjerg, PhD, Biobehavioral Medicine Program, University of Pittsburgh Cancer Institute, Pittsburgh, PA, Unnur Valdimarsdottir, PhD, Public Health Sciences, Gudrun Arnadottir, MA, Department of Psychology, Frúðrik Jónsson, PhD, Department of Psychology, Sjófn Agustsdottir, M.D., Department of Psychology, University of Iceland, Reykjavik, Iceland

Introduction: Increasing evidence suggests that emotions play a role in adherence to cancer screening recommendations, including mammography screening. However, as majority of the studies have been retrospective it is difficult to evaluate or determine causality. In addition, as most studies have focused on short term adherence little is known about the role of emotions in predicting long term adherence. To our knowledge, this study is the first to use a nation-wide approach to sampling and to use clinical records to prospectively explore emotional predictors of both short and long term mammography adherence. Methods: A randomly selected sample (n=1000) of all Icelandic women aged 42.2±9.0 years, not previously diagnosed with breast cancer, were recruited by mail. Participants (n=534) completed questionnaires for: demographic/medical variables, general emotional predictors of both short and long term mammography adherence determined using nation-wide records. Results: Multiple logistic regressions revealed that non-adherence to mammography screening at 2 years, 3 years, 4 years and 5 years was: 1) independently and negatively predicted by: older age, higher levels of depressed affect, and higher levels of mammography-specific distress; and 2) independently and positively predicted by general cancer worries and anxiety. Summary: The results indicate that emotional factors can differentially influence adherence to mammography screening guidelines. Interventions to increase adherence to cancer screening guidelines should address the role of such factors to maximize effectiveness.

95) Abstract 1369

PERCEPTIONS OF CONTROL AND SOCIAL SUPPORT ON HIV-RELATED SELF-EFFICACY
Elliot J. Lopez, MS, Mark Yovvick, PhD, Psychology, University of North Texas, Denton, TX

The requisite health behavior changes that follow a positive diagnosis of HIV can be influenced by a number of factors, such as the belief that the individual can manage the illness (Funnan et al., 2008). Because this belief can benefit treatment outcomes (Lorig et al., 1996), barriers and facilitators to self-efficacy must be examined. Literature suggests that locus of control (Gordijn & Boven, 2009) and social support (Davey, Foster, Milton & Duncan, 2009) are associated with the ability to effectively manage the disease. Our study examines the extent to which these factors influence self-efficacy with regard to disease management. Bandura's self-efficacy theory (1997) informed our analysis. We measured perceived ability to effectively manage illness with The Self-Efficacy for Managing Chronic Disease Scale (Lorig et al, 1996). Scores from the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet & Farley, 1988) and the Multidimensional Locus of Control Scale (Levenson, 1972) were used
96) Abstract 1691

A RANDOMIZED, CONTROLLED TRIAL OF MINDFULNESS BASED STRESS REDUCTION (MBSR) IN HIV

Frederick M. Hecht, MD, Patricia J. Moran, PhD, Judith Moskowitz, PhD, Michael A. jquery, MD, Medicine, Kevin Barrows, MD, Family and Community Medicine, Elissa Epel, PhD, Margaret Kenneny, PhD, Psychiatry, Steven Deeks, MD, Medicine, Peter Bacchetti, PhD, Epidemiology and Biostatistics, Susan Folkman, PhD, Medicine, University of California, San Francisco, San Francisco, CA

Purpose: Observational data link depression and stress to CD4+ T-cell loss in HIV. We tested MBSR in a randomized, attention controlled trial in persons with CD4 counts > 250 cells/mm3 who were not on HIV therapy. Methods: We randomized 177 HIV+ persons to an 8-week MBSR course (n=89) or an HIV self-management group (n=88) with 12 month follow-up (FU). Key psychological measures included Brooding (from Ruminative Responses Scale), Beck Depression Inventory (BDI), Positive Affect Negative Affect Scale (PANAS), and Perceived Stress Scale (PSS). CD4 were censored if persons started HIV treatment. Results: The table shows mean psychological changes at 3 and 12 months in those with 12 month FU (n=144). At 6 months, the mean drop in CD4+ T-cell counts was 41 cells/mm3 in the MBSR group and 58 cells/mm3 in the control group, a 17-cell advantage for the MBSR group (95% CI -23, 57; p =0.4); 12 month CD4 data and ITT analysis are still being done. Conclusions: Negative affect, brooding, and perceived stress improved significantly from baseline in the MBSR group at 3 months, but improvements were not statistically significant compared with the attention control group. Both groups had similar improvements at 12 months suggesting that some of the important benefits came from group support. The data provide evidence against a substantial improvement in CD4+ T-cell counts with MBSR with 6 months follow up, though 95% CI still include a potentially clinically significant benefit.

| Psychological Outcomes at 3 & 12 months (Con=control, t=0.05) |
|-----------------|-------------|
| BDI             | PANAS+      |
| MBSR-Con 3 mths| -0.13 (-0.3, 0.03) | 0.75 (-1.5, 3.0) | -1.39 (-3.6, 0.8) |
| MBSR 3-0 mths   | -0.23* (-1.65) | 1.03 | -2.27* (-4.6, -0.8) |
| MBSR 12 month   | -0.10 (-0.1) | 0.28 | -0.88 | -0.34 |
| MBSR 12-0 mths  | -0.15* (-1.85) | 1.03 | -2.17* (-4.6, -0.8) |

97) Abstract 1605

CARDIOVASCULAR RESPONSE TO EXPERIMENTAL PAIN DURING A MASSAGE INTERVENTION

Cynthia W. Karlson, M.A., Nancy A. Hamilton, Ph.D., Sarah D. Pressman, Ph.D., Rebecca L. Clau sius, B.S., Catrina C. Lootens, B.A., Psychology, University of Kansas, Lawrence, KS

Complementary therapies such as massage and relaxation training have been shown to have potent effects in reducing physical pain; however, the mechanisms of action remain poorly understood. The present study seeks to elucidate the precise mechanisms of massage by contrasting the effects of massage versus guided imagery relaxation during experimentally induced electrical stimulation pain. Participants were 72 healthy female undergraduates (mean age = 19.40 years; 87.5 % Caucasian). Participants completed a 10-min rest baseline period; a 15.5-min randomly assigned massage plus guided imagery, massage, guided imagery, or no-treatment intervention period; and a 10-min rest recovery period. Heart rate and respiration were continuously assessed using the Biopac BioMedical Life System. High frequency spectra power (HFSP), mean heart rate (MHR), respiratory sinus arrhythmia (RSA), and inter-beat interval (IBI) were calculated using the MindWare HRV 2.6 analysis software. Repeated Measures Analysis of Variance was used to evaluate the independent contribution of group assignment on physiological functioning during data collection periods and recovery tasks after accounting for baseline. No associations with outcome variables were found for age, ethnicity, or BMI. No group differences in pain intensity were reported (p=.05). Significant differences in MHR (F=5.08, p<.001) and IBI (F=3.89, p<.01) were observed between groups. Specifically, MHR significantly decreased from baseline to intervention for the massage group (F=19.91, p<.01) and massage plus imagery group (F=18.01, p<.01). MHR remained lower during recovery for the massage group (F=10.05, p<.05), while increasing for the massage plus imagery group (F=6.93, p<.05). Similarly, IBI increased for the massage group (F=12.60, p<.01) and massage plus imagery group (F=38.48, p<.01) and remained higher for the massage group (F=0.7, p<.05), while decreasing for the massage plus imagery group (F=6.93, p<.05). These results indicate that massage may have a greater propensity towards physiological arousal than guided imagery alone. This provides evidence for the value of physical contact in health outcomes. Data collection is ongoing.

98) Abstract 1671

SEX DIFFERENCES IN THE RELATIONS OF POSITIVE AND NEGATIVE DAILY EVENTS AND FATIGUE IN ADULTS WITH RHEUMATOID ARTHRITIS

Mary C. Davis, PhD, Morris A. Okun, PhD, Denise Kruszewski, MA, Alex J. Zautra, PhD, Psychology, Arizona State University, Tempe, AZ

Fatigue is a common, disabling symptom for individuals with rheumatoid arthritis (RA). This study 1) examined sex differences in the relations between daily changes in positive and negative interpersonal events and same-day and next-day fatigue; and 2) tested positive affect and negative affect as mediators of the associations between changes in interpersonal events and fatigue. Reports of fatigue, number of positive and negative interpersonal events, and positive and negative affect were assessed each evening for 30 days via diaries in 228 men (n=70) and women (n=158) diagnosed with RA. Daily variables were centered at participant means for each variable across the 30 diaries. Multilevel modeling revealed that days of higher than average daily positive events were associated with both decreased same-day fatigue and increased next-day fatigue, but only among women (Sex X Positive Events interaction terms: b = .36, t = -1.97, p <.05 for same-day fatigue, and b = .43, t = 2.11, p = .03 for next-day fatigue). Moreover, sex differences in same-day relations between positive events and fatigue were mediated by increases in positive affect (z test for indirect effect = -2.81, p < .01). For both sexes, days of higher than average daily negative events related to increased same-day (b = .52, t = 3.36, p < .001) and next-day fatigue (b = .55, t = 3.23, p < .002). The same-day relations between negative events and fatigue were mediated by increases in negative affect (z test for indirect effect = 6.92, p < .001). These findings suggest that increases in positive interpersonal events may have mixed effects for women and do not benefit men with RA. Women appear to obtain a
same-day energy boost from pleasant events but experience greater next-day fatigue. Increased negative events, on the other hand, are consistently related to increased fatigue that carries over to the next day for both sexes. The findings may help clinicians target psychosocial factors that potentially can ameliorate their patients' experience of fatigue.

99) Abstract 1685

PAIN, MOOD, AND SELF-EFFICACY AS CORRELATES OF C-REACTIVE PROTEIN IN PATIENTS WITH RHEUMATOID ARTHRITIS

Jennifer N. Carty, B.A., Elyse Sklar, B.S., Psychology, Wayne State University, Detroit, Michigan, Angela Mosley-Williams, MD, Internal Medicine, John D. Dingell VA Medical Center, Detroit, Michigan, Francis J. Keefe, PhD, Psychiatry, Duke University Medical Center, Durham, North Carolina, Mark A. Lusmey, PhD, Psychology, Wayne State University, Detroit, Michigan

Systemic inflammation is a marker of increased stress and risk for psychophysiological and other disorders, and C-reactive protein (CRP) is increasingly used as an index of inflammation. CRP is elevated in depressed patients with rheumatoid arthritis (RA), but the independent relationships of depressed mood, pain, and positive variables, and self-efficacy with CRP need to be studied. Research should also identify subgroups of patients who demonstrate the strongest links between psychosocial variables and inflammation. In this study, we recruited 255 adults with RA (81.2% female, age M = 55.3 years, range 22-82; 67.5% European American, 28.6% American African) from two sites in the United States, had them complete measures of pain (McGill Pain Questionnaire), mood (Arthritis Impact Measurement Scales-2), and self-efficacy (Arthritis Self-Efficacy Scale). Patients had blood drawn and assayed for CRP. Analyses examined associations of pain, depressed mood, and self-efficacy with CRP, controlling for steroid use, neuroticism, sex, and education. Significant partial correlations indicated that inflammation (higher CRP) was associated with more mood disturbance (pr = .14, p = .04), higher pain (pr = .21, p = .004) and lower self-efficacy (pr = -.27, p < .001). Next, controlling also for pain, mood was no longer related to CRP (pr = .05, NS), but self-efficacy was (pr = -.20, p = .002). Finally, in a regression model with the four covariates and pain, depressed mood, and self-efficacy entered simultaneously, only self-efficacy correlated with CRP (Beta = -.24, p = .07). Also, age moderated the mood relationship. Depressed mood was related to CRP for the older patients (above median age of 65) (pr = -.27, p = .004), but unrelated for younger patients (pr = .03, NS). We conclude that pain intensity may be a more robust correlate of CRP than mood in RA, and self-efficacy is linked with less inflammation and may be a protective factor. The age dependency of the depressed mood / CRP association should be studied further. Funded by NIH R01 AR049059

100) Abstract 1454

PREDICTORS OF PHYSICAL QUALITY OF LIFE IN OLDER ADULTS: ROLE OF INFLAMMATION AND SLEEP

Shamini Jain, Ph.D., Cancer Prevention and Control Research, Richard Ohnstead, Ph.D., Semel Institute for Neuroscience, Michael R. Irwin, m.d., Coasins Center for Psychoneuroimmunology, UCLA, los angeles, ca

Complaints about decreased physical health-related quality of life (HRQOL) are common in older adults, but little is known about the relative contributions of psychosocial factors, sleep quality, and inflammation on HRQOL in aging. In older adults who self-reported good health (n=101, age = 70 years), predictors of physical HRQOL were examined. Physical HRQOL was assessed using the SF-36 Physical Component Score (PCS), which is comprised of four subscales (Physical functioning, Role-Physical, Bodily Pain, and General Health). Predictors included significant sociodemographic covariates (i.e., educational level, age), psychosocial variables (i.e., social support, Sarason; depression, Beck Depression; and sleep quality, Pittsburgh Sleep Quality Index/PSQI), and inflammatory markers (i.e., interleukin-6, IL-6; C-Reactive Protein, soluble intercellular adhesion molecule-1). Using hierarchical linear regression, the full model was significant (p <.0005; R2 = .29). Significant predictors of SF-36 PCS were PSQI daytime disturbance (standardized β = -.185; p =.035) and IL-6 (standardized β = -.399; p <.0005). To determine what components of the PCS were associated with PSQI daytime disturbance and IL-6, respectively, post-hoc partial correlation analysis were conducted controlling for all significant variables as well as other PCS subscales. IL-6 was uniquely associated with Bodily Pain (partial r = -.29, p =.004) & Physical Functioning (partial r = -.23, p =.02). Conversely, PSQI daytime disturbance was uniquely associated with Role Physical (partial r = -.29, p =.002) and General Health (partial r = -.22, p =.02). Among older adults who self-report good health, inflammation and daytime disturbance play unique roles in affecting physical HRQOL. Reports of poorer physical functioning and higher bodily pain are associated with higher IL-6 levels, while poorer general health and role functioning are associated with sleep-related daytime disturbance. Results suggest that interventions targeting sleep disturbance and/or inflammation may impact HRQOL in older adults.

101) Abstract 1219

BLOOD PRESSURE PREDICTS LATER SYMPTOMS OF POST-TRAUMATIC STRESS AMONG PATIENTS UNDERGOING ORTHOPEDIC SURGERY

Julie K. Crenceaux-Smith, Ph.D., Psychology, Kent State University at Stark, N Canton, OH, Kenneth Greene, M.D., Orthopaedics, Cleveland Clinic, Cleveland, OH, Douglas L Delahanty, Ph.D., Psychology, Kent State University, Kent, OH

Prior research has revealed that individuals with post-traumatic stress disorder (PTSD) have elevated cardiovascular functioning and reactivity. Subsequent research has examined whether hyperarousal (assessed via resting heart rate or blood pressure) assessed soon after trauma may predict the subsequent development of PTSD. Due the unpredictability of most traumatic stressors, it is unclear whether elevated cardiovascular functioning precedes onset of the trauma or exists as a reaction to the traumatic event. The present study examined the extent to which blood pressure (proximal to the time of surgery) predicted the development of post-traumatic stress symptoms (PTSS) following total knee replacement (TKR). Participants were 110 patients (75 females) between the ages of 49 and 90 (M=69.2) undergoing unilateral TKR. The majority of the sample was Caucasian (92.8%) and undergoing TKR for the first time (75.5%). A review of patients’ records allowed for the recording of routine blood pressure measurements taken by hospital staff: 1) pre-surgery, 30 minutes prior to surgery, 2) post-surgery, 1 hour following surgery, and 3) discharge. Patients completed the IES-R three months following TKR. Final regression models controlled for relevant demographic characteristics, depression, and pain. Patients post-surgical systolic and diastolic blood pressure, assessed while in recovery, predicted PTSS three months later (B=-.214, p=.021 and B=-.184, p=.036, respectively). After further controlling for patients’ history of traumatic stressors, pre-surgical systolic blood pressure predicted PTSS three months later (B=-.27, p=.031). Patients’ blood pressure assessed during time of surgery was not related to subsequent PTSS. Contrary to expectations, lower blood pressures predicted later PTSS. These findings suggest that the identification of at-risk patients (and the development of targeted interventions) may be possible on the basis of routine blood pressure readings taken by hospital staff proximal to the time of surgery.

102) Abstract 1678

PATIENTS WITH TYPE II DIABETES IMPROVE GLYCEMIC CONTROL AND PSYCHOSOCIAL FUNCTIONING THROUGH INTEGRATIVE HEALTH COACHING

Mark H. Drensicke, BS, Integrative Medicine, Duke University School of Medicine, Durham, NC, Elizabeth Skinner, PharmD, GlaxoSmithKline, Research Triangle Park, NC, Linda Duda, MSW, Tracey V. Hawkins, BA, Shin-Ying Yeung, BA, Janna Fikkan,, Integrative Medicine, Duke University, Durham, NC, Christopher Cook, PhD, Peggy Flowers, MSPH, GlaxoSmithKline, Research Triangle Park, NC, Ruth Q. Wolfever, PhD, Integrative Medicine, Duke University, Durham, NC

An estimated 90% of patients with type II diabetes do not adhere to treatment recommendations. Integrative Health Coaching (IHC) may address the myriad behavior and psychosocial challenges that impact...
adherence as well as physiological outcomes. In a randomized clinical trial, 56 patients with type II diabetes [M(SD): length of dx=11(7.8) years, age=53(7.9) years, 77% female; 57% African-American] received either 6 months of 14 individual IHC sessions by telephone (n=27), or usual care (control, n=22). At pre- and post-intervention visits, patients were evaluated for HbA1c and completed surveys regarding medication adherence, exercise frequency, patient activation, perceived stress, mood and social support. Repeated-measures ANOVA was used to assess group differences over time. Compared to controls, IHC patients showed decreased barriers to medication adherence [ASK-20: F(1,47)=4.64, p=0.036], increased patient activation [PAM: F(1,47)=6.90, p=0.012], benefit-finding [F(1,47)=4.52, p=0.039] and social support [ISEL: F(1,47)=5.94, p=0.019]. HbA1c findings in the randomized design trended toward significance; however, the small sample size precluded adequate statistical power. The control group subsequently received the IHC intervention, allowing for longitudinal analyses on all patients who received coaching (n=48). Using Wilcoxon signed rank tests and family-wise alpha levels in this analysis, all measures showed improvement over time. Patients with elevated baseline HbA1c (>7%) showed a significant 0.64% reduction in HbA1c [8.9(1.78)% to 8.3(1.76)%, p=0.030]. Behavior change was evidenced by increased exercise and medication adherence [Morisky: 6.8(1.10) to 7.2(1.07), p=0.001]. Correlations suggested that behavior change was related to improvements in perceived stress (PSS and exercise: rho=-0.241, p=0.049), patient activation [PAM and exercise: rho=0.199, p=0.088] and mood [BMS and exercise: rho=-0.261, p=0.036; BMS and Morisky: rho=0.267, p=0.033]. These findings imply that principles of IHC may be useful in diabetes self-management interventions.

103) Abstract 1527

EMOTIONAL DISTRESS AND COGNITIVE COPING MECHANISMS OF PATIENTS WITH LIVER STEATOSIS

Dan L. Dumitrascu, MD, 2nd Internal Medicine, University of Medicine and Pharmacy Iuliu Hatieganu, Cluj, Romania, Radu Codreac, Mr, Psychology, University Babes Bolyai, Cluj, Romania, Adriana Baban, PhD, Psychology, University Babes Bolyai, Cluj, Romania

The aim of this study was to assess the cognitive coping mechanisms as mediators between automatic thoughts and emotional distress in two groups of patients with hepatic steatosis (alcoholic and non-alcoholic). The sample included 63 in-patients, with mean age 57 years. Data were collected using Automatic Thoughts Questionnaire, Emotional Distress Profile and Cognitive Coping Mechanisms Scale. For data analysis we used partial correlation coefficient and general linear model. Results confirm partially the mediator role of cognitive coping mechanisms (r=0.62, p<.01). The comparison denotes significant differences between groups with alcoholic and non alcoholic etiologies (p<.01). Alcoholic groups had higher level of automatic thoughts (m=56.6) and emotional distress (m=102.85) comparative with non alcoholic groups (m=42.4, 74.6), and used mostly coping mechanisms as projection, repression and denial. The results are useful for developing a cognitive intervention model for patients with hepatic steatosis in clinical setting with the aim of reducing patients' emotional distress.

104) Abstract 1536

SOCIAL SUPPORT IS ASSOCIATED WITH GREATER VAGAL TONE IN ULCERATIVE COLITIS

Robert G. Maudner, MD, Jonathan J. Hunter, MD, Psychiatry, Hillary Steinhart, MD, Gordon Greenberg, MD, Medicine, Mount Sinai Hospital, University of Toronto, Toronto, Ontario, Canada, Robert P. Nolan, PhD, Behavioural Sciences and Health, Toronto General Research Institute, Toronto, Ontario, Canada

In ulcerative colitis (UC), satisfaction with social support is associated with better quality of life but the relationship between support and stress physiology has received little attention. Efferent parasympathetic (vagal) nerve function is an interesting mechanism in this regard because vagal activity (i) provides a rapidly responsive brake on stress-related arousal, (ii) is associated with suppression of inflammation, and (iii) according to Porges' polyvagal theory, contributes to adaptive social behaviour. We report here on a link between social support and a measure of vagal tone (high frequency heart rate variability, HF HRV) in 104 persons with ulcerative colitis in remission. Methods: Of 166 ulcerative colitis patients who participated in a larger study, 62 patients with visible sigmoid mucosal inflammation were excluded to eliminate autonomic perturbations related to acute systemic inflammation. Frequency domain HRV was measured during eight 5-minute tasks of a standard stress protocol: baseline, relaxed breathing, paced breathing, stress task 1, recovery, stress task 2, recovery, final relaxation. We tested age and satisfaction with social support (SSQ-6) as independent variables in repeated measures ANOVA of HF HRV over the 8 protocol tasks. Results: HF HRV varied significantly in the expected direction during stress and recovery periods. HF HRV was significantly related to main effects of both age (F = 37.3, p < 0.001) and support (F = 5.4, p = 0.02). Post hoc analysis revealed that higher HF HRV (greater vagal tone) was associated with younger age and higher social support. In both cases this effect was tonic, i.e. present during each protocol task, rather than stress-induced. Conclusions: Satisfaction with social support is directly associated with a marker of vagal tone in patients with ulcerative colitis in remission. To the extent that vagal efferents are active in gut immune modulation, this suggests a mechanism by which social support could contribute to maintenance of remission of inflammation in ulcerative colitis.

105) Abstract 1651

BIOPSYCHOSOCIAL CORMORBIDITIES OF CELIAC DISEASE

Danielle Arigo, M.S., Joshua M. Smyth, Ph.D., Psychology, Syracuse University, Syracuse, NY, Alicia Anskis, B.A., Digestive Diseases, NI Diabetes & Digestive/Dentary Diseases, Syracuse, NY

PURPOSE: Celiac Disease (CD) is characterized by an allergic reaction to gluten, requiring a lifelong adherence to a gluten-free diet. The abundance of gluten in common foods creates difficulties adjusting to this lifestyle and managing CD symptoms, which can give rise to or exacerbate psychosocial difficulties (e.g., dysphoria, poor daily function, disordered eating behaviors, etc.). Although the incidence of CD appears to be increasing, little is known regarding psychosocial comorbidities in CD. METHOD: We investigated relationships among CD symptom severity, dietary compliance, and broadly defined well-being and functioning in a sample of 177 women with CD (mean age=39.34). RESULTS: Most patients reported good dietary compliance; variation within this range of compliance did not predict CD symptom severity. Relatively poorer dietary compliance and increased CD symptom severity, however, were each independently associated with greater depressed mood, higher perceived stress, lower physical and emotional functioning, and increased symptoms of disordered eating (p<.05). A substantial minority of the CD sample endorsed symptoms that met criteria for clinical diagnosis of psychiatric disorders: 41% met the threshold for depressive symptoms, and 23% for disordered eating. Participants whose symptoms exceeded these clinical thresholds also reported increased symptoms of disordered eating (p<.05). A substantial minority of patients report clinically-relevant levels of depression and disordered eating, often associated with greater psychosocial distress in other domains. Existing care appropriately focuses on dietary recommendations for individuals with CD. There may be great potential to improve patient well-being through provision of adjuvant biopsychosocial care and intervention (e.g., for symptoms of depression and disordered eating).

106) Abstract 1071

THE INFLUENCE OF PSYCHOLOGICAL STRESS ON UPPER RESPIRATORY INFECTION. A META-ANALYSIS OF PROSPECTIVE STUDIES

Robert Zachariae, MDsci, Oncology, Aarhus University Hospital, Aarhus, Denmark, Anette F. Pedersen, PhD, General Medicine, University of Aarhus, Aarhus, Denmark, Dana H. Boivdberg, PhD, Behavioral Medicine, University of Pittsburgh Cancer Institute, Pittsburgh, PA

Infectious and allergic upper respiratory infections (URI) are considered common, with at least 50% of the population being affected each year. As the majority of these infections are due to respiratory viruses, such as rhinoviruses, there is a considerable amount of research on stress and URI. However, the results have been inconsistent and the majority of the research conducted has been cross-sectional or case-control studies. The majority of the literature suggests that stress may contribute to URI risk, but this association is not robust. Using a meta-analytic approach, this study aims to evaluate the association between psychological stress and URI risk. The results of this study suggest that psychological stress is associated with increased risk of URI.
BACKGROUND AND AIM: Among individuals exposed to an infectious agent, not all develop clinical disease, and it has been suggested that some of this variability may be explained by reduced resistance to infection caused by psychological stress. Our aim was to quantify the available evidence for this hypothesis. METHODS: We conducted a systematic review and meta-analysis of prospective studies examining the association between psychological stress and subsequent upper respiratory infection (URI). RESULTS: The literature search identified 27 published studies, which satisfied the inclusion criteria. The results revealed a significant overall relationship between stress and the risk of developing URI (r = 0.21; 95% CI: 0.15 to 0.27; random effects model). The high failsafe-number of 850 exceed the criterion of 145 indicated a robust result. Further analyses showed that effect sizes did not vary according to type of stress, how URI was assessed, or whether the studies had controlled for antigen pre-exposure. CONCLUSION: Taken together, the hypothesis that psychological stress is associated with increased susceptibility to URI was confirmed, lending support to an emerging appreciation of the potential importance of psychological factors in infectious disease.

107) Abstract 1465

DUPLICATE SALIVA SAMPLES DURING PSYCHOSOCIAL STRESS TESTING: FEASIBILITY AND STABILITY OF CORTISOL ASSESSMENTS
Ana F. Trueba, B.S., Erica S. Ayala, M.A., Antje Kalliomat, Ph.D., Psychology, Southern Methodist University, DALLAS, TEXAS, Charles D. Vance, Ph.D., Richard J. Auchus, MD, PhD, Biomedical Sciences, UT Southwestern Medical Center at Dallas, DALLAS, TEXAS, Thomas Ritz, Ph.D., Erica S. Ayala, M.A., PSYCHOLOGY; Southern Methodist University, DALLAS, TEXAS

Salivary cortisol is widely used as a parameter of the hypothalamic pituitary adrenal response to stress. Because saliva sampling is noninvasive, it could also provide convenient access to an additional number of endocrine and immune parameters. However, it remains unclear whether multiple saliva samples at one time point are feasible and if they add to the quality of saliva cortisol assessments. In the present study we collected duplicate saliva samples within 1-2 min for assessment of stress-induced cortisol changes. The correlation between these samples was used to determine the stability of the cortisol levels. If levels were stable, cortisol could be assessed as part of saliva sampling series with multiple saliva samples at each time point. We analyzed responses to a laboratory-induced moderate psychosocial stress task (Trier Social Stress Test- TSST) in 29 asthmatic and 19 healthy participants (mean age 21.6), with six duplicate samples at 15 min intervals before and after stress. Cortisol samples were highly correlated (r = .89-97) within and across groups. Levels were slightly lower in the second sample for two out of six time points (p < .05-005). We also explored if TSST effects on cortisol levels were better demonstrated by the first, the second, the highest, or the average of the two cortisol levels. Results were largely consistent, with significant increases of cortisol after stress in all analyses. Asthmatic participants had significantly lower cortisol levels at all time points compared to healthy participants. Our findings suggest that cortisol assessed by a single saliva sample is sufficient to obtain a reliable assessment of cortisol levels and that cortisol can be readily assessed from a second sample in a series of saliva samples.

108) Abstract 1775

EFFECTS OF ACUTE PSYCHOSOCIAL STRESS ON VENTILATION IN HEALTH AND ASTHMA
Erica S. Ayala, M.A., Ana F. Trueba, B.S., Antje Kalliomat, Ph.D., Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX

Emotions and stress are known to change the respiratory pattern. In asthma, certain breathing patterns, such as hyperventilation, can have adverse effects on the airways and thereby lead to symptom exacerbation. Prior research on stress-related breathing pattern changes in asthma has only considered a limited set of respiratory parameters and has remained equivocal. We therefore studied ventilation during an acute psychosocial stress task (Trier Social Stress Test) and during resting conditions before and after the test in participants with asthma and healthy controls. The respiratory pattern was recorded with ambulatory respiratory inductance plethysmography. Measures were obtained at 15 and 0 minutes before stress, during a 5-minute free speech and a 5-minute mental arithmetic task, as well as at 15, 30, and 45 min after stress. In addition, partial pressure of end-tidal carbon dioxide (PCO2) was measured with capnometry before and after stress. Complete data were obtained from 18 asthmatic participants and 17 healthy controls. Overall minute ventilation was higher in asthma, but PCO2 levels were comparable to healthy controls during pre- and poststress phases. Asthmatic patients showed a significant lengthening of the respiratory cycle and the total respiratory cycle as well as an increase in tidal volume instability from pre- to post-stress. Healthy participants showed an opposite pattern of changes. During stress tasks, all participants showed marked increases in tidal volume, inspiratory flow, minute ventilation, tidal volume instability, ribcage contribution to tidal volume, and ribcage-abdominal asynchrony during stress. Participants with asthma showed more pronounced lengthening of expiration compared to healthy participants. Thus, we found no evidence for hyperventilation during stress in asthma patients. Expiratory lengthening is characteristic for asthma patients in psychosocial stress and may help avoiding symptom exacerbations.

109) Abstract 1538

EARLY ADVERSE EXPERIENCES AND SUBSEQUENT HEALTH AND ADJUSTMENT: THE TRANSITION TO COLLEGE
Kelly B. Filipkowski, M.S., Joshua M. Smyth, Ph.D., Psychology, Syracuse University, Syracuse, NY

PURPOSE: Research supports a connection between early traumatic/stressful experiences and subsequent health outcomes. The current study prospectively examined the impact of early adversity on the health and well-being of students adjusting to college. METHOD: During the first two weeks of entering college, students (n = 249; 55% female; ages 18-19) reported traumatic/stressful events they experienced prior to college. They also reported physical symptoms, health-related behaviors, and other components of college adjustment; health and well-being reports were repeated at the end of their first semester. RESULTS: Analyses examined the relation of early adversity to outcomes at the start of college, as well as to prospective changes across the first semester. Higher reported adversity prior to entering college predicted greater perceived stress, physical symptoms, and sexual risk behavior at college entry (ps < .01). Reported trauma prior to college also predicted a prospective increase in physical symptoms over the first semester (p < .05); this relationship appeared mediated by perceived stress at college entry. Additionally, prior traumatic experiences were related to lower body weight at college entry and predicted prospective weight decline over the semester (p < .04). Past trauma was associated with cigarette use at college entry (p < .03), but not prospective changes over the semester. Trauma did not predict alcohol consumption at college entry or changes across the semester. CONCLUSION: Early adverse experiences can negatively impact health and adjustment, even among relatively healthy and high-functioning young adults. Risk factors associated with early adversity are present by the time students arrive at college, but can also prospectively impede adjustment to college. Thus, stress/trauma experienced early in life has a persistent and widespread legacy, even among those who are generally resilient.

110) Abstract 1145

A CONCEPTUAL OVERVIEW OF THE RELAXATION RESPONSE RESILIENCY MODEL
Gregory L. Fricchione, MD, Elyse R. Park, PhD, MPH, John W. Dansinger, MD, PhD, Jonathan A. Lerner, PhD, Sarah E. Rastegar, BA, Herbert Benson, MD, Benson-Henry Institute for Mind Body Medicine, Mass. General Hospital, Harvard Medical School, Boston, MA

Purpose of study: To present the theoretical underpinnings, operationalization, and empirical evidence of the Relaxation Response Resiliency Model (RRRM). Statement of methods: Since the Relaxation Response was introduced by Herbert Benson, M.D. in 1974, three decades of research and clinical work has been undertaken. Dr.
Benson's groundbreaking work highlighted how the mind and body function together in one's experience of stress and proposed the existence of an elicitable state, the Relaxation Response, that could alter one's physiology and combat stress. Today we know that an individual's experience of stress is a result of a confluence of genetic, biometabolic, psychological, and social factors. To this end, we present an updated model, the Relaxation Response Resiliency Model which is conceptualized as an antidote to the deleterious effects of the stress response. The RRRM tenets include the following: 1) stressors, and one's corresponding responses, can affect one's core resiliency; 2) the relaxation response is a learned physiological state that, once achieved, can counter-regulate the multiple factors of stress reactivity; 3) many techniques can be used to achieve the relaxation response's enhanced state of awareness and attentiveness; and 4) mastery of the relaxation response maximizes one's ability to benefit from a multimodal mind body intervention. The RRRM promotes lifestyle modification, emotional regulation, cognitive strategies, and physical improvements. Summary: We will review the benefits of the relaxation response, strategies to elicit the relaxation response, and barriers to practice. We will present an overview of the 4 RRRM intervention components and detail how it is operationalized in a multimodal intervention. We will detail recommended measures (psychological, cognitive, physiological, genetic) used to assess and explain the effects of the RRRM intervention as well as our epigenetic, neuroimaging, clinical and animal research conducted to date.

The aim was to study if health, reaction time, and the diurnal rhythm of cortisol were negatively affected when a group of shift workers changed their work schedule from ordinary night-day shift to swing shift. This was tested on 19 healthy workers on a Norwegian oil rig in the North Sea. They worked two weeks offshore followed by 4 weeks off work. The ordinary schedule was to work 12-hour day shift during one work period (14 days), and 12-hour night shift on the next work period (14 nights)(fixed-shift). Swing shift involves night shift during the first week, then day shift the second week, for every working period. The advantage of swing shift is that the workers are readapted to a normal day-night rhythm when they start their 4 week off work period. The disadvantage is that the workers have to adjust their biological rhythms every work period instead of every other work period. All participants worked ordinary night-day shift when baseline data were collected (questionnaires, saliva cortisol, and reaction time during work). After collection of baseline data the workers changed their work schedule to swing shift, one year later the same data were collected. Swing shift did not give any negative health effects or any negative changes in reaction time during the day they shifted from night work to day work. During swing shift the cortisol rhythm went slowly back to a normal rhythm in the second week, but it was not fully returned to normal values when they returned home for the 4 weeks off period. When working swing shift the cortisol rhythms were readapted to normal values after one week at home. For personnel returning home directly from 14 consecutive night shifts, diurnal cortisol adaptation was not complete after one week at home.

111) Abstract 1717
CORTICOSTEROID MODULATION OF ORAL MUCOSAL WOUND HEALING
Christopher G. Engeland, PhD, Phillip T. Marucha, PhD, DMD, Periodontics, University of Illinois at Chicago, Chicago, IL
Corticosteroids have been used in dental surgeries since 1950 to reduce edema and trismus (loss of functionality) following surgery. Surprisingly, it remains unknown how corticosteroids affect tissue healing in the mouth. The general assumption is that healing is slowed by corticosteroids due to their immunosuppressive effects. Previous data from our laboratories suggest the opposite might be true. Although it has never been empirically tested, this assumption has affected clinical practice by reducing the use of corticosteroids during surgery. To resolve this issue, the present study examined the effects of corticosteroid administration on wound closure rates in the oral mucosa. 60 young adults received a 3.5mm diameter circular wound on the hard oral palate after being given placebo or corticosteroid (125 mg methylprednisolone iv). Wounds were videographed daily to assess closure rates. One month later, this procedure was repeated with the alternate drug treatment on the opposite side of the mouth. In men (n=30) corticosteroids had no effect on wound healing rates. Preliminary results in women (n=16) indicate that corticosteroids resulted in faster healing times. Using the same wound healing model, we hypothesize that corticosteroids could accelerate healing time in men. Clinical implications will be discussed. (Support NIH R21 DE018161, UIC College of Dentistry)

113) Abstract 1723
MARITAL SATISFACTION, BUFFER THE NEGATIVE EFFECTS OF ACCULTURATIVE STRESS IN MEXICAN IMMIGRANTS
Patrick R. Steffen, PhD, Jill Walker, BS, James Van Dyke, BS, Chris Anderson,, Clinical psychology, Brigham Young University, Provo, UT
INTRODUCTION: Marital status and marital satisfaction have been shown to be related to positive health outcomes in a variety of studies. It is not known, however, if the effects of marital status on health outcomes help to buffer the stress of cultural transition in immigrant populations. The purpose of this study was to examine whether marriage would buffer acculturative stress in Mexican immigrants. METHOD: A sample of 180 Mexican immigrants (average age = 37, average of 9 years living in the United States, 52% female) were assessed on marital status, marital satisfaction (Dyadic Adjustment Scale-Revised) mental (depressive symptoms, perceived stress) and physical (hs-CRP, glucose, insulin, hba1c, cholesterol, triglycerides) health. RESULTS: Marital status did not buffer the effects of stress on health in Mexican immigrants. Marital satisfaction was related to decreased depressive symptoms (F = 4.66, p < .001) and perceived stress (F = 4.12, p < .01), and was related to lower hs-CRP (F = 2.72, p = .07), lower fasting glucose (F = 3.30, p < .05), lower hba1c (F = 5.50, p < .01), lower cholesterol (F = 4.69, p < .01), and lower triglycerides (F = 3.10, p < .05) with these effects being seen most strongly among those with higher levels of acculturative stress. CONCLUSIONS: Marital satisfaction, but not marital status, is related to positive health outcomes in Mexican immigrants and appears to buffer the negative effects of acculturative stress on health.

114) Abstract 1485
DOES FEEDING FOLLOW FIGHT OR FLIGHT? STRESS-INDUCED EATING IN THE NATURAL ENVIRONMENT
Kristin E. Heron, M.S., Joshua M. Smyth, Ph.D., Psychology, Syracuse University, Syracuse, New York
PURPOSE: Stress impacts health directly through physiological processes, but also from its effect on health behaviors, including eating habits. Experimental studies show acute stress manipulations can induce stress-related eating, along with alterations in endocrine function and glucose metabolism. Evidence as to whether naturally occurring stressors induce eating comes primarily from retrospective self-report measures, limiting our understanding of real-time processes and temporal sequencing of this relationship. This study examined the within-person relationship between stress and eating in everyday life, using ambulatory ecological momentary assessment. METHODS:

120) Abstract 1207
SHIFT WORK, CORTISOL AND HEALTH AMONG OFFSHORE WORKERS
Anette Harris, MSc, Psychology, Siri Waage, MSc, Public Health and Primary Health Care, Ursin Holger, MD,PhD, Unifoh health, University of Bergen, Bergen, Norway, Åse M. Hansen, PhD, Institute of Public Health, National Research Centre for the Working Environment, Copenhagen Ø, Denmark, Bjørn Bjorvatn, MD, PhD, Section for General Practice, Hege R. Eriksen, PhD, Psychology, University of Bergen, Bergen, Norway
Women (N=59, mean age=19) recorded stress, mood, and eating 5 times per day for 1 week on palmtop computers. Eating episodes, stressor occurrence, and the stress, duration, and anxiety subscales of the Depression Anxiety and Stress Scale [DASS] were measured at each assessment. Time lagged multi-level random effect models controlling for time of day were conducted. Stress and mood ratings at each momentary assessment were used to predict eating at the next assessment (2-3 hours later). RESULTS: Stressor occurrence (p=.07), DASS stress scores (p=.01), and DASS anxiety scores (p=.01) prospectively predicted eating episodes. In contrast, DASS depression scores were unrelated to subsequent eating (p=.35). Thus, experiencing stress or anxiety (but not depression) increased the likelihood of eating over the next 2-3 hours. Stress-induced eating appears uniquely linked to the presence of high arousal negative valence states, rather than broader dysphoric mood (e.g., depression), and may reflect different underlying physiological processes (e.g., cortisol function). Stress-induced eating in daily life may thus be a risk factor for diabetes, cardiovascular disease, obesity, and other illnesses. Moreover, stress may be a target for intervention in chronic disease prevention and self-management programs requiring dietary change.

115) Abstract 1597

DEPRESSION, VITALITY, AND CORTISOL IN OLDER ADULT CAREGIVERS AND NON-CAREGIVERS

Karissa G. Miller, B.A., Guido G. Urizar, PhD, Psychology, California State University, Long Beach, Long Beach, CA

Chronic stress has been shown to adversely influence cortisol patterns, yet few studies have investigated the relationship between depression, vitality and cortisol in older adults. Therefore, the current study tested whether changes in depression (Beck Depression Inventory) and vitality (Vitality Plus Scale) were associated with cortisol among 48 older adult caregivers and non-caregivers (mean age = 56 ± 6 years; 54% caregivers) who participated in a 4-month health behavior intervention. Salivary cortisol was collected at four times during the day over a two-day period, at baseline and at 4 months. Total average cortisol output was calculated and cortisol levels were steeper, with a greater decline in cortisol across the day representing a more normal diurnal cortisol pattern. Paired samples t-test analyses demonstrated that compared to baseline values, depression scores significantly decreased for total depression (t=3.20, p<.05), and both psychological (t=2.83, p<.01) and somatic symptoms of depression (t=2.15, p<.05). Conversely, vitality scores significantly increased from baseline to 4-months (t=1.96, p<.05). At the 4-month follow-up period, caregivers had significantly higher levels of total depression (t=3.29, p<.01), and more psychological (t=3.01, p<.01) and somatic (t=3.10, p<.01) symptoms of depression than non-caregivers. Further, caregivers had significantly lower vitality (t=2.67, p<.01) and higher total cortisol output (t=2.04, p<.05) than non-caregivers at 4 months. Hierarchical regression analyses indicated that, controlling for caregiver status, greater changes in vitality from baseline to 4-months were associated with more normal diurnal cortisol patterns (R=2.15, p<.05). These results highlight the differential impact of changes in depression and vitality on cortisol patterns among older adult caregivers and non-caregivers, and provide support for health interventions which address the unique needs of caregivers.

116) Abstract 1251

SELF-REPORTED SLEEP AND DIURNAL CORTISOL IN A HEALTHY MIDDLE-AGED SAMPLE

Crista N. Crittenden, MPH, Sheldon Cohen, PhD, Psychology, Carnegie Mellon University, Pittsburgh, Pennsylvania, Anna L. Marsland, PhD, Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania

Differences in diurnal cortisol and disrupted sleep patterns have been implicated in physical health outcomes. This study aims to further define the link between these factors by examining self-reported sleep and diurnal cortisol patterns measured across several days. Participants were healthy males (39) and females (57), 40 to 60 years old (mean 49.94), and were part of a larger vaccination study. Participants collected salivary cortisol samples 4 times a day for 6 days (0.5, 4, 9, and 11 hours after awakening). Area under the curve (AUC) and daily slope were calculated for each day. Sleep parameters were assessed with the Pittsburgh Sleep Quality Index (PSQI). Sleep variables included efficiency, duration, minutes to fall asleep, minutes lost at night and minutes lost in the morning. AUC was correlated negatively with sleep duration (-.214, p = .044) and positively with minutes to fall asleep (.213, p = .045). Diurnal slope was negatively correlated with sleep duration (-.245, p = .021) and efficiency (-.225, p = .034) and positively with minutes to fall asleep (.276, p = .009) and minutes lost at night (.213, p = .045). Minutes lost in the morning had no association with cortisol. Results imply that sleep duration affects total daily cortisol; the shorter the duration, the higher the cortisol levels. Cortisol levels also increased with the more minutes it took to fall asleep. Daily cortisol patterns differed by efficiency and duration in participants reporting greater sleep duration and efficiency showed steeper slopes, indicative of more normal diurnal patterns than those reporting short duration and less efficiency. Slopes were less steep the more minutes it took to fall asleep and the more minutes spent awake at night. Again, any minutes lost in the morning were not linked to cortisol. It may be that only specific sleep parameters are associated with particular cortisol outcomes, and that health is affected through these distinct pathways. These findings have implications for further developing the mechanisms in which sleep, cortisol and health are related and may inform more targeted behavioral/health interventions.

117) Abstract 1363

REGIONAL DIFFERENCES IN AWARENESS AND ATTITUDES TOWARDS GENETIC TESTING FOR DISEASE AND ANCESTRY

Charles R. Jonasaitis, PhD, Institute for Genome Science & Policy, Charmaine D. Royal, PhD, African & African American Studies, Duke University, Durham, NC

Advances in genomic medicine have lead to the widespread use of genetic testing to determine disease risk and ancestry. Little is known, however, about the lay public's awareness and attitudes towards genetic testing and what factors influence their perceptions. The existing literature focuses mainly on ethnic and socioeconomic differences; however, here we focus on how awareness and attitudes towards genetic testing differ by geographical region. METHODS: Participants included 455 adults (41% African American and 67% female) from four U.S. sites, Oklahoma City, OK, Cincinnati, OH, Harlem, NY, and Washington, DC. We compared awareness, attitudes, and behavior towards genetic testing among four major U.S. cities. All participants underwent DNA testing for ancestry. RESULTS: The OK and NY site tended to be more ethnically diverse (X2=31.75,p<.01), while the DC participants were younger (F=2.74,p<.04), had a higher mean education (F=2.87,p<.03), and were less likely to identify with an organized religion than all other sites (X2=16.76,p<.01). The OK site knew more about their own ancestry (F=3.35,p<.02) and preferred ancestry testing over genetic disease testing more than all other sites (X2=19.19,p<.01). The NY site was more likely to seek genetic disease testing (X2=15.86,p<.01) and believed that finding out more about one's ancestry was important, more so than all other sites (X2=14.59,p<.02). The DC site reported hearing and reading more about genetic testing for African ancestry than all other sites (F=8.74,p<.01). These site differences were not better accounted for by sex, age, education, self-reported ethnicity, religion or previous experience with genetic testing/counseling. European ancestry was positively associated with knowledge about one's own ancestry (B=40,p<.01) and Sub Saharan African ancestry was positively associated with age (B=10.44,p<.001); however, site differences in awareness and attitudes remained significant even with the inclusion of genetic ancestry in each model. CONCLUSIONS: Regional differences in awareness and attitudes towards genetic testing cut across traditional demographic predictors, such as ethnicity, age and education. Geographic region specific factors, more than ethnicity and socioeconomic status, may influence the public's knowledge and belief systems, particularly in respect to science and medicine.
118) Abstract 1241

Effects of Abbreviated Progressive Muscle Relaxation on Resilience in a High Stress College Sample

Christyn L. Dolbier, PhD, Taylor E. Rush, MA, Psychology, East Carolina University, Greenville, North Carolina

Stress in college students makes them vulnerable to health problems and thus, in need of intervention. Much research examines negative stress responses, with little focusing on processes that counteract stress such as activity of the parasympathetic nervous system (PNS), the autonomic nervous system branch that calms the body following stress. An indicator of PNS activity is heart rate variability (HRV), the fluctuation in intervals between heartbeats. Research supports progressive muscle relaxation (PMR, tensing and relaxing muscle groups) as a clinical treatment to reduce negative stress responses; however, its effect on PNS activity has not been studied. This study examined the effectiveness of PMR to enhance physiological and psychological resilience among high stress college students. Participants (N=128) were undergraduate women (59%) and men recruited from psychology classes, 19 years old on average, predominantly white (77%), with above average Perceived Stress Scale scores. After random assignment, there were 62 control group (CG) participants who tensed muscle groups for 20 minutes. Stress and post-treatment measures included the Endler Multidimensional Anxiety Scale, physical and mental relaxation items, and 5-minute ECG HRV recordings. A series of analyses of covariance were conducted. Post-treatment, the EG reported significantly higher mental [F(1,124)=4.5, p=.04] and physical [F(1,124)=4.8, p=.04] relaxation and lower cognitive anxiety [F(1,124)=5.0, p=.02] compared to the CG [M=7.1, M=7.4, M=12.4, respectively]. The EG had significantly lower low-to-high frequency HRV ratios [M=2.7, F(1,118)=5.8, p=.02] and greater normalized high frequency HRV [M=38.4 F(1,118)=5.7, p=.02] compared to the CG [M=43.2, respectively] suggesting greater PNS dominance. These findings indicate a 20-minute PMR intervention can have significant short-term effects on resilience to stress by reducing detrimental and enhancing beneficial responses in high stress college students.

119) Abstract 1448

Resilience from Society to Cells: A Theoretical Psychosomatic Model of Health Disparities

Sarah L. Szanton, PhD, Johns Hopkins University, Nursing, Baltimore, MD, Jessica M. Gill, PhD, National Institutes of Health, National Institute of Nursing Research, Bethesda, MD

Humans experience challenges throughout their lives and strive to meet them through a process of resilience. However, individuals differ markedly in their resilient capacity. Few theorists have conceptualized resilience as a process largely determined by the cumulative interaction of environmental and inherent factors. In contrast, we propose a society-to-cells theory of resilience to facilitate efforts to analyze and decrease health disparities. Factors which may influence differences in resilience include: the nature of the challenge, the societal, community, and family environments in which people live, and intrinsic factors that influence psychological, physiological, and cellular coping potential. These factors are interactive and cumulative across the life-course. The resultant differences in resilient abilities may explain some health disparities. For example, the psychological and physical health of some but not all traumatized New Orleans residents changed following Hurricane Katrina. These changes may partially result from societal-to-cells perspective will provide researchers an opportunity to view individuals' responses to challenges in an integrative manner. Interventions based on the 6 factors could lead to sustainable changes through cellular, physiologic, individual, family, community, and societal resilience. These changes to factors affecting resilient potential could also decrease individual and societal health disparities.

120) Abstract 1591

Daily Physical Health Symptoms and Cortisol in the National Study of Daily Experiences

Heather A. King, M.S., Robert S. Stavski, Ph.D., David M. Almeida, Ph.D., Human Development and Family Studies, The Pennsylvania State University, University Park, Pennsylvania

The results of past studies are equivocal regarding how self-reports of physical health symptoms are associated with cortisol. Symptom reports have been linked to both higher (e.g., Volkman & Weekes, 2006) and lower (e.g., Lindeberg et al., 2008) cortisol. In addition, several studies have found no relationship between symptom reporting and cortisol (Ferguson, 2008; Wrosch et al., 2007). The present study contributes to this literature by examining the associations between a diverse set of daily physical health symptoms and levels of cortisol at various points across the day in a national sample. The sample included 2,022 adults between the ages 33 and 84 (mean age = 56, 57% female) who participated in the second wave of the National Study of Daily Experiences, a part of the Midlife in the United States Study (MIDUS). Respondents completed eight consecutive daily telephone interviews, during which participants indicated whether they experienced each of 28 symptoms such as cough, headache, and muscle soreness. The majority of the respondents (86%) also participated in saliva collection, providing 4 saliva samples (upon waking, 30 minutes after waking, before lunch, and before bed) on study days 2-5 of the 8-day sequence. Controlling for time of sample collection, medication use, and smoking status, regression analyses indicated that people who report more physical health symptoms on a daily basis exhibit lower levels of cortisol upon waking (beta = -.09, p < .01) and 30 minutes after waking (beta = -.09, p < .01) but higher levels of cortisol at bedtime (beta = .06, p < .05). These results suggest that reports of daily physical health symptoms are important for understanding naturally occurring daily cortisol levels. Further investigation of this topic would contribute to a more in-depth and complete understanding of health and health-related processes.

121) Abstract 1376

Pathways Linking Inflammation with Chronic Stress

Michael Murphy, B.S., Gregory E. Miller, Ph.D., Psychology, University of British Columbia, Vancouver, British Columbia, Canada

Purpose: Recent research suggests that chronic stress may contribute to systemic inflammation by decreasing the sensitivity of white blood cells to cortisol. However, many questions remain regarding the biological mechanisms that mediate this relationship and how it develops over time. The purpose of this study is to elucidate these processes by following a chronically stressed group of people and measuring their glucocorticoid sensitivity (GS) as well as glucocorticoid receptor (GR) expression in immune cells. Methods: As part of an ongoing longitudinal study, saliva samples were collected on new caregivers of brain cancer patients and demographically similar healthy controls. All participants are assessed 4 times over 1 year. At each visit a battery of psychosocial measures on mood and stress are collected. Also, blood is obtained for assessing GS and GR expression utilizing a flow-cytometry based intracellular staining protocol. For this, whole blood is treated with lipopolysaccharide and a range of cortisol doses and intracellular expression of interleukin-6 (IL6) and GR is measured in CD14+ monocytes. Currently, there are 6 caregivers and 14 control participants enrolled in our study, however we expect this number to increase over the coming months. Results: Although currently our sample size is small, caregivers showed a trend towards a higher sensitivity to cortisol-mediated inhibition of IL6 compared to controls (F = 2.75, p = .11). Additionally, caregivers have fewer GR+ monocytes than controls, and expressed GRs less densely per cell (caregiver mean = 46.86, control mean = 61.33). However, neither of these findings was statistically significant with the low power available. Conclusion: These initial data suggest that the monocytes of new caregivers are more sensitive to the anti-inflammatory properties of cortisol. However, we speculate that over time, prolonged exposure to caregiving will reverse this pattern and participants will become more resistant to the anti-inflammatory properties of cortisol. Differences in monocyte GR expression may play a role in this process, but the present findings suggest it is likely to be complex.
122) Abstract 1384

THE INFLUENCE OF PHYSICAL TOUCH ON CARDIOVASCULAR FUNCTIONING

Rebecca L. Clausius, B.S., Cynthia Karlson, M.A., Catrina C. Lootens, B.S., Stacy M. Carter, Sarah D. Pressman, Ph.D., Psychology, University of Kansas, Lawrence, KS

Limited research has examined the influence of human touch on physiological outcomes such as blood pressure (BP), heart rate and parasympathetic functioning. This study investigated whether self-reported physical touch with friends, family, and/or a romantic partner, and satisfaction with those levels of touch, would predict physiological outcomes. Eighty-two female undergraduate participants (mean age 19.3 years; 86.6% Caucasian) completed demographic information and the Personal Affection & Touch Scale (PATS) followed by a 10 minute rest period of cardiovascular recording. The PATS is a newly constructed, 20-item measure assessing physical contact frequency (e.g. hugging, massage) via a 5-point Likert scale (1=Very rarely or never, 5=At least once daily) as well as one item assessing satisfaction (PATS-SAT; min=1 want much less contact, max=5 want much more contact) and one item assessing discomfort (PATS-D; min=Always uncomfortable with touch, max=Not at all uncomfortable with touch). This measure assessed general (PATS-GEN) and romantic (PATS-RO) touch. Measures of cardiovascular output were collected from 8am to 8pm. Of 72 participants, 16 medicated vs. 47 hypertensive adults, 35 BP, mean heart rate (MHR), inter-beat interval (IBI), and high frequency spectral power (HFSP). Cardiovascular outcomes were not found to be associated with age, ethnicity, baseline mood, minutes slept last night, or non-stimulant medications. Multiple linear regression revealed that the PATS-SAT predicted average systolic BP, controlling for BMI and stimulant use (t=2.11, p<.05), with a desire for more touch being associated with increased systolic BP. The PATS-RO predicted diastolic BP (t=-2.10, p<.05), controlling for BMI with touch comfort being associated with lower HFSP. The PATS-RO scale predicted MHR (t=-2.25, p<.05), controlling for BMI, and showed a trend for predicting IBI (t=1.84, p=.07). These results indicate that higher levels of physical touch as well as comfort and satisfaction with touch may be associated with lower levels of BP and MHR, and higher levels of parasympathetic activity (HFSP). These findings describe one pathway by which physical touch and activities like massage may be beneficial for health and well-being.

123) Abstract 1315

IMPACT OF ANTIHYPERTENSIVE DRUGS AND BLOOD PRESSURE ON DIURNAL SYMPATHETIC ACTIVITY

Jana Strahler, MSc, Clemens Kirschbaum, PhD, Psychology, Technische Universität Dresden, Dresden, Germany

It was often shown that older adults display an increase in sympathetic drive what might be associated with a higher risk for cardiovascular diseases. This sympathetic drive was often shown to be associated with higher blood pressure (BP) whereas the effects of antihypertensive drugs (AD) seems controversial. Salivary alpha-amylase (sAA) has been suggested as a non-invasive saliva based marker for sympathetic nervous system (SNS) activity. To our knowledge, there are virtually no studies investigating the effects of AD as well as actual BP on basal sAA values in older adults. To determine SAA basal rhythms, five saliva samples were collected immediately after awakening, 30 minutes after awakening, 11am, 3pm, and 8pm in 79 older adults (32 nonmedicative and 16 medicative antihypertensive; 47 hypertensive adults, 35 medicated). Results showed a pronounced rhythm of sAA in all groups. We found no effect of AD and BP on sAA profiles whereas a trend towards a main effect of AD (p = 0.120) indicated higher values at all time points in unmedicated older adults. Descriptively, this was also true for hypertensive older adults. Diurnal profiles differed significantly between men and women (p = 0.009) with men lacking the typical decrease of sAA in the morning. The main effect of AD was also shown for area under the curve (AUC) values (p = 0.018), indicating a higher total output of sAA in medicated adults. An AD by sex interaction (p = 0.055) and a trend towards a BP by sex interaction (p = 0.116) indicated that unmedicated as well as hypertensive men showed the highest diurnal output of sAA. Overall, our findings showed higher salivary alpha-amylase output in men being hypertensive and not using any antihypertensive medication, indicating higher sympathetic activity in this group. This implies a possible mechanism for an increased susceptibility to cardiovascular events in older men. Our findings are of particular interest for the increasingly important research area of aging and highlight the importance of sympathetic activity as a potential risk factor for cardiovascular morbidity and mortality in the elderly.

124) Abstract 1644

DO SOCIAL IDENTIY AND RECEIVED SOCIAL SUPPORT FROM OUTGROUP OR INGROUP MODERATE THE RELATIONS BETWEEN DISCRIMINATION AND DEPRESSIVE SYMPTOMS?

Andrena Pierre, MSc, Kimberly Matheson, PhD, Psychology, Hymie Annis, PhD, Institute of Neuroscience, Carleton University, Ottawa, Canada

Discrimination is a potent stressor that may negatively impact mental health. The goal of this study was to identify and understand social and individual factors that may influence the impact of discrimination on depressive symptoms. Social support is known to buffer against the negative effects of stressful events, and could potentially act in a similar fashion when the stressor involves discrimination. However, the effects of social support may depend on whether it comes from other members of the targeted group, or from individuals who belong to the group that has perpetrated the discrimination. Moreover, the effects of social support may also depend on individuals’ sense of pride about their group (private regard) or their evaluation of the regard that others have for their group (public regard). A community sample of 235 Jewish participants (64% female, mean age = 35 years), completed an online questionnaire assessing discrimination experiences, social support received from ingroup and outgroup members, social identity (private regard and perceived public regard), and levels of depressive symptoms. Hierarchical regression analyses of depressive symptoms indicated a three-way interaction between discrimination, public regard and social support received from outgroup members, Rchange= .027, p < .05. Simple slope analyses showed that when individuals thought that the outgroup held their group in low regard, receiving social support from the outgroup increased the association between perceived discrimination and depressive symptoms (Hierarchical F=3.87, p < .05). These results suggest that thought that the outgroup held Jews in low regard, receiving greater social support from outgroup members buffered against depressive symptoms in response to discrimination. In addition, greater social support from ingroup members was associated with the discrimination and depressive symptoms relationship being reduced, regardless of victims’ social identity, Rchange= .025, p < .05. The data are interpreted in terms of individual processes (expectancy, appraisal, coping) that accompany the receipt of social support from outgroup members following encounters of discrimination.

125) Abstract 1562

SUBJECTIVE SOCIAL STATUS, PSYCHOSOCIAL RISK, AND SELF-RATED HEALTH

Jenny M. Cundiff, MA, Psychology, University of Utah, Salt Lake City, UT, Timothy W. Smith, PhD, Bert N. Uchino, PhD, Cynthia A. Berg, PhD, Psychology, University of Utah, Salt Lake City, Utah

Subjective social status (SSS) refers to an individual’s perceived standing or rank in a social group or community. SSS predicts health independently of traditional measures of socio-economic status (SES), such as income, education, and occupation (Adler et al., 2008; Cohen et al., 2008). Although psychosocial vulnerabilities (e.g., depression) and resources (e.g., optimism) have been described as mechanisms linking SES and health, few studies have examined their role in associations between SSS and health. The present study of 300 middle-aged and older married couples examined the association of SSS with self-rated health, a health measure previously been shown to predict health outcomes. Eighty-two female undergraduate participants (mean age = 35 years), completed an online questionnaire assessing social identity (private regard and perceived public regard), and levels of depressive symptoms. Social support is known to buffer against the negative effects of stressful events, and could potentially act in a protective manner for cardiovascular morbidity and mortality in the elderly.
between SSS and self-rated health for both women and men, $Z = 4.10$ and 3.25, respectively, both $p < 0.002$. Importantly, SSS was significantly related to self-rated health when controlling psychosocial vulnerability, both $p < 0.05$, indicating partial mediation. Hence, psychosocial vulnerability contributes to, but does not completely account for, the association between SSS and self-rated health. As in the case of models of SES and health, psychosocial variables may be important mechanism linking SSS and health outcomes.

126) Abstract 1681

ANXIETY AND ANGER IN DAILY LIFE: CONTRIBUTIONS OF THE PERSON AND SITUATION IN MOMENTARY ASSESSMENTS OF ELICITED STATES

Jonathan A. Shaffer, Ph.D., Donald E. Edmondson, Ph.D., Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York; William Chaplin, Ph.D., Psychology, St. John's University, Jamaica, New York; Joseph E. Schwartz, Ph.D., Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York; Arthur Stone, Ph.D., Department of Psychiatry and Behavioral Science, Stony Brook University Medical Center, Stony Brook, New York

Anxiety and anger influence physiological outcomes such as blood pressure and heart rate (James et al., 1986). While anxiety and anger are elicited by situational factors, the frequency and intensity with which individuals experience these states are also thought to be influenced by trait dispositions. Purpose: We aimed to decompose the total variance in momentary reports of anxiety and anger collected over 24 hours into those parts that could be attributed to dispositional versus situational factors. Further, we sought to evaluate the correspondence between the trait component of momentary reports and questionnaires of trait anxiety and anger. Methods: Participants ($N=754$) in the Masked Hypertension Study used an electronic diary to rate their degree of anxiety and anger on a visual analogue scale every 28 minutes during the waking hours of a 24-hour period. Participants also completed the State-Trait Anxiety Inventory, Anger Expression Inventory, and the Medley Hostility Scale. Mixed effects regression was used to examine the data. Results: For anxiety, 51% of the variance in momentary reports could be considered trait variance, while 49% could be attributed to state/situational factors and measurement error. The questionnaire measure of trait anxiety shared only 14% of its variance with the trait component of momentary reports of anxiety ($r = .37$, $p<.01$). For anger, 49% of the variance in momentary reports could be considered trait variance, while 51% could be attributed to state/situational factors. Questionnaire assessments of trait anger and trait hostility shared only 2-14% of their variance with the trait component of momentary reports of anger ($r's = .13-.37$, $p<.01$). These results suggest that anxiety and anger are influenced heavily by trait/dispositional factors as well as state/situational factors. Moreover, the poor correspondence between questionnaire measures of trait anger and trait anxiety and momentary assessment points to the need for refinement of extant questionnaire measures or development of new measures. Supported by NIH P01-HL47540

127) Abstract 1275

SUBCORTICAL VASCULAR DISEASE CORRELATES WITH DEPRESSIVE SYMPTOMS AMONG PATIENTS WITH CARDIOVASCULAR DISEASE

Jeanne M. McCaffery, PhD, Psychiatry and Human Behavior, The Miriam Hospital and Brown Medical School, Providence, RI; David F. Tate, PhD, Radiology, Boston University Medical School, Alzheimer's Disease, Boston, MA; Ronald A. Cohen, PhD, Psychiatry and Human Behavior, The Miriam Hospital and Brown Medical School, Providence, RI

The mechanisms involved in the etiology of depression among patients with cardiovascular disease are poorly understood. It has been hypothesized that cerebrovascular disease, particularly in the subcortical region, may contribute depressive symptoms, even in the absence of a large vessel stroke. However, this 'vascular depression' hypothesis remains largely untested among patients with cardiovascular disease. Here, we examined whether depressive symptoms, quantified using the Beck Depression Inventory (BDI), correlate with infarction volume and white matter hyperintensities (WMH) in the subcortical region among 27 participants with documented cardiovascular disease (age range 56-80; 33% female; individuals with clinical history of stroke were excluded). A highly significant association between depressive symptoms and subcortical lacunar infarction volume was observed (Spearman rho = 0.57, $p < 0.001$). The correlation between depressive symptoms and subcortical WMH was Spearman rho = .28, $p = 0.14$. As it has been hypothesized that subcortical vascular disease may be differentially associated with somatic depressive symptoms, we examined whether subcortical vascular disease may be differentially associated with somatic symptoms of the BDI, relative to the cognitive symptoms. The correlation of subcortical lacunar lesion volume with cognitive items of the BDI was Spearman rho = 0.52, $p = 0.004$, whereas the correlation with somatic items was Spearman rho = 0.33, $p = 0.08$. These results suggest that the association between BDI scores and subcortical vascular disease is not simply a function of the effects of subcortical vascular disease on somatic depressive symptoms. Consistent with prior studies in patients not selected for cardiac disease, these results support the hypothesis that depressive symptoms are associated with subcortical vascular disease among patients with cardiovascular disease.

128) Abstract 1582

IMPACT OF MOOD DISTURBANCE ON FLOW MEDIATED DILATION

Denise C. Cooper, Ph.D., Milos S. Milic, M.D., Ph.D., Joseph R. Tafur, M.D., Paul J. Mills, Ph.D., Wayne A. Bardwell, Ph.D., Michael G. Ziegler, M.D., Joel E. Dimsdale, M.D., Psychiatry and Behavioral Medicine, University of California San Diego, La Jolla, CA

Purpose of Study: Substantial literature indicates that negative mood is linked to cardiovascular disease. However, the mechanisms underlying this relationship are not well defined. Cardiovascular disease is often preceded by dysfunction of the endothelium. The current study examined the impact of mood states on endothelial function as measured non-invasively by brachial artery flow mediated dilation (FMD). Participants were 517 healthy adult smokers. Endothelial effects of negative mood states (measured non-invasively by an upper-arm blood pressure cuff) were compared with those of mood states (measured non-invasively by an upper-arm blood pressure cuff) without negative mood. Methods: Participants (N=754) completed the Profile of Mood States (POMS), which contains six subscales (depression/dejection, tension/anxiety, anger/hostility, confusion/bewilderment, fatigue/inertia, vigor/activity) that are used to compute a total mood disturbance composite score for overall psychological distress. Summary of Results: Multiple regressions showed that increases in total mood disturbance scores were associated with decreases in endothelial function, with mood disturbance explaining 10% of the variance in FMD ($p<0.01$) after adjustment for covariates (i.e., age, sex, mean arterial pressure, body mass index, socially desirable response bias). To decompose this link between FMD and POMS total mood disturbance scores, we conducted exploratory regressions for each of the POMS subscales on FMD. Exploratory results indicated that decreased FMD was correlated with increased scores on the POMS depression/dejection, tension/anxiety, anger/hostility, fatigue/inertia ($p<0.05$), and confusion/bewilderment ($p<0.01$) subscales. Conclusion: Mood disturbance may contribute to cardiovascular disease via impaired vasodilation. These preliminary results suggest that even mild levels of adverse psychological states, particularly depressed, anxious, angry, confused, and fatigued states, could be linked to increased cardiovascular risk.

129) Abstract 1360

THE PROSPECTIVE RELATION BETWEEN POSTPARTUM DEPRESSION AND INFANT HEALTH IN LOW-INCOME AND ETHNIC MINORITY WOMEN

Jenna L. Gress, M.A., Allison Lake, B.A., Psychology, Arizona State University, Tempe, AZ; Rose Howe, MSW, Maricopa County Department of Public Health, Phoenix, AZ; Kathryn Lemery-Chalfant, PhD, Linda J. Luecken, PhD, Psychology, Arizona State University, Tempe, AZ
Approximately 10%-15% of new mothers experience postpartum depression (PPD; CDC, 2007). The incidence of PPD among low-income and ethnic minority women is considerably higher. Children of depressed mothers are at increased risk of behavioral, cognitive, and social impairments. The effects of maternal PPD on infant physical health are less understood, particularly among at-risk populations. The aim of the current study was to investigate the prospective relations between maternal depressive symptoms at 5 months postpartum and infant weight gain, physical health (e.g. ear infections, colic, vomiting, fevers), and sleep awakenings at 9 months postpartum in a sample of 133 very low-income new mothers (mean age 26.5 years (SD 5.6); 77% Hispanic, 11% Caucasian, 5% African-American, 4% other ethnicities). Regression analyses predicted infant weight, health, or sleep at 9 months from maternal depressive symptoms at 5 months, controlling for birth weight, gestational age, 5 minutes APGAR score at birth, and 5 month infant weight, health, or sleep. Clinically significant levels of depression (CES-D score > 16) were reported in 24.3% of the women at 5 months postpartum, and 50.6% at 9 months postpartum. Higher maternal depressive symptoms at 5 months postpartum were significantly associated with less infant weight gain from 5 to 9 months, p = .005 and an increased number of infant physical health complaints, p = .006, but did not predict infant nighttime awakenings. A concurrent correlation was found between depressive symptoms and infant weight gain or awakenings, 9 months postpartum (r=.40, p<0.01). This striking prevalence of clinically significant depressive symptoms at 5 and 9 months postpartum in this very low income, largely ethnic minority sample. Further, the effects of PPD extend well into the postpartum period and include significant ramifications for infant physical health.

130) Abstract 1211

PSYCHOSOCIAL AND CLINICAL PREDICTORS OF DEPRESSION IN A SAMPLE OF PORTUGUESE PATIENTS WITH HEART FAILURE

Maria Margarida Bento, MD, Internal Medicine, Hospital São Francisco de Xavier, Lisboa, Portugal; Ricardo Gusmão, PhD, Psychiatry and Mental Health, Faculdade de Ciências Médicas, Lisboa, Portugal; Candida Fonseca, PhD, Internal Medicine, Hospital São Francisco Xavier, Lisboa, Portugal; Antonio Mendes Pedro, Psychology, ISPA e Universidade Autónoma, Lisboa, Portugal

In Portugal, patients with heart failure (HF), have a high rate of depressive symptoms. Aim: to examine clinical, psychosocial and existential variables as risk factors for depression in these HF patients. Methods: 51 patients, NYHA functional classes I-IV, male 66.6%, mean age 72.94 years. BDI-II was used to assess depression symptoms. Sociodemographic and Clinical data were obtained from medical records; the Structured Interview of Symptoms and Concerns (SISC) (i.e. physical, psychological, social and existential) and a qualitative question for the positive aspects were also administered. The BDI-II categorized patients in depressed (27.5%) and non depressed (72.6%) groups. Data were analyzed by multiple regression. Results: the variables associated with depression were: 1) Sociodemographic: being female (p=0.045) practicing religion at home (p=0.053), motivation for retirement (p=0.026). 2) Behavioural: not doing exercise (0.006); negative therapeutic adhesion (P=0.024) 3) Clinical: history of heart attack (p=0.16), prior re-hospitalizations (p=0.022). III-IV NYHA classes (p=0.05) high NT-pro-BNP (p=0.033), fatigue (p=0.033); breathing difficulties (p=0.02); existential concerns (p=0.09), perception of social support (p=0.00), being alone (p=0.013); difficulty of disease acceptance (p=0.011), loss of resilience (p=0.001) and hopelessness (p=0.00). Conclusion: In addition to clinical and behavioural risk factors, many of the positive aspects came from the social dimension; the psychological aspects (e.g. being valuable for people) were higher in non-depressed HF patient; the existential aspects were higher in depressed patients; and the severity of symptoms and concerns belonging to all dimensions, specially physical and social, showing scarce positive aspects of life.

131) Abstract 1030

DELIRIUM FOLLOWING CARDIAC SURGERY

Adam Lau, MD, Psychiatric Research, Zucker Hillside Hospital, Glen Oaks, NY; Joseph S. Weiner, MD, PhD, Consultation Liaison Psychiatry, North Shore University Hospital/Manhasset, Manhasset, NY; Christopher Burke, MD, Head of Division, Consultation Psychiatry, Long Island Jewish Medical Center, New Hyde Park, NY; Syed A. Shamsi, MD, Anil K. Mahlotra, MD, Psychiatric Research, Zucker Hillside Hospital, Glen Oaks, NY; Background Delirium is a serious postoperative complication. It is associated with high mortality and morbidity and increased length of hospital stay. The presence of delirium specifically after cardiac surgery has been associated with increased in: (i) ICU stay, (ii) length of stay, (iii) sternal wound stability, (iv) sternal wound correction and (v) increased incidence of intubation. Aim To identify patients undergoing cardiac bypass and/or valvular surgery who developed post-operative delirium and correlate clinical variables which may be associated with this. Methods We evaluated patients post operatively for evidence of delirium using the Confusion Assessment Method-Intensive Care Unit (CAM-ICU). We included patients of all ages who underwent cardiac bypass and/or valvular surgery and followed patients for up to five days following surgery. Results We evaluated 50 patients (35 males, 15 females; mean age = 70.86 years (SD 10.86)). Results: 45% of patients showed no evidence of delirium. Patients that developed delirium were significantly more likely to have a history of hypertension (p=0.034), an arrhythmia (p=0.018), "on pump" surgery (p=0.042) or receiving intra-operative blood transfusions (p=0.011). Patients who developed delirium had an increased length of post operative stay (9.3 days vs 6.9 days) and were less likely to be discharged home. Conclusion Post-operative delirium following cardiac surgery appears to be a significant postoperative event. Delirium was associated with increased length of stay and decreased likelihood of being discharged home. Clinical variables including medical history and intra-operative factors may be potentially modifiable.

132) Abstract 1177

THE WORK-HEALTH-CHECK (WHC): A NEW COMPREHENSIVE TOOL TO ASSESS STRESS-RELATED PSYCHOSOCIAL WORK CONDITIONS

Michael C. Gadinger, Dipl. Psych., Public Health & Social Medicine, University of Heidelberg. Mannheim Medical Faculty, Mannheim, Baden-Württemberg, Germany, Joachim E. Fischer, Professor, Oliver Schilling, PD, Public Health & Social Medicine, University Heidelberg. Mannheim Medical Faculty, Mannheim, Baden-Württemberg, Germany

Purpose: To evaluate the measurement properties of the WHC, a new, brief instrument (44 items) designed to assess the key work-related stressors. Subject sample: The WHC was administered twice to representative samples of the workforce of southern Germany. Samples consisted of 651 and 472 participants, respectively. Methods: Reliability was assessed with Cronbach’s α and test-retest reliability. The interdependence of the scales was assessed with bivariate correlations. Factorial validity was assessed with confirmatory factorial analyses (CFA). Correlations with the effort scale of the ERI questionnaire were calculated for the convergent validity of the demand scales (quantitative-, physical-, emotional-, technology- and cognitive demands) and discriminant validity of the resource scales (decision authority, skill stimulation, social capital, positive organizational climate, rewards). Correlations with the PHQ-9 and the SF-12 served to assess criterion validity. Discriminant validity was assessed as the scale’s ability to distinguish between different occupational groups. Results: All scales had satisfactory reliabilities (Cronbach’s α: .76 - .92, test-retest reliability: .66 -.81). Good separability of the scales was indicated by moderate inter-scale correlations (mean r = .23). The best fits in CFA (df/Chisq. = .57, RMSEA = .04) was an eleven factorial model. Except dividing the reward scale into the
dimensions-status control, and monetary/esteem rewards, this model supported the anticipated factorial structure. Significant correlations between the effort and the demand scales (mean correlation = .46) and non-significant correlations with the resource scales (mean r = .07) revealed good convergent and discriminant validity. We observed the highest mean values with the resource scales and cognitive- and technology demands among managers, a result suggesting good discriminant validity. Finally, the correlation of the scales with the PHQ-9 and the SF-12 demonstrated good criterion validity (e.g., low demands and high resources were associated with good health). Thus, the WHC may be a reliable and valid instrument to work-related stressors.

133) Abstract 1377

**BODY MASS INDEX IS ASSOCIATED WITH SEVERITY OF DEPRESSIVE SYMPTOMS AND ANXIETY SENSITIVITY IN ADULT ASTHMATICS**

Maxine Boudreau, BA, Simon L. Bacon, PhD, Karine Ouellet, BA, Kim L. Lavoie, PhD, MBMC/Psychology/Exercise Science, Hôpital du Sacré-Cœur de Montréal/UQAM/Concordia, Montreal, Quebec, Canada

Over the last decade, researchers have established that lifestyle and health behaviors are major determinants of risk of chronic diseases like asthma. Studies suggest that obesity and asthma tend to co-occur, and that patients with higher body mass index's (BMI) tend to have worse asthma control and quality of life. The probability of engaging in unhealthy behaviors is also higher among individuals experiencing depression and anxiety. However, there is limited data on the relationship between the severity of depressive symptoms and anxiety sensitivity and BMI in asthmatics. A total of 548 patients with physician diagnosed asthma were recruited from the outpatient asthma clinic at Hôpital du Sacré-Cœur. During a clinic visit, patients provided self-reported demographic and medical history information, and completed the Beck Depression Inventory (BDI) and the Anxiety Sensitivity Index (ASI). BMI was calculated from patients' self-reported height and weight. All patients were tested on visual memory, which was used to help calculate asthma severity. General linear model analyses revealed a main effect of BDI score on BMI (F = 9.92, p = 0.002), such that patients with higher depressive symptomatology had higher BMI's, and an interaction between BDI and ASI score (F = 4.59, p = 0.03), such that patients with higher depression and lower anxiety sensitivity had the highest BMI. All results are adjusted for age, sex, comorbidity, years of education, and severity of asthma. There was no main effect of ASI score on BMI (F = 2.87, p = 0.09). These results suggest that asthmatics with high levels of depression and low anxiety sensitivity, as well as patients with high levels of depression alone, tend to have higher BMIs, independent of covariates. This suggests that low anxiety sensitivity may actually be detrimental to BMI in the presence of high levels of depression, and that higher anxiety sensitivity may be beneficial to BMI in the presence of low levels of depression. Longitudinal research is needed to assess the direction of this relationship, and the extent to which BMI influences psychological morbidity or the reverse.

134) Abstract 1397

**HOW STRESS HORMONE LEVELS CAN CHANGE AN ACQUIRED MEMORY TRACE: IMPLICATIONS FOR THE FIELD OF MENTAL HEALTH**

Marie- Franck Martin, M.Sc., Neurological Sciences, Sonia J. Lupien, Ph.D., Psychiatry, Fernand-Seguin Research Center, Université de Montréal, Montréal, Quebec, CANADA

Glucocorticoids (GCs) are a major class of stress hormones known to modulate different memory processes. In general, high levels of GCs enhance memory consolidation whereas both low and high levels impair memory retrieval. Other studies show that the process of retrieval serves as a reactivation mechanism whereby the memory trace that is reactivated during the retrieval process is once again sensitive to modifications by environmental or psychological manipulations. Therefore, Study 1 investigated the immediate and long-term effects of a stressor on a reactivated memory trace. Thirty-two healthy participants (16 men) encoded a movie containing neutral and emotional slides. Two days later, they recalled the movie. Half of the participants were then exposed to the Trier Social Stress Test, a validated psychosocial stressor, whereas the others read magazines (controls). Memory was re-assessed immediately after stress and five days later. The stressed group recalled significantly more emotional material after stress compared to the controls. Moreover, this enhanced emotional memory trace was maintained five days later. Study 2 investigated whether pharmacologically lowering GC levels at the time of reactivation would impact the memory trace in a temporary or a long-lasting manner. Twenty-two healthy men encoded the movie (same as in Study 1). Three days later, they were randomly assigned to a metyrapone (an inhibitor of GC synthesis) or a placebo condition. Memory was assessed after drug administration and four days later. At both time points, the metyrapone group recalled less emotional material compared to the controls. These experiments suggest that variations in GC levels close to the time of reactivation can modulate the strength of a memory trace, and this effect seems to be specific to emotional material. Given that one of the major features of post-traumatic stress disorder is the traumatic memory trace that often alienates the individual, these findings suggest an interesting treatment avenue that definitely requires further investigation.

135) Abstract 1704

**WORK STRESS, DEPRESSION AND POST-TRAUMATIC STRESS SYMPTOMS IN MEDICAL EXAMINERS AND CORONERS**

Elizabeth Brondolo, PhD, Psychology, St. John's University, Jamaica, New York, Douglas L. Delahanty, PhD, Psychology, Kent State University, Kent, Ohio, Elizabeth Brondolo, PhD, Psychology, St. John's University, Jamaica, New York

Employees of medical examiner (ME) and coroner (C) offices are responsible for medicolegal death investigations and play a vital role in the nation's criminal justice and public health efforts. As a function of their job responsibilities, MEs and Cs are exposed to situations that may increase their risk for depression and post-traumatic stress. The purpose of this study is to identify specific mental health symptoms associated with these symptoms. The 179 participants with complete data (44% women, 76% White, 7% Black, 7% Latinx) included 132 employees of 6 ME offices nationwide and 47 attendees at a statewide coroners conference. Assessments of workplace stressors were developed following key informant interviews and focus groups. Depressive symptoms were assessed with The Beck Depression Inventory (BDI-II), and post-traumatic distress was assessed with the PTSD Symptom Scale (PSS). Across the sample, at least monthly, 26% had exposure to a multiple fatality homicide, 43% had exposure to an accidental infant death, and 15% had exposure to an infant homicide. Controlling for age and gender, the frequency of direct or indirect contact with the families of the victims (r = .16, p .05) was positively correlated with symptoms of post-traumatic distress, but not with depressive symptoms. A 4-item scale assessing stress associated with contact with the victim's family (e.g., "family was aggressive" "family was inconsolable"), was associated with both PSS and BDI-II scores. Specifically, regression analyses revealed that the family contact stress scale was a significant predictor of depressive symptoms (B = .29, SE = 0.09, t = 3.14, p < .01) and post-traumatic distress (B = .30, SE = 0.11, t = 2.87, p < .01). Other work-related stressors, including fears of infection and exposure to brutal crimes were also predictive of depressive symptoms. These data can provide direction for worksite stress reduction interventions.

136) Abstract 1350

**NEUROFEEDBACK FOR INSOMNIA**

Barbara U. Hamner, Ph.D, William L. Gregory, Ph.D, Kimberly A. McGill, University, Montreal, Quebec, Canada, Agatha P. Colbert, MD, Helfgott Research Institute, National College of Natural Medicine, Portland, OR

Purpose: Insomnia has reached epidemic proportions in the US. The most widely used treatments are pharmaceutical agents that are associated with negative side effects, which prevent their long-term
137) Abstract 1349
DIFFERENCES IN VETERANS WITH AND WITH POST-TRAUMATIC STRESS DISORDER DURING RELAXING AND STRESSFUL CONDITIONS.
Hayden Wade Washko, MCR, Barry Oken, MD, Neurology, Oregon Health & Science University, Portland, Oregon, Mary Lu, MD, Psychiatry, Portland VA Medical Center, Portland, Oregon

Purpose of study: The objective of this cross sectional study was to examine physiological measures in veterans with and without post-traumatic stress disorder (PTSD) during baseline, relaxation, and stress. Subject sample and statement of methods: There were three age and gender matched groups: combat veterans with PTSD; combat veterans without PTSD and; non-combat veterans with PTSD. Participants were selected from the general community and randomly assigned to the SMR or IND group. All were free of other mental and (uncontrolled) physical disorders; eight completed the study. Groups received 15 20-minute sessions of Z-Score NFB. Pre-post assessment included mental health (MMP-2-RF), Quality of Life Index (QOLI), Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), sQEEG, and Actiwatch. Results: Paired t-tests yielded significant pre versus post treatment improvement for both groups on all Insomnia total scores (ISI=p<.005, PSQI=p<.0001), Sleep Efficiency (p<.007), and QOLI (p<.02). Binomial tests of baseline EEGs of all participants indicated a significantly high proportion of excessively high levels of Delta and Beta power (p<.001). These excessive levels were significantly reduced post-treatment (paired t-tests, p<.001). On MRP-2-RF, pre-treatment borderline-normal subjects showed post-treatment clinical improvement. Conclusions: Baseline EEGs showed both excessive sleepiness and hyperarousal, which significantly improved post-treatment. Both NFB protocols provided significant improvement in disturbed sleep and daytime functioning. SMR treatment was as effective as IND and is significantly less burdensome to administer.

138) Abstract 1253
SELF-REFERENTIAL PROCESSING AND THE PREFRONTAL CORTEX OVER THE COURSE OF DEPRESSION: A PILOT STUDY
Cédric Lenomge, MD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, FRANCE, Helen S. Mayberg, MD, PhD, Psychiatry, Emory University School of Medicine, Atlanta, GA, Lorentz Bergouignan, PhD, CNRS UMR 3246, Emmanuelle Volle, MD, PhD, CR-ICM, INSERM UMR-S 975, Pauline Delaveau, PhD, CNRS UMR 3246, Stéphane Lehevéry, MD, PhD, Center for Neuroimaging Research, Jean-François Allilaire, MD, Philippe Fossati, MD, PhD, Psychiatry, Pitié-Salpêtrière Hospital, Paris, FRANCE
Depressed patients exhibit cognitive biases, including maladaptive self-focus. In a previous functional magnetic resonance imaging (fMRI) study, the activation of the dorsal medial prefrontal cortex (MPFC) during self-referential processing was unique to patients, as was the activation of the left dorsolateral prefrontal cortex (DLPFC). The aim of this pilot study was to examine whether this activation pattern was stable over the course of depression. Sixteen participants (8 depressed inpatients and 8 healthy controls) viewed personality traits during fMRI and judged whether each trait described them or not (self condition), or whether it described a generally desirable trait or not (general condition). There were two scanning sessions with an interval of at least 6 weeks, in which patients received an antidepressant treatment. Severity of depression was assessed using the Montgomery and Asberg's Depression Rating Scale (MADRS) and the Beck's Depression Inventory (BDI). Both MADRS and BDI improved from session 1 to session 2 (p=.012). According to the BDI, 3 patients achieved remission (score<8), including 2 patients that achieved remission according to the MADRS (score<10). Although the activation of the left DLPFC normalized between the 2 sessions (p=0.001), a greater activation of the dorsal MPFC in 'self' versus 'general' condition remained in depressed patients (p<0.001). The 3 patients who achieved remission were those who experienced the greater decrease of the left DLPFC activation in self versus general condition from session 1 to session 2. The small sample size and heterogeneous clinical features prevented subgroup analyses between responders and non-responders. The normalization of the left DLPFC activity suggests that antidepressants are associated with a more balanced allocation of cognitive control across self-referential and non self-referential processes. The apparent lack of effect on the dorsal MPFC activity is consistent with the specific effects of antidepressants versus cognitive behaviour therapy (CBT) previously demonstrated in depression. Future studies could examine the relationships between the dorsal MPFC activity in depressed patients and the need to reduce self-focus through CBT to achieve remission and prevent relapse.

139) Abstract 1462
THE POLYMORPHIC REGION OF THE 5-HTT GENE MODERATES THE ASSOCIATION BETWEEN OVERCOMMITMENT (OC) AND DEPRESSION
Petra H. Wirtz, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Zurich, Switzerland, Johannes Siegrist, PhD, Department of Medical Sociology, University of Duiseldorf, Düsseldorf, Germany, Wolfgang Muier, MD, Department of Psychiatry, University of Bonn, Bonn, Germany, Sibylle Schwab, PhD, Western Australian Institute of Medical Research, University of Western Australia, Perth, Perth, Australia, Astrid W. Zobel, MD, Department of Psychiatry, University of Bonn, Bonn, Germany

Background: Gene-environment interactions in depression research have been proposed but the role of personality is unclear. Overcommitment (OC) is a personality trait characterized by excessive striving that has been prospectively associated with depressive symptoms. We investigated whether OC would be differentially associated with depressive symptom severity in subjects high and low expressing alleles at the 5-HTTLPR locus. Methods: We assessed the length polymorphism in the promoter region of the serotonin gene (5-HTTLPR) and the single nucleotide polymorphism rs25531 in 293 men and women with and without major depressive disorder (MDD) regarding 75 subjects homozygous for low expressing allele (SS), 127 heterozygous subjects with SL, and 91 subjects homozygous for high

use, and when discontinued, sleep problems return. Insomnia has the highest co-morbidity with psychological disorders. Neurofeedback (NFB) is a psychophysiological technique that has reported serious side effects and whose effectiveness does not appear to diminish rapidly after treatment completion. Despite its demonstrated effectiveness for insomnia almost 30 years ago, NFB has not been widely used. The purpose of this study was to assess whether two distinct NFB protocols, a standard sensorimotor (SMR) and a sequential, quantitative EEG (sEEG) guided Individually Designed (IND) protocol, can alleviate the disturbed sleep behavior and associated daytime dysfunctions of patients with insomnia. Methods: Adults with insomnia (N=12) were selected from the general community and randomly assigned to the SMR or IND group. All were free of other mental and (uncontrolled) physical disorders; eight completed the study. Groups received 15 20-minute sessions of Z-Score NFB. Pre-post assessment included mental health (MMP-2-RF), Quality of Life Index (QOLI), Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), sQEEG, and Actiwatch. Results: Paired t-tests yielded significant pre versus post treatment improvement for both groups on all Insomnia total scores (ISI=p<.005, PSQI=p<.0001), Sleep Efficiency (p<.007), and QOLI (p<.02). Binomial tests of baseline EEGs of all participants indicated a significantly high proportion of excessively high levels of Delta and Beta power (p<.001). These excessive levels were significantly reduced post-treatment (paired t-tests, p<.001). On MRP-2-RF, pre-treatment borderline-normal subjects showed post-treatment clinical improvement. Conclusions: Baseline EEGs showed both excessive sleepiness and hyperarousal, which significantly improved post-treatment. Both NFB protocols provided significant improvement in disturbed sleep and daytime functioning. SMR treatment was as effective as IND and is significantly less burdensome to administer.
expressing alleles (LL). Moreover, we assessed depressive symptoms (Beck Depression Inventory, BDI), OC, as well as work stress (effort-reward-imbalance, ERI). Results: Overall, higher OC was significantly associated with higher BDI scores independent of age, gender, 5-HTTLPR-polymorphisms, and work stress (beta=.41, p<.001, deltaR²=.11, R²=.28). Moreover, OC was differentially associated with depression symptom severity in subjects with and without SS-genotype (beta=.40, p=.019, deltaR²=.02, R²=.24). Independent of confounders, the association of OC and BDI was stronger in SS-subjects (beta=.48, p=.001, deltaR²=.18, R²=.42) as compared to subjects without SS-genotype (beta=.41, p=.001; deltaR²=.10, R²=.24). Conclusions: Our findings suggest a role for the personality trait OC in increasing depressive symptom severity in MDD patients and controls particularly in those with low expressing alleles at the 5-HTTLPR locus. This might be of clinical relevance with respect to preventive cognitive-behavioral intervention strategies particularly in at risk persons.

### Abstract 1390

**A BIOLOGICAL MECHANISM FOR HEALTH DISPARITIES: SES EFFECTS ON CHILDREN'S STRESS REACTIVITY**

Nicole R. Bush, PhD, Center for Health and Community - School of Medicine, Nancy Adler, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, W. Thomas Boyle, MD, Human Early Learning Partnership (HELP), University of British Columbia, Vancouver, BC, Canada

Income and education, key components of socioeconomic status (SES), are powerful predictors of mental and physical health throughout the lifespan. Research suggests that early childhood SES is associated with patterns of biological responding, such as dysregulated stress reactivity. Yet, no studies have established whether childhood SES exerts effects on health throughout later development by shaping physiological regulation. This study explores a possible mechanism for health disparities by examining the relations between family SES and developmental changes in children's stress reactivity. Method: A socioeconomically and ethnically diverse sample of 338 children aged 5-6 participated. Stress regulation was assessed by cardiovascular reactivity (heart rate: HR; respiratory sinus arrhythmia: RSA; and pre-ejection period: PEP) to 4 challenging tasks (social, cognitive, sensory, and emotional) in fall and spring of kindergarten. SES was assessed as the standardized average of household annual income (range: $10,000 to >$400,000; M:$60-79,999; Mdn:$80-99,999) and highest educational attainment (range: <HS diploma to advanced degree (model)). Results: SES accounted for longitudinal change in HR and PEP reactivity (p<.001), but not RSA reactivity (Table 1). Specifically, low SES predicted muted stress responses for PEP, an index of sympathetic activation of the heart known for its role in mobilizing biological resources during "fight-or-flight" responses, and HR, a multiply-determined physiologic parameter. Conclusions: Findings illuminate one pathway for SES effects on health by providing longitudinal evidence that SES factors predict physiological changes in early childhood. Understanding determinants of autonomic reactivity is particularly crucial because of its implication in multiple disease and etiologies.

### Std Regression Coefficients and Rsquare for Change in Reactivity

<table>
<thead>
<tr>
<th>Step</th>
<th>Fall Reactivity</th>
<th>1</th>
<th>2-SES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spring HR</td>
<td>.21***, .05***</td>
<td>.29***, .03***</td>
</tr>
<tr>
<td></td>
<td>Spring RSA</td>
<td>.26***, .07***</td>
<td>.05, 0</td>
</tr>
<tr>
<td></td>
<td>Spring PEP</td>
<td>.14*, .03***</td>
<td>.15**, .02**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.26***, .07***</td>
<td>.05, 0</td>
</tr>
</tbody>
</table>

### Abstract 141

**POSTTRAUMATIC STRESS DISORDER IS ASSOCIATED WITH DECREASED MODULATION OF HEART RATE VARIABILITY BY RESPIRATION**

Nicholas D. Giardino, PhD, Department of Psychiatry, University of Michigan, Ann Arbor, MI

Posttraumatic stress disorder (PTSD) is associated with increased risk for cardiac, pulmonary and metabolic diseases, as well as a number of functional somatic syndromes. Measure of heart rate variability, such as respiratory sinus arrhythmia (RSA) have been used to index autonomic nervous system action on the cardiac sinus node. RSA occurs mainly as a result of phasic respiratory gating of vagal output to the sino-atrial node. In addition, changes in respiratory rate and volume alter the impact of vagal activity on RSA independent of mean vagal activity. Significant individual differences have been observed in the degree to which changes in respiration affect RSA, which may reflect differences in the efficiency of cardio-pulmonary coupling. We examined differences in the modulation of RSA by changes in respiration in 14 recently returned veterans with PTSD, 12 recently returned combat veterans without PTSD and 14 noncombat non-PTSD healthy control participants. RSA, respiratory period (TTOT) and tidal volume (VT) were recorded during four 2-minute paced breathing conditions (8, 11, 13 and 16 breaths/min) prior to participants undergoing a laboratory assessment of stress reactivity. Using data from each breath during all 4 pace breathing periods, individual regression lines of RSA VT on TTOT were computed. Group differences in regression line slopes were compared using analysis of variance. Veterans with PTSD showed significantly lower slopes than combat veterans without PTSD and non-combat controls. We discuss the implications of reduced cardio-pulmonary coupling in veterans with PTSD for increased risk for mental and physical disorders.

### Abstract 1534

**SEASONAL DIFFERENCE IN THE DIURNAL PATTERN OF CORTISOL SECRETION IN HEALTHY PARTICIPANTS AND THOSE WITH SEASONAL AFFECTIVE DISORDER**

Lisa Thorn, PhD, Phil Evans, PhD, Cannon Anne, BSc, Andrea Oskis, BSc, Psychology, Hucklebridge Frank, PhD, Human and Health Sciences, Angela Clow, PhD, Psychology, University of Westminster, London, UK

Seasonal difference in the diurnal pattern of cortisol secretion in healthy participants and those with seasonal affective disorder (SAD), to contribute to the understanding of the pathophysiology of SAD. Fifty-two participants completed the study with an equal number in each group (control and SAD). The diurnal pattern of cortisol secretion was assessed across two consecutive days in the summer, and two in winter, with conditions being counterbalanced. On each study day participants collected multiple saliva samples in the domestic setting to capture the cortisol awakening response (CAR) and declining levels across the day. In addition, perceived stress, anxiety, depression, state stress and state arousal were assessed using validated questionnaires. In summer, SAD and control participants had similar psychological profiles, whereas in winter SAD participants reported greater depression, stress and anxiety, and lower levels of arousal following awakening in the morning. Four-way mixed ANOVA was used to examine differences in cortisol secretion between groups across seasons for both the CAR (0, 15, 30 and 45 min samples) and the day samples (3, 6, 9, 12 h samples) separately, with factors season (winter, summer) x day (day1, day2) x sample (4) x group (SAD, control). The aim of this study was to examine seasonal differences in diurnal cortisol secretion in healthy participants and those with seasonal affective disorder (SAD), to contribute to the understanding of the pathophysiology of SAD. Fifty-two participants completed the study with an equal number in each group (control and SAD). The diurnal pattern of cortisol secretion was assessed across two consecutive days in the summer, and two in winter, with conditions being counterbalanced. On each study day participants collected multiple saliva samples in the domestic setting to capture the cortisol awakening response (CAR) and declining levels across the day. In addition...
CHILDHOOD TRAUMA AND INFLAMMATION: ROLE OF FAMILIAL FACTORS IN A STUDY OF TWINS
Viola Vaccarino, MD,PhD, Medicine, Emory School of Medicine, Atlanta, GA, Jack Goldberg, PhD, Epidemiology, University of Washington, Seattle, WA, Emir Veledar, PhD, Medicine, James D. Brenner, MD, Psychiatry, Emory School of Medicine, Atlanta, GA
Early life stress has been linked to adult inflammation, but whether this is due to long-term consequences of stress, or to associated risks is debated. We examined 512 male twins (256 pairs) born between 1946 and 1956 from the Vietnam Era Twin Registry. All twins served in the military during the Vietnam era. Childhood traumatic experiences occurring before age 18 were measured retrospectively with the Early Trauma Inventory (ETI) and included physical, sexual, emotional abuse and general trauma. Lifetime major depression and posttraumatic stress disorder (PTSD) were assessed with the SCID. Traditional risk factors for cardiovascular disease such as smoking and hypertension were also assessed. Plasma C-reactive protein (CRP) levels were measured to determine inflammation; CRP values were log-transformed because of the skewed distribution. Mixed-effects regression was used to estimate separate between and within twin pair effects. When analyzed as separate individuals, twins with childhood trauma had a 27% higher CRP (homeostatic mean) than those without trauma (p=0.02), and for each additional traumatic exposure, CRP increased 4% (p=0.01). The prevalence of a clinically significant CRP level (>3 mg/L) was 34% and 21% in those with and without early trauma, respectively (p=0.001). Twin pairs where both members had childhood trauma had a 60% higher CRP than pairs without trauma (p=0.001). This between twin pair association was only mildly attenuated by adjusting for cardiovascular risk factors (depression and PTSD). Similarly, the probability of a clinically significant CRP level was 80% higher comparing trauma exposed to non-exposed pairs (p=0.002). Of all the different types of trauma, emotional trauma was most strongly related to inflammation. There were 74 twin pairs discordant for childhood trauma and within these pairs, there was no association with CRP levels, either in monozygotic or dizygotic pairs. In conclusion, the association between childhood trauma and inflammation is explained by familial factors shared by the twins. Clarification of these factors will be key to uncover important correlates of stress and disease.

TESTING THE PERSEVERATIVE COGNITION HYPOTHESIS: THE ROLE OF WORRY IN THE OCCURRENCE AND TREATMENT OF SOMATIC SYMPTOMS
Bart Verkuij, PhD, Jos F. Brosschot, PhD, Esther Meerman, MSc, Department of Clinical Psychology, Leiden University, Leiden, the Netherlands, Kees Korvelboom, PhD, Research Department, PsyQ, Psycho Medical Programs, The Hague, the Netherlands, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, Ohio
According to the perseverative cognition hypothesis, worry plays a pivotal role in the onset and maintenance of psychological as well as somatic health problems. Worry is proposed to prolong the wear and tear on the human body by prolonging the physiological response to stressful events beyond the actual presence of these events. In this presentation we will briefly review the evidence for the perseverative cognition hypothesis and will present several new studies that tested this hypothesis. In one ambulatory study, the effects of daily stressful events and daily worry on somatic symptoms were investigated in 69 Dutch secondary school teachers. It was shown that worry mediated the effects of stressful events on somatic symptoms. In another study, the assumption was tested that a reduction of worry would play a pivotal role in the maintenance of psychological as well as somatic health problems. Worry is proposed to prolong the wear and tear on the human body by prolonging the physiological response to stressful events beyond the actual presence of these events. In this randomized clinical trial it was tested whether a two-week worry postponement and disengagement intervention reduced work stress, including somatic symptoms, and whether it enhanced subsequent stress management therapy. The pretreatment effects of worry were investigated in sixty-two outpatient awaiting stress management therapy that were suffering from a wide range of stress-related and unspecified somatic symptoms. The worry intervention was compared to two other pretreatment conditions, namely to the mere registering of worry episodes and to a waiting list control group. Although short term effects on somatic, anxiety and depressive symptoms were not significant, the worry intervention added to the effectiveness of the subsequent stress management therapy. When compared to waiting-list controls, patients that had received the worry intervention before the onset of stress management therapy showed lower levels of somatic complaints three months after the stress management therapy. These new results further clarify the perseverative cognition hypothesis and it's implications for the link between stress and health.

MEASURING ALLOSTATIC LOAD CAN DETECT VULNERABILITY TO BURNOUT: A PILOT STUDY
Robert-Paul Jaster, B.A., Neuroscience, McGill University, Montreal, Quebec, Canada, Andrea Perna, B.Sc., Neuroscience, Carleton University, Ottawa, Ontario, Canada, Alireza Hashemi, B.Sc., Shireen Sindi, M.Sc., Neuroscience, McGill University, Montreal, Quebec, Canada, Marie-France Marin, M.Sc., Neuroscience, University of Montreal, Montreal, Quebec, Canada, Jens C. Pruessner, Ph.D., Douglas Mental Health University Institute, McGill University, Montreal, Quebec, Canada, Sonia J. Lupien, Ph.D., Fernand-Seguin Research Centre, University of Montreal, Montreal, Quebec, Canada
Chronic stress causes stress hormones like cortisol and adrenalin to strain many biological systems in a process referred to as allostatic load (AL). This mal-adaptation is measurable using an index of biomarkers, although how it relates to dynamic assessments of stress hormone and cardiovascular activities is still a matter of debate. While several studies of stressful workplaces have successfully applied an AL framework, few have investigated burnout, a syndrome involving emotional exhaustion, depersonalization, and cognitive weariness. Moreover, evidence that burnout is physiologically characterized by diminished diurnal cortisol fluctuations and exaggerated cardiovascular
reactivity has not been elucidated using the AL model. We hypothesized that normal and burnout profiles for stress hormones and cardiovascular functioning can be differentiated using the AL index. To measure AL, fifteen biomarkers were collected and values were transformed into an index that then served to divide 30 participants into Low or High AL groups. We assessed stress reactivity using 10 dynamic measures each for salivary cortisol, salivary alpha-amylase (catecholamine proxy), and cardiovascular parameters throughout the Trier Social Stress Task. Diurnal cortisol was measured at five time points (awakening, 30 minutes afterwards, 2:00PM, 4:00PM, and bedtime) over two working days. We also administered questionnaires of chronic stress, burnout, and depression. We found that participants from the High AL group displayed lower diurnal and reactive cortisol levels, but higher reactive systolic blood pressure and heart rate levels in contrast to the Low AL group. Higher AL levels were also associated to increased levels of self-reported chronic stress, as well as symptoms of burnout and depression. Our results demonstrate that AL can detect blunted diurnal cortisol levels, exaggerated cardiovascular reactivity and more burnout and depressive symptoms. Delineating the physiological recalibrations associated with burnout would benefit from longitudinal studies sensitive to the time-course of specific biomarker dysregulations and associated symptoms.

147) Abstract 1267

CHARACTERISTICS OF PERSONS WITH FUNCTIONAL SYMPTOMS WITHIN A SAMPLE WITH PSYCHOPATHOLOGY

Sophie A. Vreeburg, MD, Psychiatry, Henriëtte E. van der Horst, MD, PhD, General Practice, Brenda W. Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, the Netherlands

Purpose: Functional syndromes (chronic fatigue syndrome, fibromyalgia, irritable bowel syndrome) often co-occur with depressive and anxiety disorders. To gain further understanding of the relationship between depression/anxiety and functional syndromes, we examined the characteristics of persons with and without a functional syndrome in a large sample with psychiatric disorders. We studied sociodemographics, health characteristics, symptom profile, impairment and hypothalamic-pituitary-adrenal (HPA) axis activity. Subject sample and methods: From the Netherlands Study of Depression and Anxiety, we included data of persons with lifetime CIDI-diagnoses of depression and/or anxiety disorders (n=1767). Of these, 1556 persons reported no functional syndrome and 231 reported having chronic fatigue syndrome (n=32), fibromyalgia (n=47) and/or irritable bowel syndrome (n=176). Data was used on sociodemographics, health factors (e.g. smoking, psycho-active medication), psychopathological symptom profile (e.g. severity, somatic symptoms) and disability (using the WHO-DAS). Salivary cortisol samples were taken at awakening, and 30, 45 and 60 minutes later. Results: Persons with a functional syndrome were more often women (51.4 vs 65.2%, p<.001), reported more pain (108 vs 77 days in past 6 months, p<.001) and more chronic diseases (21.6 vs 13.3%, p<.001), had more severe psychopathology (severity score (IDS) 32.6 vs 28.2, p<.001), more often atypical depression (25.7 vs 15.9%, p<.001) and more disability (all p<.01) than persons without a functional syndrome. Of the functional syndromes, persons with chronic fatigue syndrome showed a lower cortisol awakening response than those without or other functional syndromes (b=−3.10, p<.05). Conclusion: Within this sample with psychopathology, persons with a functional syndrome seemed to constitute a more severely ill and impaired subgroup. In addition, chronic fatigue syndrome was associated with a lower cortisol awakening response, possibly indicating exhaustion of the HPA axis. These differences might be relevant for (risk) identification and treatment of these patients.

148) Abstract 1148

DEMOGRAPHIC AND MEDICAL FACTORS ASSOCIATED WITH DISTINCT SYMPTOM CLUSTERS OF LYME DISEASE

Cheryl Koopman, PhD, Tyson H. Holmes, PhD, Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA, Raphael Stricker, MD, Department of Psychiatry and Behavioral Sciences, Stanford University, San Francisco, CA, Daniel Cameron, MD, Department of Psychiatry and Behavioral Sciences, Stanford University, NY, Christine Green, MD, Department of Psychiatry and Behavioral Sciences, Stanford University, Los Altos, CA, Yvonne Lin, PA-C, Lila Castillo, MA, Alexandra Aylward, BA, Jill Whisnant, MA, Casey Brodhead, BA, Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, CA

The diagnosis of Lyme disease needs further study because of the diversity of its manifestations, with infections found, for example, in the brain, joints/muscles, or heart. The primary aim of this study was to systematically characterize different patterns of Lyme disease found in a large sample of patients seen in clinical practice. A secondary aim was to identify exposure, medical and demographic characteristics that differentiate these patterns of Lyme disease. This study is based on a retrospective analysis of 1059 medical records obtained from a large community-based medical practice that specializes in tick-borne illness. All selected patients had been diagnosed with Lyme disease, provided written consent for review of medical records for research purposes, at the time of the first visit were 18 years old or older, and completed a lengthy questionnaire that assessed 132 self-reported symptoms and signs (including psychiatric and neurological as well as muscular/skeletal), tick exposure, other illnesses, and use of antibiotic therapy. Patients were predominantly female (69.03%), and ranged in age from 21-97 (M=44.7, SD=12.2). Lab results and medical status were also coded from patients’ medical records. Gap statistic analysis of a k-medoids clustering (k = 1 through 20) identified 10 separable symptom clusters. These symptom clusters differ in quantities and types of symptoms/signs experienced by greater than 50% of patients in each cluster (0-85) and quantities of patients assigned to each cluster (3-220). Furthermore, differences in symptom clusters were significantly related to gender (p < .0005), age (with older age associated with use of antibiotic therapy (p < .002), but were not significantly related to recall of tick bite or bulls eye rash or to current use of antibiotic therapy. This research lends support to the perspective that Lyme disease is a complex illness. Distinct subtypes and/or stages of the illness may require different treatment approaches. This study was made possible by research grants from the Turn the Corner Foundation and The California Lyme Disease Association.

149) Abstract 1443

TITERS OF CIRCULATING ANTIBODIES TO THE HEAT SHOCK PROTEIN 60 (ANTI-HSP60) IN RESPONSE TO TREATMENT, INDEPENDENT OF PSYCHOSOCIAL STRESS OR GENDER

Jose R. Peña, MD PhD, Arcelus M. Quintini, MD PhD, Internal Medicine, University of Carabobo, Valencia Medical School, Valencia, Carabobo, Venezuela, Sabrina Islam, B.A.S., Medicine, Bahette Wekiler, M.D., Medicine/Oncology, Weill Cornell Medical College, New York, NY, Cirilo A. Yelamo, M.D., Namilda Piña, D.D.S., Medicine/Oncology, University Romulo Gallegos, Valencia, Carabobo, Venezuela, Elio A. Romero, M.D., Orthopedic, Carabobo Hospital, Valencia, Carabobo, Venezuela

Titers of Circulating Antibodies to the Heat Shock Protein 60 (Anti-Hsp60) Increase in Response to Surgery after Bone Trauma, Independent of Psychosocial Stress or Gender. The primary aim is to explore factors contributing to circulating antibodies to (Human) Hsp60 in a group of patients who underwent surgery after bone trauma. Low levels of circulating antibodies against Hsp60 have been found in normal individuals, with a distinct increase in humans and in animal models under certain stresses and diseases. Our secondary aim is to test if psychosocial stress and gender are correlated with the level of Hsp60 antibodies. We recently provided evidence of an association between levels of anti-Hsp60 and various psychosocial measures. In addition, since estrogen can also induce the expression of heat shock proteins, gender differences might be expected. We developed a case-control observational study in which quantitative variables such as Anti-Hsp60
and a life events scale (Holmes and Rahe) were measured in 19 consecutive previous healthy individuals (10 male and 9 female) who suffered bone trauma and underwent surgical procedures as compared with 19 healthy gender matched controls who did not have any bone trauma. Results/Conclusions: The patients who underwent surgery after bone trauma had a four fold average higher serum concentration of Anti-Hsp60 than the controls (P<0.05, t test) when tested at four days after surgery. No significant difference in psychosocial stress was found between patients and controls (P=0.05, t test). Furthermore we found serum levels of Anti-Hsp60 to be independent of gender in the patient group (P=0.05, t test) Neither was there a correlation between psychosocial stress and Anti-Hsp60 titers in the patients (Pearson correlation Rxy= -0.44). We conclude that surgical trauma after bone injury increases Anti-Hsp60 titers independently of gender or of other psychosocial stressful events in this group of patients, suggesting a immunological response to trauma mediated by Anti-Hsp60.

150) Abstract 1616
VULNERABILITY TO STRESS IN MEDICAL STUDENTS IS ASSOCIATED WITH MOOD SYMPTOMS AND PERSONALITY TRAITS
Adomas Bunevicius, MD, Institute of Psychophysiology and Rehabilitation, Kaunas University of Medicine, Palanga, Lithuania, Arune Katkute, MD, Kaunas University of Medicine, Kaunas, Lithuania
It is known that high level of vulnerability to stress has negative and significant effect on students' academic achievements. In this study we hypothesized that in population of students higher level of vulnerability to stress is linked with higher levels of depression, anxiety and neuroticism. Students of the Kaunas University of Medicine were evaluated for vulnerability to stress using the Stress Vulnerability scale (SVS), for symptoms of anxiety and depression using the Hospital Anxiety and Depression scale (HADS) anxiety (HADS-A) and depression (HADS-D) subscales, respectively. Personality traits were evaluated using the Big Five Personality Dimensions (BFPD). A total of 338 agreed to participate in the study: 73 (22%) male students and 265 (78%) female students. The mean age of study population was 21 ±1 years. We found that students who had depressive symptoms (scored >=8 on the HADS-D) had higher scores on the SVS when compared to students who did not have depressive symptoms (scored <8 on the HADS-D) (36±11 and 24±9 respectively, p=0.001). Score on the HADS- D correlated significantly with score on the SVS (r=0.44, p=0.01). Students who had symptoms of anxiety (scored >=8 points on the HADS-A ) had higher scores on the SVS when compared to students who did not have anxiety symptoms (scored <8 on the HADS-A) (30±11 and 23±9 respectively, p=0.001). The score on the HADS-A correlated significantly with the score on the SVS (r=0.38, p=0.01). The score on the SVS correlated positively with the score on neuroticism subscale (r=0.27, p=0.01) and correlated negatively with the score on the extraversion subscale (r=0.21, p=0.01), with the score on the consciousness subscale (r=0.13, p=0.01), with the score on the agreeableness subscale (r=0.29, p=0.01) and with the score on the openness subscale (r=0.11, p=0.02) on the BFPD. Results of this study show that in population of students higher vulnerability to stress is associated with symptoms of depression and with symptoms of anxiety as well as with personality trait of neuroticism. Other personality traits such as extraversion, consciousness and openness have negative association with vulnerability to stress.

151) Abstract 1609
POSITIVE LIFE EXPERIENCES PREDICT BETTER MUCOSAL IMMUNITY ONLY AT TIMES OF LOW STRESS DURING THE FIRST YEAR OF UNIVERSITY
Andrew J. Wawrzyniak, PhD, Department of Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, Maryland, Martha C. Pollard Whiiteman, PhD, Psychology, University of Edinburgh, Edinburgh, UK
The university setting can provide a dynamic environment to examine the range of perceptions of the higher education experience. Furthermore, these perceptions may influence biological processes, namely immune functioning. To examine this relationship, 68 undergraduate students (27 male, 18.94 years, SD = 0.15; 41 female, 18.85 years, SD = 0.11) completed the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) at three times during the first academic year of university and provided timed saliva samples using a passive drool technique to measure salivary secretory immunoglobulin-A (sIgA) to determine innate mucosal immune functioning. sIgA levels changed over the course of the year, with times of higher persistent stress at the beginning of their academic careers and at final exam time correlating with lower sIgA release rates, indicating poorer immune functioning (p < .01). At the time of lowest stress during the academic year which occurred just after winter break, higher mucosal immunity related to positive life experiences. Controlling for gender, smoking, perceived stress, and recent illnesses, higher salivary sIgA release rate at the beginning of the second semester was predicted by higher Life Experience ratings (standardized b = .37, p = .13, adj. R2 = .10). This relationship was not seen at any other phase, indicating that the nature of the assessment, namely a time of low stress, may have moderated the relationship. These findings suggest that during the least stressful time of the academic year, the positive perception of life experiences confers better innate mucosal immunity independent of gender and health status. The effect of stress in an academic setting appears to diminish the relationship between positive life perceptions and better innate immune functioning.

152) Abstract 1453
MINDFULNESS MEDITATION TRAINING FOR FIBROMYALGIA: A PRELIMINARY STUDY INVESTIGATING ATTENTION-RELATED BIAS ON A DOT-PROBE TASK
David R. Vago, PhD, Psychiatry, Harvard Medical School, Boston, MA, Yoshio Nakamura, PhD, Anesthesiology, University of Utah Medical School, Salt Lake City, UT
Recent studies have emphasized the role of cognitive and emotional processes in the origin and maintenance of symptoms associated with fibromyalgia (FM). These studies suggest that FM patients have difficulty allocating attentional resources effectively in response to threatening, or potential threatening contextual information. Behavioral interventions that include mindfulness meditation training target maladaptive cognitive and emotional processing of threat and may significantly reduce attentional biases associated with FM. The current preliminary study investigated the impact of intensive meditation training on selective attentional biases for pain-related word stimuli in FM. Age-matched, female FM subjects either most recently completed an 8-week mindfulness meditation training program (FMM) or were drawn from a comparison control group (CT). Both groups performed a modified dot-probe task in which they were shown either neutral/neutral or neutral/pain-related word pairs prior to each dot-probe detection trial. Results indicate very specific differences in attentional bias between groups that are dependent upon the presentation duration of word pairs prior to dot-probe detection. At short durations (100 ms), it was found that relative to FMM women, CT women (1) show increased avoidance of pain-related threat, p < 0.01; (2) exhibit rapid disengagement from pain-related threat, p < 0.01. At longer durations (500 ms), relative to FMM women, CT women exhibit impairments with disengagement, p < 0.05. These impacts of meditation appear to degrade after 6 months. These preliminary data suggest that mindfulness meditation training modifies selective attentional biases associated with pain-related cues in FM women, and do so differently at early versus later stages of information processing.
STRESS ASSESSMENT IN MEDICAL/SURGICAL DEPARTMENTS NURSES AND PHYSICIANS
Stefano Tabolli, MD, Health Services Research, Cristina di Pietro, statistician, Health Services Research Unit, IDI IRCCS Rome Italy, Rome, Italy, Claude Urs, Registered Nurse, Health Services Research, IDI IRCCS Rome Italy, Rome, Italy.

Background: Studies of stress in health care staff have indicated high prevalence of distress. Stress is generally assessed with the General Health Questionnaire (GHQ), on which high scores indicate caseness for anxiety/depression disorders. Purpose of the study was to investigate levels of job stress and job satisfaction among medical/surgical nurses and physicians in order to identify areas in need of interventions. Methods: The research questionnaires included a section on sociodemographic variables, a validated job satisfaction questionnaire, and the GHQ-12. Questionnaires were applied in a large hospital in Rome. GHQ-12 was used as a unidimensional instrument; it was scored with the binary methods, collapsing adjacent responses to obtain a dichotomous scoring (0-1). A cut off e 4 was considered sufficient to identify cases. Results: 148 Medical Health Staff (MHS) and 145 Surgical Health Staff (SHS) were enrolled (54% of permanent hospital staff replied to the questionnaires). A gender difference was manifested in MHS more often women worked as nurses for more years. Overall, gender differences were present among physicians (25.7% and 28.6% respectively). Major problems (career development, circulation of information) were similar in the groups; the percentage of unsatisfied were 70%. Statistically significant worst conditions were observed for SHS nurses with respect to MHS in almost every observed variable: 'opportunity for personal growth', 'satisfaction with the management of the Unit', 'satisfaction with clarity and appropriateness of responsibility'(p<0.05). To be GHQ case strongly influenced the judgment of satisfaction. Conclusions: More than 1/3 of nurses and 1/4 of physicians in our study are currently at risk of anxiety/depression. Satisfaction levels and psychological symptoms among hospital personnel is possible to identify critical areas. Future interventions should focus on nurses, particularly for those in surgical Departments.

EVIDENCE FOR SPECIFIC REGIONS OF HIPPOCAMPAL DAMAGE AND CORTISOL ELEVATION IN MULTIPLE SCLEROSIS PATIENTS WITH DEPRESSIVE SYMPTOMS
Mary-Frances O’Connor, PhD, Cousins Center for Psychoneuroimmunology, Stefan M. Gold, PhD, Nancy L. Sicotte, MD, Neurology, UCLA, Los Angeles, CA

Objectives: Depression is one of the most common symptoms in patients with multiple sclerosis (MS) with a prevalence of up to 50%, but its underlying pathological correlates are unknown. Depressive symptoms are linked to poorer treatment compliance, and thus can affect long-term health outcome. Here, we examine the role of specific regions of hippocampal atrophy, cortisol levels, and depressive symptoms in relapsing-remitting MS. Methods: 29 MS patients and 20 matched healthy controls were enrolled. We obtained high resolution structural MRI scans of the hippocampus for subregional measurements (Cornu Ammonis 1 (CA1), CA2.5 and the Dentate Gyrus (CA23DG), Subiculum). Diurnal salivary cortisol was assessed at awakening, 4pm and 9pm on two consecutive days. Based on the Beck Depression Inventory cut-off, we further examined the role of depressive symptoms on hippocampal volumes and cortisol slopes for three groups: normal controls (n=20), non-depressed MS patients (n=21) and depressed MS patients (n=8). Results: Overall, MS patients showed smaller hippocampal volumes compared to controls in the CA1 (p<.001) and Subiculum subregions (p<.002). When the MS group was divided into depressed and non-depressed, both MS groups still showed smaller volumes in CA1 and Subiculum compared to healthy controls. However, only MS patients with elevated depressive symptoms also showed atrophy in CA23DG (p<.02). In addition, only MS patients with depressive symptoms had elevated diurnal cortisol secretion associated with specific regions of atrophy in the hippocampus and are linked to depressive symptoms. This evidence supports a neuroendocrine-limbic pathology that contributes to depressive symptomatology in MS, and highlights the importance of treatment for depression in MS for neuroprotection.

ADHD SYMPTOMS AND SMOKING EXPECTANCIES IN CHILDREN AND ADOLESCENTS
Ida M. Foster, B.A Honours (candidate), Simon Racicot, M.A., Jennifer J. McGrath, Ph.D., M.P.H., Pediatric Public Health Psychology PPHP Laboratory, Concordia University, Montreal, Quebec, Canada.

Individuals with ADHD have a higher prevalence of smoking than those without the disorder (19%-46% ADHD vs. 10%-24% non-ADHD). Adults and adolescents with ADHD experience earlier smoking initiation and more rapid progression to regular smoking compared to those without ADHD. Few studies have considered whether ADHD is associated with smoking initiation or smoking cessation, specifically smoking expectancies. The aim of the current study was to examine whether hyperactivity/impulsivity and inattention are associated with smoking expectancies in children and adolescents. Participants (N = 228; M = 12.66yrs, SD = 2.03yrs; 53.5% boys; 72.8% English-speaking) and their parents took part in the Healthy Heart Project. Parents completed the Connor ADHD Rating Scale and the Child Behavior Checklist. Children completed the Smoking Expectancies Scale in Adolescents and standardized questions about smoking behaviour. Smoking expectancies include perceived positive benefits (feel relaxed, fit in) and negative costs (smell bad, lung cancer). Children were classified as "never-smokers" if they endorsed smoking less than one whole cigarette in their lifetime. Never-smokers endorsed significantly more negative (M = 128.5 items, SD = 46.6) than positive smoking expectancies (M = 43.5 items, SD = 22.4, p < .001). Neither hyperactivity/impulsivity (R2 = .00, n.s.) nor inattention (R2 = .00, n.s.) predicted positive smoking expectancies in univariate regression analyses. In contrast, greater hyperactivity/impulsivity (R2 = .02, p < .05) and inattention (R2 = .05, p < .001) each significantly predicted endorsement of fewer negative smoking expectancies. When considered simultaneously, greater inattention (t = 2.91, p < .05) but not hyperactivity/impulsivity (t = -1.03, n.s.), predicted fewer negative smoking expectancies (F(2,225) = 6.96, p < .01). Taken together, the inattention component of ADHD, but not hyperactivity/impulsivity, was associated with having fewer negative smoking expectancies. These findings support a link between ADHD subtypes and smoking precursors and suggest prevention programs may need to target youth with inattention symptoms.

IMPACT OF THE I AM FIT PROJECT ON BLOOD PRESSURE IN ADOLESCENTS
Vernon A. Barnes, PhD, Pediatrics, Roman M. Cirbikra, DDS, Dentistry, Norman Pollock, PhD, Pediatrics, Douglas R. Bentley, MPH, Denise D. Kornegay, MSW, Family Medicine, Medical College of Georgia, Augusta, GA, Carl D. Hammond-Beyer, MS, Deborah Walker, EdS, AR Johnson Health Sciences High School, Augusta, GA.

Background: There is an urgent need to initiate school-based health promotion and prevention programs. The purpose of the "I AM FIT" project was to determine the feasibility of a school-based walking program for increasing health and physical fitness awareness. Methods: Student participants were divided into teams based on grade levels (9-12). The teams competed for distance walked per week. Participants wore pedometers each day and recorded at the end of every week for 16 weeks. Parental permission was obtained for participation in health evaluations. Blood pressure (BP) was measured in sitting position with the Dinamap 1846SX (Critikon, Inc. Tampa, FL). Appropriate BP cuffs were placed on the right arm and readings taken at 0, 5, 7, and 9 min were used for analysis. Results: 97% of the sample had significantly lower diurnal cortisol levels at baseline compared to posttest to a demographically matching control school that did not participate in the project. These BP values were consistent across all time points.
walking program. Results: 157 students (ages ranged 14 to 18 years) completed evaluations at the beginning and end of the 16 week project. Collectively, 6 weekly pedometry entries per person out of 16 total possible entries were logged (mean 4390 miles or 140.6 miles per student over 16 weeks). The project was successful in maintaining physical activity levels in the participants in the first 5 weeks, but participation was reduced markedly over the remaining weeks. At pretest, the mean height was 65.6±3.6 inches and mean weight was 147.2±46.2 lb. The mean pretest systolic BP (SBP) was 114.8±12.0 mmHg and diastolic BP (DBP) was 63±7.3 mmHg. At posttest there was a slight increase of 1.2±3.5 lb in weight and 0.2 inches in height. 37 "I AM FIT" students lost at total of 182.2 lbs. At posttest there was a decrease of 2.5 mm Hg SBP in the "I AM FIT" school, compared to an increase in the control school of 3.4±9.8mmHg (p<.002). There were increases of 1.5 mmHg DBP in the "I AM FIT" school and 4.1 mmHg in the control school (p = .13). Discussion: The "I AM FIT" project was a success in terms of feasibility and acceptance by the faculty and students. More importantly, the students in the "I AM FIT" project benefited from a significant decrease in SBP.

157) Abstract 1628

ENDOCRINE AND AUTONOMIC ACTIVITY UNDER BASAL AND STIMULATED CONDITIONS IN CHRONIC FATIGUE SYNDROME
Urs M. Nater, PhD, James F. Jones, MD, William C. Reeves, MD, Centers for Disease Control and Prevention, Atlanta, GA

The hypothalamic-pituitary-adrenal (HPA) axis and the autonomic nervous system (ANS) appear to be involved in the pathophysiology of chronic fatigue syndrome (CFS). We conducted this study to evaluate HPA axis and ANS function in CFS cases and non-fatigued controls (NF) under both basal and stimulated conditions. Persons with CFS and matched well controls identified from the general population participated in a 3-day in-hospital study. On all three days, we measured awakening salivary cortisol response and measured diurnal salivary cortisol profiles on days 1 and 2. We also measured salivary alpha-amylase. In day 3, participants were exposed to a standardized psychosocial stressor (the Trier Social Stress Test) and provided continuous cortisol and alpha-amylase samples. Preliminary analyses in 43 subjects revealed that subjects with CFS showed attenuated morning cortisol profiles on days 1 and 2 in comparison to NF, but no differences were found on day 3. Alpha-amylase profiles were increased in CFS throughout all 3 days. In response to the psychosocial stressor, we found attenuated cortisol, but increased alpha-amylase responses in CFS compared to NF. This study provided further evidence of reduced cortisol responsiveness in CFS. Importantly, hypocortisolism also occurred during the Trier Social Stress Test. In contrast, sympathetic activity, as measured by alpha-amylase, was markedly increased both under basal and stimulated conditions in CFS. The relevance of these findings for understanding pathophysiological mechanisms of CFS will be discussed.

158) Abstract 1556

FAMILY DYSFUNCTION MEASURED USING THE GENOGRAM AND DERMATOLOGICAL CONDITIONS: A REPORT ON 106 PATIENTS
Francois Sampogna, Health Services Research Unit, Istituto Dermopatico dell’Immacolata IDI-IRCCS, Rome, Italy. Françoise Poot, Hôpital Erasme, Bruxelles, Belgium

Background. Collection of family history has been recognized as an important tool to detect risks for diseases. The genogram is a practical instrument to record and retrieve family data systematically. It consists of a family tree including information on family structure, demographics, life events, family social problems, and medical information. As far as we know, the genogram has never been used in patients with dermatological conditions. Purpose of the study. To investigate the presence of a possible association between the genogram score and the presence of a chronic dermatological condition, such as psoriasis, atopic dermatitis, and alopecia. Subject sample and methods. This was a case-control study, performed in a dermatological clinic. Patients included in this study were those who had a diagnosis of psoriasis, atopic dermatitis, or alopecia, attending a dermatological clinic. The control group included people going to the same clinics for pathologies considered as not influenced by psychological factors, such as nevi or basal cell carcinoma. Data were collected in three centres, two in Italy and one in Belgium. A psychologist collected information from the patient on 29 stressful events to build the genogram. Each information was scored 1 or 2, and the sum of scores gave the genogram score. The 12-item General Health Questionnaire (GHQ-12) and the 20-item Toronto Alexithymia Scale (TAS-20) were used to assess psychological distress and alexithymia. Results. We collected data on 106 patients, 59 cases and 47 controls. Among cases, 37 had psoriasis, 15 alopecia and 7 atopic dermatitis. The mean (sd) genogram score was 6.7 (3.3) in cases and 3.0 (2.4) in controls (p<0.01). The score was 6.0 (3.0) in patients with psoriasis, 8.8 (2.6) in patients with alopecia, and 5.9 (3.0) in patients with atopic dermatitis. Cases presented a higher degree of psychological distress and of alexithymia compared to controls. Conclusions. These results seem to confirm the hypothesis of an association between family dysfunction and the presence of a dermatological disease, such as psoriasis, atopic dermatitis or alopecia.

159) Abstract 1240

INTELLIGENCE AS A RISK FACTOR FOR FUNCTIONAL SOMATIC DISORDERS
Eva Kingma, BSc, Psychiatry, Judith Rosmalen, PhD, Psychiatry, Internal Medicine, University of Groningen, Groningen, the Netherlands

Functional somatic symptoms (FSS), not conclusively explained in terms of conventionally defined organic pathology, can occur together resulting in clusters known as functional somatic disorders (FSD). In previous research we found a negative association between intelligence and FSS. Therefore, we hypothesized that intelligence was related to the risk of having FSD. Furthermore, in a group with multiple FSS, we questioned whether intelligence is a risk factor for FSD independent of the number of FSS. Analyses were performed in a population based cohort (N=1094, mean age 55.3 SD 11.1, 46.3% male). The Generalized Aptitude-Task Specific Intelligence Test was used to measure intelligence; intelligence is measured with a dimensional space test, a vocabulary test, and an arithmetic reasoning test. The current presence of FSD was measured with a questionnaire. Furthermore, participants completed the somatization section of the Composite International Diagnostic Interview for the assessment of FSS in the previous year. Logistic regression analyses, adjusted for age and gender, were performed in the entire cohort to test whether intelligence was associated with FSD, and in a subgroup, that reported at least two FSS in the previous year, to test whether intelligence was associated with FSD independent of the effect of number of FSS. Of the total of 1094 participants, 140 reported at least one FSD. We found no association between intelligence and FSD (OR=1.043; 95%CI=0.958-1.157; p=.32), but a positive association between the dimensional space test and FSS (OR=1.256; 95%CI=1.013-1.558; p=.038). In total 1094 participants, 269 reported at least two FSS in the previous year and of these, 76 reported at least one FSD. In this subgroup, we found a positive association between intelligence and FSD (OR=1.146; 95%CI=1.000-1.312; p=.050), and again a positive association between the dimensional space test and FSD (OR=1.753; 95%CI=1.245-2.469; p<.001). We conclude that low intelligence is not associated with FSD, in contrast to with FSS. Our results might suggest that intelligence increases syndrome labelling of FSS in participants with multiple FSS.

160) Abstract 1078

ASSOCIATIONS OF DEPRESSIVE SYMPTOMS AND TRAIT HOSTILITY WITH C-REACTIVE PROTEIN AND INTERLEUKIN-6 RESPONSE FOLLOWING STRESS RECALL: MODERATION BY GENDER
Beverly H. Brunnett, PhD, Stephen H. Boyle, PhD, Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, N.C.; Ilene C. Siegler, PhD, Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, N. Carolina; Redford W. Williams, MD, Psychiatry, Duke University Medical Center, Durham, N.C.

Evidence suggests that depressive symptoms moderate the effect of stress on the interleukin-6 response in women (Emery, 1997). The current study evaluated the association of depressive symptoms and trait hostility in a sample of 250 healthy college students. More importantly, the students in the "I AM FIT" project benefited from a significant decrease in SBP.

A-67
interleukin-6 (IL-6). We extended these findings by examination of the joint effects of depressive symptoms and hostility on changes in CRP and IL-6 in response to an acute laboratory stressor. The present study included 307 males and 218 female participants, affording the opportunity to also examine potential moderation by gender. Regression analyses were preformed to examine depressive symptoms, hostility ratings, gender, and their interactions as predictors of CRP and IL-6 response to an emotion (anger and sadness) recall task. All analyses adjusted for age, race, and body mass index (BMI), and importantly, for pre-recall task levels of either CRP or IL-6. The hostility x depressive symptoms x gender interaction was a significant predictor of CRP response (p = 0.04); hostility was significantly associated with increased CRP response—but only in females with higher levels of depressive symptoms. The depressive symptoms x gender interaction was a significant predictor of IL-6 response (p = .03); females with higher depressive symptom ratings had higher IL-6 levels following the task, as compared to those with lower symptom ratings, whereas for males an opposite pattern was found. Hostility was not related to IL-6, either as a main effect, moderator of depressive symptoms, nor moderator of gender. These effects extend prior research in this area by suggesting that acute stress related responses of CRP and IL-6 may be associated with the psychological vulnerability factors of depressive symptoms and hostility in females. This research was supported by grants # P01HL53687 and the Duke Behavioral Medicine Research Center.

161) Abstract 1592

STRESS IMPACTS MATERNAL AND FETAL IRON BIOLOGY DURING PREGNANCY: AN UNAPPRECIATED MEDIATOR OF POSTNATAL ANEMIA IN INFANTS

Christopher L. Coe, PhD, Harlow Center for Biological Psychology, University of Wisconsin, Madison, WI, Pamela J. Kling, MD, Pediatrics, School of Medicine and Public Health, Madison, WI

Purpose of study. An ancient biological response to stress is to increase tissue partitioning. In addition, stable iron isotopes are used to track placental transfer. Based on our findings in stressed infants interacting with growth to tax consumable iron available (lower MCV and Hgb, p<.05). Low ferritin at birth in prenatally administered to index lower iron (ß=.25, p<.007). Their infants are stressed from stressful pregnancies or from mothers on iron-limited diets. In addition to determining ferritin at birth, a storage form, our studies examine iron-regulatory hormones that influence gut uptake of iron and increase tissue partitioning. In addition, stable iron isotopes are administered to track placental transfer. Based on our findings in animals, a study on psychological stress in 150 gravid women was undertaken. Results. Infants monkeys from stressed pregnancies showed a significant impairment in hematological status by 4-6 months of age (lower MCV and Hgb, p<.05). Low ferritin at birth in prenatally stressed infants interacted with growth to tax consumable iron available in breast milk. Women reporting higher levels of stress birthed infants with significantly higher reticulocyte-enriched zinc protoporphrin/heme in cord blood, an index of lower iron (ß=25, p<.007). Their infants are being tracked to predict likelihood of anemia by one year, when typically first assessed in prevailing pediatric practice. Our results in monkeys and humans indicate that iron biology during pregnancy is stress-responsive and can predispose to postnatal anemia. Beyond the impact of stress, higher risk groups include low SES, young mothers, premature infants, and gestational conditions such as hypertension and diabetes. Awareness of these relationships should inform clinical practice, including the scheduling of diagnostic testing for vulnerable infants and earlier initiation of iron supplementation with fortified foods.

162) Abstract 1433

THE EFFECTS OF CPAP ON QUALITY OF LIFE IN SLEEP APNEIC PATIENTS: A 3-WEEK RANDOMIZED TRIAL

Paul R. Puri, M.D., Joel E. Dimsdale, M.D., Psychiatry, University of California, San Diego, San Diego, CA

Background: Obstructive sleep apnea (OSA) is associated with lower subjective quality of life (QoL). Continuous Positive Airway Pressure (CPAP) is an effective treatment for OSA, and uncontrolled studies have suggested that CPAP improves QoL. Prior randomized studies that compared CPAP to a placebo treatment (sub-therapeutic pressure) have yielded mixed results. One study of 1 week duration showed both groups improved in health-related quality of life, but that there was no difference between the two groups. Another study featured a one-month trial and showed significant improvement in quality of life in both the CPAP and placebo CPAP group, but with greater improvement in the CPAP group and in more areas of QoL. The placebo group showed improvement in only a few areas of QoL (e.g. physical role, energy vitality). Methods: Seventy-four subjects with OSA were randomized to receive a 3-week trial of CPAP or a placebo (sub-therapeutic pressure CPAP). Subjective quality of life was measured at both visits with the SF-36. Results: CPAP was not found to be different than placebo CPAP on SF-36 total or subscale scores. When the treatment group was examined as a whole (placebo and CPAP subjects), some subscales were found to improve significantly over time (Physical Role, p<.012; Social Function, p=.025; Physical Health Rollup, p<.029), but when comparing the treatments there was no significant difference in improvement between the groups. Conclusions: Our study adds to a growing body of literature concerning the effects of CPAP on quality of life. The study suggests that future investigations of CPAP need to include a placebo control in order to be sure that the beneficial effects of CPAP reflect specific effects of treatment as opposed to non-specific (i.e. placebo) effects.

163) Abstract 1020

LOWER SUBJECTIVE SOCIOECONOMIC POSITION IS ASSOCIATED WITH POORER SLEEP IN ADULTS

Denise C. Jarrin, MA, Jennifer J. McGrath, Ph.D., M.P.H., Pediatric Public Health Psychology PPHP Laboratory, Concordia University, Montréal, Québec, Canada

A socioeconomic gradient exists for multiple health outcomes. Recent research investigates whether this socioeconomic gradient exists for sleep. Most studies focus largely on objective socioeconomic position. Namely lower income, education, and occupational status have been linked to shorter sleep duration, poorer sleep quality, greater difficulty initiating and maintaining sleep, and considerably more accumulated sleep debt in adults. Relatively little is known about the relationship between subjective socioeconomic position and sleep. The aim of the present study was to replicate and extend earlier findings linking socioeconomic position and sleep in adults. Participants (N=177; M =45.3 years, SD =6.3; 18.6% male) took part in the larger Healthy Heart Project at Concordia University. Objective socioeconomic position was derived from level of education and total income. Subjective socioeconomic position was measured using The MacArthur Scale of Subjective Social Status (Adler et al., 2000) as an indicator of participants' perceptions of their placement in the social hierarchy in Canada; higher scores indicate higher subjective social status. The Pittsburgh Sleep Quality Index (Buysse et al. 1989) was used to assess overall sleep quality and duration over a one month period. The Epworth Sleepiness Scale (Jones, 1991) was used as an index of daytime sleepiness. Consistent with previous results, higher objective socioeconomic position was significantly correlated with better overall sleep quality (r=.32, p<.05), longer sleep duration (r=.17, p<.05), and less daytime sleepiness (r=-.21, p<.05). Extending these results, higher subjective socioeconomic position similarly was significantly correlated with better overall sleep quality (r=.24, p<.01), longer sleep duration (r=.18, p<.05), and less daytime sleepiness (r=.27, p<.01). Future researchers should consider whether sleep may be an underlying pathophysiological mechanism to explain how socioeconomic position "gets under the skin" to affect health.
Body Mass Index, Depression and Their Association with Physiological Stress Markers Among Older Adults

Nina A. Smallwood, B.A., Guido G. Urizar Jr., Ph.D., Psychology, California State University, Long Beach, California, Natara Garovoy, Ph.D., Cynthia Castro, Ph.D., Abby C. King, Ph.D., Medicine, Stanford University, Stanford, California

Prior studies have found body mass index (BMI) and levels of depression to be related to physiological measures of stress, yet few studies have examined this relationship among older adult caregivers and non-caregivers. The current study examined whether body mass index and levels of depression were associated with resting heart rate, blood pressure, and salivary cortisol patterns among older adults, controlling for gender (70% women) and caregiver status (54% were caregivers). Participants consisted of 54 older adults over the age of 45 (47% had a BMI>30; 21% had moderate to severe depressive symptoms) who completed a measure of depression (BDI) and collected salivary cortisol for two consecutive days at four different times throughout the day (i.e. awakening, 30 minutes after waking, 4pm, and bedtime). ANOVA analyses revealed that older adults with higher BMI were more likely to have significantly higher diastolic blood pressure (F=3.16, p <.05). Hierarchical regression analyses showed that adults with higher BMI and greater depressive symptoms had a significantly higher heart rate, controlling for gender and caregiver status (R²=.29, p <.01). A significant BMI by depression interaction on heart rate was also found (controlling for gender and caregiver status) showing that older adults with higher BMI and greater depressive symptoms had a significantly higher heart rate (R²=.34, p <.01). Further, a significant BMI by depression interaction was found for diurnal cortisol (controlling for caregiver status) showing that older adults with higher BMI and greater depressive symptoms had more abnormal cortisol patterns (R²=.19, p<.05). These results suggest the need for interventions for older adults with a high BMI (>30) and greater depressive symptoms in order to prevent negative health outcomes associated with chronic stress.
STRESS MANAGEMENT SKILLS, STRESS REDUCTION, AND CHANGES IN INFLAMMATORY AND METABOLIC MARKERS OF DISEASE RISK

Daniel M. Webber, MS, Jeffrey M. Gregoski, PhD, Integrative Medicine, Duke University Medical Center, Durham, NC, Justin P. Meunier, BA, Medicine, Louisiana State University School of Medicine, New Orleans, LA, Tracy W. Gaudet, MD, Ruth Q. Wolaver, PhD, Integrative Medicine, Duke University Medical Center, Durham, NC

Purpose: Accumulating evidence suggests that perceived stress relates to inflammation and insulin resistance. Yet few studies have investigated the effect of stress management (SM) interventions on inflammatory and metabolic biomarkers of chronic disease risk.

Methods: This observational study used structural equation modeling to test the hypothesis that increased use of SM skills is associated with decreased stress, lowered inflammation, and improved insulin resistance. Sixty-three adults [M(SD) age=60(8); 48% women; 33% metabolic syndrome] received instruction in SM techniques during a 3-day integrative medicine program that was followed by health education, a breath awareness meditation (BAM) program and a brief telephone health coaching session. Participants were randomized to 5-week training sessions conducted during health or physical education classes by teachers who received training in various SM methods.

Results: Participants reported a significant decrease in stress (p<.001) and significant improvements in inflammatory and metabolic markers of chronic disease risk. A significant group x time interaction for pre-test, post-test and 3-mo follow-up values, respectively for anger-in (p<.04). Scores were 16.3±0.41, 16.4±0.42 and 15.3±0.48 for the WLS group, and 15.7±0.44, 14.8±0.46 and 15.6±0.49 for controls. Least squares means showed a significant group x time interaction for pre-test, post-test and 3-mo follow-up values, respectively for anxiety (p<.05). Scores were 5.8±0.33, 5.4±0.37 and 4.1±0.37 for the WLS group and 4.9±0.35, 4.7±0.40 and 4.4±0.38 for controls. CONCLUSION: These findings demonstrate the feasibility of conducting the Williams LifeSkills program in the school setting and its potential beneficial impact upon reducing self-reported anger and anxiety levels in healthy adolescents. WLS training can feasibly be delivered in the school setting by trained school teachers. Importantly, these findings were observed over a relatively short intervention period.

EFFECT OF WILLIAMS LIFESKILLS TRAINING ON ANGER AND ANXIETY IN ADOLESCENTS

Vernon A. Barnes, PhD, Pediatrics, Medical College of Georgia, Augusta, GA; Virginia P. Williams, PhD, Williams LifeSkills, Inc., Durham, NC, Redford B. Williams, MD, Behavioral Medicine, Duke University Medical Center, Durham, NC, Venkataraman P. Shenbagarajan, MBBS, Pediatrics, Douglas R. Bentley, MPH, Family Medicine, Maribeth H. Johnson, MS, Biostatistics, Medical College of Georgia, Augusta, GA

BACKGROUND: Psychosocial factors (such as anger) have been shown to be related to a wide range of physical health problems including elevated blood pressure and coronary heart disease in adults. The Williams LifeSkills anger and stress management workshop (WLS) enhances awareness of thoughts and feelings in stressful situations, and provides training in evaluation, deflection, problem-solving, assertion, saying no, speaking, listening, empathy, and emphasizing positives. The purpose of this study was to determine the effect of school-based WLS training on anger and anxiety in adolescents. METHODS: 192 adolescents (mean age=SD=15.7±1.4 years, 47% males, 86% African American) were randomized to WLS (n=101) or CTL (n=91) groups. The WLS group engaged in twelve 50-min training sessions conducted during health or physical education classes by teachers at school. Subjects completed the Spielberger Anger Scale and the Behavior Assessment System for Children anxiety subscale. The statistical analysis used mixed model repeated measures ANOVA. RESULTS: Least squares means showed a significant group x time interaction for pre-test, post-test and 3-mo follow-up values, respectively for anger-in (p<.04). Scores were 16.3±0.41, 16.4±0.42 and 15.3±0.48 for the WLS group, and 15.7±0.44, 14.8±0.46 and 15.6±0.49 for controls. Least squares means showed a significant group x time interaction for pre-test, post-test and 3-mo follow-up values, respectively for anxiety (p<.05). Scores were 5.8±0.33, 5.4±0.37 and 4.1±0.37 for the WLS group and 4.9±0.35, 4.7±0.40 and 4.4±0.38 for controls. CONCLUSION: These findings demonstrate the feasibility of conducting the Williams LifeSkills program in the school setting and its potential beneficial impact upon reducing self-reported anger and anxiety levels in healthy adolescents. WLS training can feasibly be delivered in the school setting by trained school teachers. Importantly, these findings were observed over a relatively short intervention period.

FAMILY ENVIRONMENTAL INFLUENCES MEDITATION EFFICACY IN AFRICAN AMERICAN ADOLESCENTS

Vernon A. Barnes, PhD, Mathew J. Gregoski, PhD, Pediatrics, Martha S. Tingen, PhD, Frank A. Treiber, PhD, Pediatrics, Graduate Studies, Medical College of Georgia, Augusta, GA

The objective of this study was to examine the impact of a stress reduction technique, breath awareness meditation (BAM), compared to health education (HE) and lifeskills training (LS) upon resting systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) within the context of potential moderating factors of family environment and expectancy of benefit. Methods: 186 AA adolescents (75 males, 111 females; mean age=15.1±0.7 yrs) with elevated resting SBP (i.e., 90th-99th percentiles) were randomly assigned by school to three-month BAM, LS, or HE interventions. Laboratory resting BP, Family Relations Index (FRI) and expectancy of benefit evaluations were conducted at pre- and post-intervention. School sessions were conducted during health classes by teachers who received training in the specific intervention (i.e. BAM, HE, LS). Results: Higher expectancy of benefit from any of the three interventions (i.e. scores >/= median) resulted in greater reductions in SBP (absolute change of 2.4 mmHg for BAM, 2.4 mmHg for LS vs. 2.2 mmHg for HE). For DBP a two-way interaction (p=0.03) indicated that BAM group subjects who came from positive family environments (i.e., FRI >/= median) exhibited greater decreases in SBP than all other subgroups (mean change 3.3 vs. range of 1.7 to 2.2 mmHg). For DBP a two-way interaction (p=0.03) indicated that BAM and LS subjects who came from positive family environments (i.e. FRI >/= median) exhibited greater decreases in SBP than all other subgroups (mean change 1.9 vs. range of 1.7 to 2.2 mmHg). For HR a two-way interaction (p=0.05) indicated that BAM group subjects who came from positive family environments exhibited a greater decrease compared to other subgroups (mean change 1.8 bpm vs. range of 1.6 to 2.5 bpm). Conclusions: Expectancy of intervention benefits beneficially impacted success of behavioral interventions among youth reducing SBP. Positive family ENVIRONMENTS in combination with either BAM or LS appear to have a beneficial impact upon hemodynamic function in AA adolescents.

STRESS IN DEMENTIA CAREGIVERS: AN EXPERIENCE-BASED SAMPLING STUDY

Alexandra M. Amen, BA, Neurology, Oregon Health and Science University, Portland, Oregon, Irina Fonareva, BA, Behavioral Neuroscience, Daniel P. Zajdel, BS, Roger M. Ellingson, M.S.C.S.&E, Barry S. Oken, MD, Neurology, Oregon Health and Science University, Portland, OR

Purpose: Many of those living with Alzheimer's disease and related dementias are cared for by family members, who are thus placed under a great deal of stress. Additionally, previous research has shown that caregiver stress may lead to health impairments and increased mortality rates. The aim of this study was to better understand the nature of caregiver burden by comparing caregiver and non-caregiver responses to a variety of stress-based questions both at home and in the laboratory setting. Methods: A hand-held digital PDA device was used to implement at home experience-based sampling of 21 caregivers of a relative with dementia (Mean Age=66.7±7.50) and 25 non-caregiver values, respectively for anger-in (p<.04). Scores were 16.3±0.41, 16.4±0.42 and 15.3±0.48 for the WLS group, and 15.7±0.44, 14.8±0.46 and 15.6±0.49 for controls. Least squares means showed a significant group x time interaction for pre-test, post-test and 3-mo follow-up values, respectively for anxiety (p<.05). Scores were 5.8±0.33, 5.4±0.37 and 4.1±0.37 for the WLS group and 4.9±0.35, 4.7±0.40 and 4.4±0.38 for controls. CONCLUSION: These findings demonstrate the feasibility of conducting the Williams LifeSkills program in the school setting and its potential beneficial impact upon reducing self-reported anger and anxiety levels in healthy adolescents. WLS training can feasibly be delivered in the school setting by trained school teachers. Importantly, these findings were observed over a relatively short intervention period.
controls (Mean Age=66.5 +/- 7.76). At 5 semi-random time points during wakeful hours on one day subjects were asked to rate on a scale of 1 to 6 their perceived stress, ability to cope with the current situation, focus on the current situation, perceived fatigue, and the demand level of the current situation. Additionally, all subjects were asked to answer these same questions while in the laboratory setting. Results: There was no difference between groups in either focus or coping ratings. However, there were significant interaction effects between location (home vs. lab) and group on ratings of perceived stress (F=8.93(33), p=0.005), sleepiness (F=5.79(32), p=0.022), and situational demand (F=7.840 (31), p=0.009). In each of these cases, caregivers rated themselves more poorly at home compared to controls, whereas controls rated themselves more poorly in the laboratory setting compared to caregivers. Conclusions: Caregiver self-rated stress and related measures are significantly impacted by whether they are assessed at home or in the laboratory setting. It will be important to determine next if this effect carries over to physiological assessments.

169) Abstract 1407
ASSESSING STRESS AND COPING AFTER HURRICANE IKE: PRELIMINARY ANALYSES AT THE FIRST ANNIVERSARY
Sherry Bishop, PhD, School of Nursing, University of Texas Medical Branch, Galveston, Texas, Charles C. Benight, PhD, Psychology, University of Colorado at Colorado Springs, Colorado Springs, Colorado, Chris R. Brewin, PhD, Clinical Health Psychology, University College London, London, England, R. Jeanne Ruiz, PhD, School of Nursing, University of Texas at Austin, Austin, Texas, Raymond Stone, PhD, Microgen Labs, Inc, La Marque, Texas
In recent years, disasters have become the focus of efforts to evaluate stress related short and long term health impacts revealing robust linkages between exposure and post-traumatic stress disorder (PTSD) symptomatology, depression, anxiety and worry. What is not clear is the etiology of those displaying the greatest disruption, (ie, whether dysfunction was evident early on or developed over time), nor which factors were contributory. Mitigation of negative health outcomes requires an understanding of factors contributing to health outcomes across time to enable effective countermeasures to be implemented in a timely manner. The recent devastation by Hurricane Ike to the Gulf Coast on September, 2008, rivals both Hurricane Katrina and the famous 1901 Galveston storm in the scope of damage to the region. A naturalistic multivariate longitudinal study on stress and coping related to short and long term mental and physical health outcomes was initiated in the immediate aftermath of the disaster on the faculty, staff and students of the University of Texas Medical Branch health science center. The second wave of data at the 1 year anniversary is underway. Preliminary analyses of baseline data on 401 respondents with completed stress assessments indicate that over 60% (n=242) had elevated stress levels. Of the 393 that completed assessment of depression, 34.6% (n=137) showed elevated levels of depression. Of the 477 that provided data on hurricane impact, 65% indicated evacuation out of town. Over 45.5% indicated travel for an average of 5.82 hours to reach destinations at least 75 miles away. Participants were displaced an average of 14.80 days (sd=23.37; range 0-225). Substantial damage was reported from power loss (61%), flooding/storm surge (33%), wind (28%) and other water (19%). Data analyses will address baseline levels of PTSD, depression, perceived stress, worry, resilience and coping and changes across time (baseline and 1 year anniversary). The most likely measures that would be associated with less decline in FS over the 6-year follow-up. Initial models examined baseline PE, and change in PE, as predictors of change in FS. These models adjusted for baseline PE, baseline negative emotion, baseline FS, age, and gender. Final models included adjustment for covariates related to FS, (ie, age, frequency of social contacts, marital status, body mass index, smoking status, drinking behavior, exercise habits, long-standing illness, and illness at baseline). Baseline PE was a predictor of change in FS, adjusted for negative emotion, age, and gender (p = 0.033). The addition of covariates reduced the effect of baseline PE as a predictor of change in FS (p = .115). Change in PE was a significant predictor of change in FS with increases in PE over time associated with less decline in FS (p = .001). The association for change in PE remained significant in a model adjusted for covariates (p = .004). Gender did not moderate any of the associations for PE as a predictor of FS. These results indicate that increase in positive emotion over time is an independent predictor of less decline in functional status in individuals aged 60 and older.

171) Abstract 1112
CHANGE IN POSITIVE EMOTION AS A PREDICTOR OF 6-YEAR CHANGE IN FUNCTIONAL STATUS IN INDIVIDUALS AGED 60 AND OLDER
Beverly H. Brunnett, PhD, Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, N.C., Morten Grønbæk, National Institute of Public Health, Copenhagen, Denmark, John C. Barefoot, PhD, Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, N.C.
Associations between positive emotion (PE) and functional status (FS) were examined in 422 members of the Danish Health and Morbidity Study (51.7% female; age M=67.9, SD=5.8). Emotion and functional status measures were gathered at baseline (1994) and follow-up (2000). Regression analyses were conducted to examine PE at baseline, as well as change in PE from baseline to follow-up, as predictors of change in FS. PE at baseline was not associated with change in FS. However, change in PE was a significant predictor of change in FS with increases in PE over time associated with less decline in FS (p = .001). The association for change in PE remained significant in a model adjusted for covariates (p = .004). Gender did not moderate any of the associations for PE as a predictor of FS. These results indicate that increase in positive emotion over time is an independent predictor of less decline in functional status in individuals aged 60 and up. This work was supported by grant # P05AG028716 from the NIA; by the Danish National Institute of Health; and grant # R01HL54780 from NHLBI.

170) Abstract 1233
PREDICTORS OF MAJOR DEPRESSION IN DIABETES OUTPATIENTS WITH SUB-THRESHOLD DEPRESSION
Mariska Bot, MSc, Frans Pouwer, PhD, Peter de Jonge, PhD, Medical Psychology and Neuropsychology, Tilburg University, Tilburg, The Netherlands
Aims: Objective of the present study was to determine rates and risks of major depression in diabetes outpatients with sub-threshold depression. Methods: This study was based on data of a stepped care-based intervention study aimed at reducing depressive symptoms in diabetes outpatients with subthreshold depression, in which patients were randomly allocated towards a low-intensity stepped care or care as usual. All patients had a baseline Center for Epidemiologic Studies Depression Scale (CES-D) score of >=16, but no baseline major depression according to the mini International Neuropsychiatric Interview (MINI). Baseline demographic, biological and psychological characteristics were assessed by means of interviews, self-completed questionnaires (including the Hospital Anxiety and Depression Scale; HADS) and blood sampling. After two years, the MINI was used to determine whether participants suffered from a major depressive disorder during the 2 year follow-up. Predictors for depressive symptoms were studied using univariable logistic regression models. Results: From the 114 patients included at baseline, 73 patients were available at 2 year follow-up. The incidence of major depression was 42% (n=31). Higher baseline symptom score of anxiety (odds ratio (OR)=1.25; 95% CI: 1.04-1.50; p=0.018) and higher baseline depression severity (OR=1.09; 95% CI: 1.00-1.18; p=0.045) were predictors of major depression. Sex, age, stepped care allocation, number of comorbidities, number of stressful life events, glycated hemoglobin, and diabetes distress score were not related to incident major depression. Conclusions: Having a higher baseline level of anxiety and depression appeared to be related to the onset of major depression during 2 year follow-up in diabetes patients with sub-threshold depression. Anxiety and depression should be taken into account when the goal is to prevent major depression in diabetes patients with sub-threshold depression.

172) Abstract 1332
FURTHER VALIDATION OF THE PLEASANT EVENTS (PE) AND ACTIVITY RESTRICTION (AR) PEAR MODEL OF NEGATIVE OUTCOMES IN ALZHEIMER CAREGIVERS: ASSOCIATIONS WITH MARKERS OF SYMPATHETIC TONE
Elizabeth A. Chattillion, BA, Susan K. Roepke, MS, Clinical Psychology, SDSU / UCSD Joint Doctoral Program, La Jolla, CA.
Raeanne Moore, MD, Clinical Psychology, Alliant International University, La Jolla, CA; Roland von Kanel, MD, General Internal Medicine, Inselspital, Bern University Hospital, Bern, Switzerland, Paul J. Mills, PhD, Psychiatry, Michael G. Ziegler, MD, Medicine, Thomas L. Patterson, PhD, Igor Grant, MD, Brent T. Mausbach, PhD, Psychiatry, University of California, San Diego, La Jolla, CA

Purpose: Caring for a spouse with dementia is a stressor associated with depressive symptoms, increased risk for hypertension and CVD. Caregiving has been associated with reduced engagement in pleasant activities and increased perceived restriction of leisure activities, which research suggests may play a role in depression. The present study used the PEAR model to examine the relationship between combined pleasant events (PE) and activity restriction (AR) and markers of sympathetic tone in Alzheimer caregivers (CG). We hypothesized that CG reporting both low PE and high AR would have elevated blood pressure (BP) and catecholamine levels compared to CG reporting high PE and low AR. Methods: 37 older adults (mean age 73.9 ± 9.4 years) caring for a spouse with Alzheimer's disease participated. Frequency of engagement in PE and perceived level of AR in the past month were assessed. Participants were divided into 3 groups: HPLR = High PE + Low AR (N=15); IPHF/LPLR = Either High PE + High AR or Low PE + Low AR (N=13); LPHR = Low PE + High AR (N=9). Resting levels of plasma norepinephrine (NE) and epinephrine (EPI) and resting sympathetic and diastolic BP were collected. Results from ICP and ANOVA comparisons of the 3 groups (HPLR; IPHR/LPLR; LPHR) were significant for EPI, F(2,36) = 4.98, p = .013, but not for NE, F(2,36) = .904, p = .415, sympathetic BP, F(2,36) = 2.88, p = .070, or diastolic BP, F(2,36) = 2.61, p = .089. However, pairwise comparisons between the HPLR and LPHR groups revealed moderate to large effect sizes (Cohen's d) for all biological outcomes. Compared to the HPLR group, the LPHR group had higher resting EPI, d = 1.20, and NE, d = .52, and higher sympathetic BP, d = .98, and diastolic BP, d = .92. These preliminary results support the PEAR model which shows that combined assessment of PE and AR is best for predicting negative CG outcomes. The current analyses extend these findings to biological outcomes. Future research should examine how the PEAR model can be used to link psychological and physical outcomes.

173) Abstract 1406

TRAIT ANXIETY, PERCEIVED STRESS, AND INTERNALIZED HOMOPHOBIA AS PREDICTORS OF SELF-BLAME IN BISEXUAL WOMEN

Kate G. Edwards, B.A.; Mark Vesvick, Ph.D., Eliot Lopez, M.A., Psychology, University of North Texas, Denton, Texas

Boehner (2002) found that .1% of research in the past 20 years has been focused on LGBT health issues. According to Hughes and Eliason (2002), individual beliefs, expectations, coping skills and internalized homophobia have factors that need to be explored in the LGB population. Though research has examined effects of minority stress in the LGB population, it has been neglected for bisexual women (Württemberg, Germany). Interaction subscale of the Lesbian Internalized Homophobia Scale - (Szymanski & Chung, 2001), Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), and the State-Trait Anxiety Inventory (Spielberger et al., 1983) were used as predictors. Our sample of bisexual women (N=33) was primarily European American (60.6%) with a mean age of 26 years (SD=8.54) and living in Dallas/Forth Worth area. Preliminary correlation analyses suggested a relationship between trait anxiety, perceived stress and internalized homophobia with regard to interaction in the lesbian community. A regression analysis suggested that these variables account for 35% of the variance in self-blame (adj. R2=.35, F(3,24) = 5.94, p < .01), with stress (B = .38, t = 2.50, p = .020) and internalized homophobia as it pertains to interaction in the lesbian community (B = -.37, t = -2.33, p = .028) being significant predictors. These results suggest that perceived stress and internalized homophobia are predictors of self-blame in bisexual women. This may indicate that interventions focused on stress reduction and acceptance could decrease self-blame as a maladaptive coping mechanism.

174) Abstract 1195

SLEEP QUALITY IN DEMENTIA CAREGIVERS: RELATIONSHIP WITH STRESS

Irina Fonarova, BA, Behavioral Neuroscience, Alexandra M. Amon, BA, Daniel P. Zajdel, BS, Roger M. Ellingson, MS, Neurology, Barry S. Okon, MD, Neurology, Behavioral Neuroscience, Oregon Health & Science University, Portland, OR

Purpose: Caregivers to demented relatives are a growing population experiencing chronic stress and its negative effects on health. Reports of sleep problems are common in this population, but few studies assessed sleep quality in caregivers using objective sleep measures. It is important to understand if poor sleep in caregivers is contributing to the negative effects of caregiving. The study aims were to examine sleep quality in dementia caregivers compared to control peers using subjective and objective sleep measures and explore associations between stress and sleep measures in our sample.

Methods: Twenty caregivers (mean age 64.9, 90% women) and 20 non-caregiving peers (mean age 66.0, 90% women) completed self-reports of perceived stress, depressive symptoms, fatigue, and sleep quality and provided samples of salivary cortisol and immune biomarkers. Subjects also completed an overnight sleep recording at home using an ambulatory device allowing assessments of sleep quality and macro- and microarchitecture (sleep stages, spindle and Rapid Eye Movement [REM] density). ANCOVAs with group as a between factor and age as a covariate and Pearson correlations were used to examine group differences and relationships among sleep and stress measures, respectively.

Results: Caregivers reported increased perceived stress, more depressive symptoms and fatigue, and worse perceived sleep quality compared to controls (all p's<.001). Objective sleep assessments showed no group differences in most basic measures such as sleep time or efficiency, but caregivers took longer to fall asleep (p<.04) and spent a greater proportion of time in stage N3 (p<.04) and spend less time in stage R (p<.03). The groups did not differ in spindle and REM density. Measures of stress were correlated with subjective sleep quality (r=.431, p<.01) and the amount of time spent in sleep stages N2 (r=.369, p<.05), N3 (r=.329, p<.05) and R (r=.352, p<.05). Conclusion: Dementia caregivers have poorer sleep than controls and their chronic stress is related to decreased sleep quality. Interventions targeting sleep in caregivers are needed.

175) Abstract 1180

ASSOCIATIONS BETWEEN JOB STRAIN AND THE CORTISOL/DHEA-S RATIO AMONG MANAGEMENT AND NON-MANAGEMENT PERSONNEL

Michael C. Gadinger, Dipl. Psych., Joachim E. Fischer, Professor, Sven Schneider, PD, Public Health & Social Medicine, University Heidelberg, Mannheim Medical Faculty, Mannheim, Baden-Württemberg, Germany

Purpose: To assess cross-sectional associations between the main, non-linear and interactive effects of the Demand-Control-Support (DCS) model and the cortisol/DHEA-S ratio, a biomarker of psychophysical wellbeing. Subjects were 609 employees from all occupational levels of a German airplane manufacturing plant. Methods Validated work stress instruments (JCO, ERI, SALSA) served as measures for the DCS dimensions. Factor scores were obtained from common factor analysis (principal component analysis, oblimin rotation). Cortisol measures were obtained from overnight urine samples and DHEA-S levels from blood samples. Sequential multiple regression models controlling for age and gender were computed separately for employees with (n=102, 47.9 ± 8.1 years, 95.2% males) and without (n=507, 40.0 ± 11.6 years, 87.6% males) management responsibilities. Results: The dimensions of the DCS model predicted the cortisol/DHEA-S ratio only among employees with management responsibilities. Among managers, significant parts of the cortisol/DHEA-S ratio were explained by the linear (p-level = .002) and non-linear effects (p-level = .025) of job demands. Increasing levels of job demands were associated with lower cortisol/DHEA-S ratios. However, the quartile of moderately high
levels of job demands seemed to represent an optimal level as indicated by the lowest mean cortisol/DHEA-S ratio. Furthermore, we observed a significant effect of job control (p-level = .05) and a significant interaction between job demands and job control (p-level = .05), which both suggest a beneficial effect associated with moderately high job control. Moderate levels of job control seemed to exert a buffering effect on adverse levels of job demands (interactive effect) and seemed to be independently related to low cortisol/DHEA-S ratios (non-linear effect). This investigation is the first to demonstrate associations between the cortisol/DHEA-S ratio and the DCS model. More specifically, the results revealed that moderately high levels of job demands and job control among employees with management responsibilities were associated with greater psychophysical wellbeing.

176) Abstract 1392

DIURNAL RHYTHM IN BRITISH ANTARCTIC PERSONNEL
Anette Harris, MSc, Psychology, University of Bergen, Bergen, Norway, Iain Grant, MB,FRCS, British Antarctic Survey, Emergency Dept, Derriford Hospital, Plymouth, UK, Hege R. Eriksen, PhD, Unifob Health, University of Bergen, Bergen, Norway, Peter Marquis, Richard Corbett, BM, BCH, British Antarctic Survey, Emergency Dept, Derriford Hospital, Plymouth, UK, Holger Pleslin, MD, PhD, Unifob Health, University of Bergen, Bergen, Norway

Introduction: The diurnal rhythm of saliva cortisol and the association to adaptation, performance, and health were examined in personnel over wintering at two British Antarctic stations. Methods: 55 healthy individuals (49 males, 6 females) participated in the study. Cortisol in saliva was sampled on three consecutive days (at awakening, 15 and 45 min after waking, at 15:00 h, and 22:00 h) immediately after arrival at the station, midwinter, and the last week before departure. Subjective Health Complaints were also measured at arrival, midwinter, and the last week before departure, while depression (Burnam screen for depression) and affect (non-linear effect). This investigation is the first to demonstrate mindfulness practices have been incorporated into an emerging set of therapies. One set of symptoms yet to be explored through the lens of mindfulness are the premenstrual symptoms. Mindfulness-Based Cognitive Therapy (Teasdale et al., 2003) reduces depression relapse, and Mindfulness-Based Relapse Prevention (Bowen, Chawla, & Marlatt, in press, Marlatt, 1994) reduces craving and use among substance users. Since pain, anxiety, depression, and craving exemplify premenstrual symptoms it is reasonable to expect premenstrual symptom improvement or prevention with mindfulness practices. As a prelude to such intervention research, this study assessed interrelationships among premenstrual symptom severity reports (PMSR), menstrual attitudes, and mindfulness qualities. Relationships among menstrual attitudes and PMSR are well documented; the poorer the attitudes, the poorer the symptom reports (e.g., Woods et al., 1991). Yet research assessing interactions among mindfulness qualities and attitudes with PMSR is lacking. Thus, women (n = 127) completed the Shortened Premenstrual Assessment Form, modified Penn Alcohol Craving Scale, Menstrual Attitude Questionnaire, and the Mindful Attention Awareness Scale. Results revealed higher levels of mindfulness were associated with lower PMSR. Also, mindfulness moderated relationships among menstrual attitudes and PMSR. Specifically, mindfulness qualities provided a buffer between: (a) the view of menstruation as debilitating and PMSR, (b) the ability to predict menses onset and premenstrual water retention report severity, (c) viewing menstruation as bothersome and PMSR, and (d) denial of the effects of menstruation and premenstrual craving. Such findings provide support for the development of a mindfulness-based intervention aimed at managing premenstrual symptoms in women.

178) Abstract 1786

TOO MUCH OF A GOOD THING?: RESILIENCE AND RELIGION PREDICT WORSE DIURNAL SALIVARY CORTISOL PATTERNS FOR AFRICAN-AMERICAN FEMALE DEMENTIA FAMILY CAREGIVERS
Marcellus M. Merritt, Ph.D., Psychology, University of Wisconsin, Milwaukee, Wisconsin, T.J. McCallum, Ph.D., Psychology, Case Western Reserve University, Cleveland, Ohio, Thomas Fritsch, Ph.D., Parkinson’s Research Institute, Milwaukee, Wisconsin

Recent studies show that African American (AA) Alzheimer’s and related dementia (ADRD) caregivers are less likely than White caregivers to find the ADRD caregiving role burdensome and that this disparity is in large part a function of unique sociocultural factors associated with caregiving such as stress resilience, cultural justification (i.e., sense of obligation) and positive religious coping. This study examined the association of the latter three factors in diurnal salivary cortisol patterns among 24 White and 30 AA female dementia caregivers and noncaregivers (48 AAs; 15 Whites). Caregiver participants completed the Stress Related Growth Scale (SRGS, or stress resilience), the Cultural Justification for Caregiving Scale (CJC), the RCOPe (a measure of positive religious coping), and the Revised Memory and Behavioral Problems Checklist (RMBPC, an index of care recipient function) and collected five saliva samples daily (at awakening, 9am, 12pm, 5pm, and 9pm) for two successive days. Hierarchical multiple regression analyses with mean diurnal cortisol slope as the criterion showed that higher SRGS (p < .007) and RCOPe (p < .03) scores were linked with flatter (or more dysregulated) cortisol slopes for AA caregivers. On the other hand, for White caregivers, higher SRGS and RCOPe scores were linked with lower cortisol slopes. Among caregivers who scored high on RMBPC and favorable coping, higher RCOPe scores were linked with lower cortisol slopes only for White caregivers (p < .06). Thus, it appears that being an AA caregiver and high in stress resilience or religious coping may elevate the risk for chronic disease, especially for those with care recipient memory and behavioral problems. Thus, it is imperative that caregiver interventions focus on the cultural orientation and stress management tactics of AA caregivers in order to minimize the stressful side effects of caregiver burden.

179) Abstract 1120

RELATIONSHIP BETWEEN CHRONIC STRESS AND CAROTID INTIMA-MEDIA THICKNESS (IMT) IN ELDERLY AA ALZHEIMER’S DISEASE CAREGIVERS
Susan K. Roepke, M.S., Clinical Psychology, SDSU/UCSD Joint Doctoral Program, La Jolla, CA, Matthew Allison, M.D., Family and Preventative Medicine, Brent T. Mausbach, Ph.D., Psychiatry, University of California, San Diego, La Jolla, CA, Elizabeth A. Chaittillon, B.A., Clinical Psychology, SDSU/UCSD Joint Doctoral Program, La Jolla, CA, Alexandra L. Harmell, B.A., Thomas L. Pierson, Ph.D., Psychology, University of California, San Diego, La Jolla, CA, Roland von Känel, M.D., General Internal Medicine,
Inselspital, Bern University Hospital and University, La Jolla, CA, Joel E. Dimsdale, M.D., Paul J. Mills, Ph.D., Psychiatry, Michael G. Ziegler, M.D., General Medicine, Sonia Ancoli-Israel, Ph.D., Igor Grant, M.D., Psychiatry, University of California, San Diego, La Jolla, CA

Background and Purpose: The stress associated with providing care for a spouse diagnosed with Alzheimer's disease can have adverse effects on cardiovascular health. One possible explanation for these findings is that chronic caregiving stress may contribute to the development of atherosclerotic disease. The purpose of this study was to determine if the length of time that one has been a caregiver (i.e. time elapsed since one's spouse was diagnosed with Alzheimer's disease) is associated with degree of atherosclerotic burden, as measured by common carotid intima-media thickness (IMT). Methods: Sixty-five elderly Alzheimer caregivers (mean age 74 ± 8.2 years, 66% female) underwent in-home assessment of common carotid artery (CA) IMT via B-mode ultrasonography. Our outcome of interest was the mean of all IMT measurements taken from the near and far walls of the right and left common carotid artery segments at 2 standardized interrogation angles for each vessel (Right: 180° and 120°, Left: 180° and 240°). Data regarding medical history, blood pressure, and indicators of caregiving stress (Clinical Dementia Rating Scale, Activities of Daily Living (ADL), and Instrumental Activities of Daily Living (IADL)) were also collected. Results: Conclusions: The mean common carotid IMT of the sample was 0.70 ± 0.11 mm. Multiple regression analysis indicated that duration of caregiving (in years) was significantly and positively associated with IMT (beta = .279, p = .047), independent of the effects of other risk factors (age, gender, body mass index, mean arterial pressure, and caregiving stress). That is, caregivers who have provided care to their spouse for longer periods of time were more likely to have elevated IMT compared to newer caregivers. Age and IMT were unassociated (beta = .026, p = .844), indicating that our finding was not better accounted for by increasing age. Further, age and duration of caregiving were also unassociated (r = .050, p = .693). One potential explanation for our main finding is that the chronic stress of being a caregiver may exacerbate arterial injury, which over time can result in development and progression of atherosclerosis. These findings provide more evidence of the potential links between chronic caregiving stress and cardiovascular disease.

180) Abstract 1230

UTILIZATION OF REFERRED PSYCHIATRIC SERVICES AMONG LOW INCOME HIV POSITIVE PATIENTS WITH SCREENING DIAGNOSES OF PTSD, ASD, OR DEPRESSION
Marie V. Soller, MD, Psychiatry Residency, San Mateo County Behavioral Health & Recovery Serv, San Mateo, CA, Neda Kharrazi, BA, Psychology, Stanford University, Stanford, CA, Diane Prettiss, MPH, MHS, San Francisco Department of Public Health, San Francisco, CA, Steve Cummings, MD, Psychiatry, San Mateo County Medical Center, San Mateo, CA, Cheryl Koopman, PhD, Psychiatry, Stanford School of Medicine, Stanford, CA, Dennis Israelski, MD, Medicine, Stanford School of Medicine, Palo Alto, CA

Purpose: Rates of posttraumatic stress disorder (PTSD), acute stress disorder (ASD) and depression range between 30 to 50% among HIV positive individuals. The burden of psychiatric comorbidity is significant not only for the emotional suffering incurred, but because of its impact on other disease progression, social functioning, and healthcare utilization. This study evaluates a community healthcare system's effort to screen for psychiatric disorders among patients at an HIV clinic and refer for psychiatric care. Methods: Subjects included 210 of the approximately 350 patients attending a public HIV clinic in California. Standardized screening measures were used to identify diagnostic symptom criteria for PTSD, ASD and depression. As previously reported, 118 patients met criteria for one or more disorder, and they were all referred for psychiatric care. A subsequent review of each patient's medical record revealed whether patients accessed psychiatric follow-up care, and a 6-month follow-up questionnaire investigated barriers patients faced and their experiences with care. Results: Of the 210 subjects interviewed, 148 (70.5%) were male; 72 (33.8%) were African American, 69 (32.9%) were Latino/Hispanic, and 55 (25.8%) were Asian. The purpose of this study was to determine differences in utilization for PTSD, ASD, and/or depression, 100 (86.2%) were seen by a social worker, but only 54 (46.6%) saw a psychiatrist and/or were prescribed a psychiatric medication. Discussion: A large burden of psychiatric comorbidity exists among this population of HIV positive patients. An effort to screen and refer patients for psychiatric care resulted in approximately half of affected patients taking advantage of referred psychiatric follow-up. The majority of patients saw a social worker, evidencing a large degree of connectedness with the county services. Continuing efforts to understand and overcome barriers to follow-up could assist future systematic efforts to facilitate access to psychiatric care and potentially improve both HIV and psychiatric health outcomes.

181) Abstract 1506

HEART RATE VARIABILITY AND SEROTONIN TRANSPORTER POLYMORPHISM GENOTYPES IN A MULTI-ETHNIC SAMPLE
John J. Sollers III, Ph.D., Julian F. Thayer, Ph.D., Psychology, The Ohio State University, Columbus, Ohio, Marcellus M. Merritt, Ph.D., Psychology, University of Wisconsin Milwaukee, Milwaukee, WI, Allison Ashley-Koch, Center for Human Genetics, Beverly Brummett, Ph.D., Irene Siegler, MD, Bedford B. Williams, MD, Department of Psychiatry and Behavioral Medicine, Duke University Medical Center, Durham, NC

Serotonin (5-HT) has been implicated as critically important for emotional and cardiovascular regulation. Promoter polymorphisms in the serotonin transporter gene (5-HTTLPR) have been linked to changes in cardiovascular reactivity, negative affect, and increased vulnerability to depression in patient populations (Williams et al., 2006; Brummett et al., 2008; McCaffery et al., 2003; Otte, McCaffery et al., 2007). Importantly, decreased heart rate variability (HRV) has also been linked with emotional dysregulation, increased risk for cardiovascular disease, and poor health outcomes (Thayer & Lane, 2007; 2009). To date, no studies have examined the relationship between promoter polymorphisms of the serotonin transporter and HRV in a multi-ethnic sample. In this study, we related resting HRV to high frequency power to the serotonin transporter as indexed by combining genotypes of the 5-HTTLPR (short and long forms) and the SNP rs25531 in a sample of 41 Whites and 45 Blacks. Based on the combined genotypes we designated each allele as a high or low expressing allele according to established expression levels (Hu et al., 2006) resulting in HiHi, HiLo, and LoLo genotype groups. Consistent with prior research HRV was higher in Blacks compared to Whites (p<0.05). Importantly, after control for sex, age and BMI, there was a significant interaction of transporter category and ethnicity (p<0.04). Whereas the HiHi and the LoLo Blacks and Whites did not differ on HRV the HiLo Blacks had significantly higher HRV than the HiLo Whites (p<0.01). These results suggest a race moderated molecular heterosis that occurs when heterozygotes differ from both homozygotes (Comings & MacMurray, 2000). These findings indicate an important gene X race interaction that may have implications for cardiovascular disease risk, such that Black 5HTTLPR heterozygotes will have lower risk, while White heterozygotes will have higher risk.

182) Abstract 1511

MINDFULNESS-BASED STRESS REDUCTION MAY LOWER BLOOD PRESSURE IN LOW-INCOME MINORITY OLDER ADULTS: A PILOT STUDY
Sarah L. Szanto, PhD, School of Nursing, Priya Paltu, BS, Epidemiology, Matthew Hayat, PhD, School of Nursing, Johns Hopkins University, Baltimore, MD, Amy B. Connolly, MS, School of Nursing, Johns Hopkins University, Timonium, MD, Rachel L. Piferi, PhD, Psychological and Brain Sciences, Johns Hopkins University, Baltimore, MD

Low-income minority older adults cope with increased health-related and non-health-related stressesors compared to younger adults and non-minorities. While Mindfulness-based stress reduction (MBSR) programs have proven effective in some populations, they have not been widely tested in low-income minority older adults despite the increased stressors of the group. The primary purpose of this pilot study was to test the feasibility and acceptability of an MBSR program for
health behavior interventions may help decrease the risk for chronic health problems among older adult caregivers and non-caregivers (R2=.60, p<.01). These findings suggest that the percentage of fat from their diet had more normal diurnal cortisol patterns at 4 months (t= -4.1, p<.001) and the number of total calories expended (M=27 vs. M=166 minutes/week, t=-4.1, p<.001) and the number of total calories expended during the day (upon awakening, 30 minutes after awakening, 4pm, and bedtime) at both baseline and 4 months. On average, participants significantly increased their number of minutes of moderate-intensity exercise/work (M=27 vs. M=166 minutes/week, respectfully; t=-4.1, p=.001) and the number of total calories expended through exercise/work (t=-4.1, p=.001) from baseline to 4 months. A significant increase in the number of servings of fruits and vegetables consumed (M=3.5 vs. M=6 servings/week; t=-4.0, p=.001), as well as a decrease in the percentage of total fat in their diet (t=3.2, p=.01) were also observed. Hierarchical regression analyses, controlling for baseline cortisol levels and BMI, showed that: (1) caregivers who significantly increased the number of total calories they expended through exercise/work had more normal morning cortisol patterns at 4 months (R2=.50, p<.05); and (2) non-caregivers who significantly decreased the percentage of fat from their diet had more normal diurnal cortisol patterns at 4 months (R2=.50, p<.05). These findings suggest that health behavior interventions may help decrease the risk for chronic health problems among older adult caregivers and non-caregivers through cortisol regulation.

183) Abstract 1763
EFFECTS OF EXERCISE AND NUTRITION ON CORTISOL REGULATION AMONG OLDER ADULTS
Guido G. Urizar Jr., Ph.D., Psychology, California State University, Long Beach, Long Beach, CA, Natasha Garovoy, Ph.D., Cynthia M. Castro, Ph.D., Abby C. King, Ph.D., Medicine, Stanford University, Stanford, CA
Biological markers of stress, such as abnormal cortisol patterns, have been associated with increased risk for chronic health problems among older adults. Yet, studies investigating the influence of changing one’s health behaviors on cortisol patterns are rare. The current study examined whether improvements in the health behavior patterns of older adults (mean age=56±6 years; mean BMI=30±5), who participated in a 4-month health behavior intervention, were associated with their salivary cortisol patterns. Our sample consisted of 54 chronically stressed caregivers and non-caregivers (54% caregivers; 70% women), whom completed measures on their exercise (CHAMPS) and diet (FFQ), and collected their salivary cortisol at four different times during the day (upon awakening, 30 minutes after awakening, 4pm, and bedtime) at both baseline and 4 months. On average, participants significantly increased their number of minutes of moderate-intensity exercise/work (M=27 vs. M=166 minutes/week, respectfully; t=-4.1, p=.001) and the number of total calories expended through exercise/work (t=-4.1, p=.001) from baseline to 4 months. A significant increase in the number of servings of fruits and vegetables consumed (M=3.5 vs. M=6 servings/week; t=-4.0, p=.001), as well as a decrease in the percentage of total fat in their diet (t=3.2, p=.01) were also observed. Hierarchical regression analyses, controlling for baseline cortisol levels and BMI, showed that: (1) caregivers who significantly increased the number of total calories they expended through exercise/work had more normal morning cortisol patterns at 4 months (R2=.50, p<.05); and (2) non-caregivers who significantly decreased the percentage of fat from their diet had more normal diurnal cortisol patterns at 4 months (R2=.50, p<.05). These findings suggest that health behavior interventions may help decrease the risk for chronic health problems among older adult caregivers and non-caregivers through cortisol regulation.

184) Abstract 1790
HIGH PRENATAL STRESS IN BOYS AND INCONSISTENT PRENATAL STRESS IN GIRLS LOWERS BIRTH WEIGHT
Huiyiu Zhang, M.S., Joy Beckwith, M.A., MPH, Sophia Green, B.S., Eugene Emory, Ph.D., Psychology, Emory University, Atlanta, GA
Male and female newborns show sexual dimorphism in relation to stress responses. Several studies tend to show that males are more vulnerable to perinatal stress than females. In this study, we examined prenatal stress during pregnancy at two time points and its impact on birth outcome. The first assessment was between 26-28 weeks and the second between 32-34 weeks. There were three prenatal variables associated with maternal stress; life stress, perceived stress and cortisol. Birth weight, gestational age, and Obstetric Complications Scale (OCS) were assessed as birth outcome measures. The results of chi square test of independence showed that there was a significant association between mother’s cortisol levels and the negative Life Events Scale (LES) scores for the male fetuses, X2 (1, N = 40) = 4.000, p = .046. For women who had male babies, those who had high perceived stress and high cortisol during the second trimester had babies with significantly lower birth weight, t (20) = 2.176, p = .021. Male babies of mothers who had low life event stress and low cortisol during the third trimester had babies with higher birth weight, t (26) = 2.077, p = .024. For women with female babies, the intensity of stress did not seem to adversely impact birth weight. However, for mothers of female babies whose cortisol levels were consistent had babies with higher birth weight than those whose cortisol levels were inconsistent, t (13) = 2.808, p = .015. The results confirm differential responses to perinatal stress for the two sexes. It is indicated that high maternal stress during pregnancy adversely affects birth weight of male offspring, and the inconsistency of stress during pregnancy, not the level, adversely affects birth weight in girls.

185) Abstract 1121
PSYCHOSOCIAL PREDICTORS OF CARDIOVASCULAR EVENTS IN THE WISE STUDY
Kerry S. Whittaker, B.A., David S. Krantz, Ph.D., Medical and Clinical Psychology, Uniformed Services University, Bethesda, MD, Thomas Rutledge, Ph.D., VA San Diego Healthcare System, University of California, San Diego, San Diego, California, B. Delia Johnson, Ph.D., Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, Nadine S. Bekkouche, B.Sc., Medical and Clinical Psychology, Uniformed Services University, Bethesda, MD, Vera Bittner, MD, MSPH, Medicine, University of Alabama at Birmingham, Birmingham, Alabama, Jo-An Eastwood, Ph.D, RN, Nursing, UCLA School of Nursing, Los Angeles, CA, Carolyn Jr., California School of Public Health, University of Pittsburgh, Pittsburgh, PA, Carol E. Cornell, PhD, Arkansas Center for Health Disparities, University of Arkansas for Medical Sciences, Little Rock, AR, Carl J. Pepine, MD, Medicine, University of Florida, Gainesville, FL, Diane A. Vido, MS, Department of Cardiology/ASRI, Allegheny General Hospital, Pittsburgh, PA, Eileen M. Handberg, PhD, Division of Cardiovascular Medicine, University of Florida, Gainesville, FL, C. Noel Bairey Merz, MD, Heart Institute, Cedars-Sinai Medical Center, Los Angeles, CA
Introduction: Research suggests that psychosocial variables known to play a role in the etiology, onset and progression of CAD display measurement overlap and share common variance. Purpose: To evaluate the clustering and predictive value of multiple psychosocial risk factors for coronary artery disease in women. Methods: A subset of the Women’s Ischemia Syndrome Evaluation (WISE) study who were undergoing coronary angiography for suspected myocardial ischemia were followed for a median 5.9 years for adverse CV events (CV related death, myocardial infarction, incident heart failure, or stroke). Principal components factor analysis of psychosocial scales (Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), Social Network Index (SNI), Cook-Medley hostility (Ho), Panic Scale, and Anxiometric Perception) was conducted to determine the factor structure of psychosocial measures. Prediction of CV events by individual psychosocial scales and by derived factors was assessed using Cox regression. Results: Multivariate analyses of psychosocial scales revealed SNI (HR: 0.80, 95% CI 0.70-0.92), Hostile Affect (HR: 0.78, 95% CI 0.61-0.95), and BDI (HR: 1.04, 95% CI 1.00-1.08) scales were significant independent predictors. Adjusting for disease covariates, effects were attenuated. Scale-wise factor analysis revealed 3 underlying factors (Eigenvalues>1): Negative Affectivity (NA) (including the BDI and STAI), Hostility (including Ho) and Social Networks (including SNI). Adjusting for standard risk variables, only the Social Networks factor was predictive (protective) of CV events (HR: 0.78, 95% CI 0.61-0.99). Conclusions: In women with suspected ischemia, factor analysis of psychosocial variables yields A-75
Individual psychosocial scales showed low social networks, high hostile affect, and depression independently predict CV events. Shared variance of psychosocial variables may be important in prediction of CV events in women undergoing testing for suspected ischemia.

186) Abstract 1589
CROSS-SECTIONAL ASSOCIATIONS OF PSYCHOLOGICAL FACTORS WITH SYMPTOMS AND FUNCTIONAL STATUS IN PATIENTS WITH CONGESTIVE HEART FAILURE: INTERIM FINDINGS
Kerry S. Whittaker, BA, Sari D. Holmes, PhD, Nadine S. Bekkouche, BSc, Kristie M. Harris, BA, Sarah M. Godoy, BA, Andrew J. Wawrzyniak, PhD, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, John S. Gottlieber, MD, Willem J. Kop, PhD, Stephen S. Gottlieb, MD, Medicine: Cardiology, University of Maryland Medical Center, Baltimore, MD, David S. Kranz, PhD, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
Background: Psychological factors are known to play a role in the etiology and progression of coronary artery disease. Little research has looked at psychosocial factors in patients that have progressed to heart failure (HF). Objective: To determine the cross-sectional relationship of psychological factors with HF symptom and functional status. Methods: 43 patients with HF (ejection fraction<40) were examined. Interim data from an ongoing study are reported. The Perceived Stress Scale (PSS), Weekly Stress Inventory (WSI), Profile of Mood States (POMS), Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), and State-Trait Anger Expression Inventory (STAXI) were completed. Patients also completed the Kansas City Cardiomyopathy Questionnaire (KCCQ) of self-reported HF symptoms, a 6 minute walk test (6MWT) of functional status, and were rated on medication compliance with the Morisky Adherence Scale (MAS). Results: The 6MWT and KCCQ Overall Summary score correlated with each other (r=0.41, p<0.01). The KCCQ Overall Summary score was correlated with all mental health measures (r= -0.36 to -0.75, p<0.05). Other several other KCCQ scales correlated with the psychological measures. Greater levels of psychological distress were associated with lower KCCQ scores, indicating worse symptom status. However, distance on the 6MWT did not correlate with any of the psychological measures. In addition, worse compliance (MAS) was correlated with lower scores on the KCCQ including Overall Summary score (r= -0.43, p<0.01), but not correlated with 6MWT, and marginally correlated with PSS, POMS, and BDI (r= 0.29 to 0.30, p=0.06). Conclusions: In HF patients, self-report of symptoms was highly influenced by psychological constructs, including stress and mood disturbances. Although functional status was not directly influenced by psychological distress, self-reported symptoms were related to functional status in HF. These findings are significant due to the weight placed on patient report of symptoms in the diagnosis and evaluation of HF.

187) Abstract 1690
CHRONIC STRESS INCREASES THE RISK OF CARDIAC MALFUNCTION IN ADULTS
Gastonon K. Kapaku, MD, PhD, Pediatrics and Medicine, Okawatayo George, Associate, Harry Davis, MS, Kashala Carter, Associate, Gwen Bullick, Associate, Shanita Tolbert, BS, James Halbert, Associate, Sharika Leverett, Associate, Lashonda Bell, Associate, Sarita Vemulapalli, BS, Department of Pediatric, Gregory Harshfield, Phd, Pediatrics, Medical College of Georgia, Augusta, Georgia
Psycosocial stress is associated with risk for cardiovascular diseases (CVD). However, there is little evidence about the psychosocial mechanisms that lead to congestive heart failure (CHF). We hypothesize that psychosocial burden may affect diastolic function (DF). Decline in DF has been shown to predict CHF. A sample of seventy-two (36 Blacks, 36 Whites; 35 males) normotensive adults (age range = 30 to 50) underwent a protocol of rest and video game stressor (40 minutes each). Psychosocial indicators of chronic stress and coping mechanisms were measured. Mitral infl ow and myocardial velocities were recorded every 20 minutes. Stepwise multiple regressions (controlling for significant effects of race, sex, bmi, and age) were computed between independent factors and the dependent variables relating myocardial relaxation (i.e., Em and Em/Am) and ventricular filling pressure (E/Em). Changes from rest to stress of Em/Am were significantly associated with Spielberger Anger Expression (R=.24, p=.046), Family Environment Scale--Cohesion (R=.41, p<0.002) and the Cook Medley Hostility scale (R=.30, p=.012). E/Em during Stress was related to the John Henry Scale (R=.24, p=.039). Stress Em was significantly related to Family Environment Scale-- Cohesion (R=.26, p=.027). These data suggest that hostility, chronic environmental stress and coping style are linked to deterioration of DF in contrast to the beneficial effect of a supportive familial environment. Thus, psychosocial factors predict early markers of cardiac malfunction before the development of overt signs of congestive heart failure.

188) Abstract 1109
PERCEIVED EMOTIONAL SUPPORT IS ASSOCIATED WITH GREATER KNOWLEDGE OF HEART ATTACK SYMPTOMS: EVIDENCE FROM A MULTI-STATE US SAMPLE
Steven D. Barger, PhD, Psychology, Northern Arizona University, Flagstaff, Arizona
Psychological support is associated with a lower risk of incident and recurrent coronary heart disease (CHD) events. Several potential mediators have been hypothesized to explain this association, including health behaviors, biological risk factors, and stress buffering. However, for acute myocardial infarction (MI) rapid identification of symptoms and contacting emergency medical transportation (e.g., calling 9-1-1 in the US) are important prognostic factors for the clinical outcome of acute MI. Thus, knowledge and action represent complementary elements of health resources that may also be stratified by emotional support. The present study evaluated whether perceived emotional support is associated with knowledge of acute MI symptoms. Symptom knowledge and emotional support were assessed from diverse probability samples in 12 US states and the US Virgin Islands (N > 81,000; collected in the 2007 Behavioral Risk Factor Surveillance Survey). Emotional support was assessed with one item (‘How often do you get the social and emotional support you need?’). Knowledge was assessed with a 7-item scale including a question regarding what action the person would take if they thought someone was having a heart attack. MI symptom knowledge was higher among those with greater levels of perceived social support (Mean for always support = 5.3 correct [95% CI 5.3-5.4]; Mean for never support = 4.4 [95% CI 4.3-4.5]). The graded association persisted after adjustment for gender, age, being married, race/ethnicity, education, employment status and CHD risk factors (β = .08 [95%CI .06-.10], τ = 8.67 p < .001) and was stronger than for key CHD risk factors such as hypertension, high cholesterol, diabetes, and smoking. The association between emotional support and MI knowledge, coupled with the high population prevalence of MI, suggests a novel and ecologically significant mechanism for the health benefit of emotional support.

189) Abstract 1140
ASSOCIATION OF ATTACHMENT STYLE AND SOCIAL SUPPORT WITH CORTISOL DURING STANDARDIZED ACUTE STRESS AND CORTISOL AWAKENING RESPONSE (CAR) IN HEALTHY ADULTS
Tara Kidd, Ph.D., Mark Hamer, Ph.D., Andrew Steptoe, D.Sc., Department of Epidemiology and Public Health, University College London, London, UK
The relationship between adult attachment style and cortisol has been relatively unexplored. This is surprising given that early life experiences have been associated with hypothalamic-pituitary-adrenal (HPA) regulation. Social support is a consistent predictor of health, and has been linked to both adult attachment and HPA regulation. The present study is the first to examine adult romantic attachment, social support, cortisol response to acute laboratory stress, and the cortisol response to awakening (CAR). Salivary cortisol monitoring was conducted in 495 participants from the Whitehall II cohort. Participants were categorized into secure (335), fearful (67), preoccupied (31), or dismissive (162) based on their score from the relationship
190) Abstract 1371

COMBINED EFFECT OF DEPRESSIVE SYMPTOMS AND HOSTILITY ON AUTONOMIC NERVOUS SYSTEM FUNCTION

Misty A. Hawkins, BS, Jesse C. Stewart, PhD, Griffin J. Fitzgerald, BA, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN.

Both depression and hostility are associated with autonomic nervous system (ANS) dysfunction relevant to cardiovascular disease, including heightened sympathetic and diminished parasympathetic activation. To our knowledge, no studies have evaluated whether these overlapping affective factors act together to influence the function of both ANS branches. Therefore, we examined associations of depressive symptoms, hostility, and their interaction with pre-emption period (PDP) as an index of sympathetic cardiac control, and high frequency heart rate variability (HF HRV), an index of parasympathetic cardiac control.

Participants were 121 healthy adults (mean age=23 years, 74% female, 16% non-white). During a laboratory session, they completed a computerized task, the Beck Depression Inventory (BDI-II), and the Buss-Perry Aggression Questionnaire (BPAQ). PEP (lower values indicate greater sympathetic activation) and HF HRV (higher values indicate greater parasympathetic activation) were derived from 1-minute epochs of impedance cardiographic and ECG data obtained during the last 5 minutes of a rest period. HF HRV was corrected for respiration rate. Regression models (adjusted for age, sex, race, body mass, and smoking) indicated that the BDI-II x BPAQ interaction was significant for PEP (β=24, p=.01, delta R-square=.05) but not for HF HRV (β=13, p=.16, delta R-square=.02). Main effects of BDI-II and BPAQ for PEP and HF HRV were not significant (p> .5). Simple slope analyses revealed that, among individuals with lower depressive symptom severity, hostility was negatively related to PEP (β=-32, p=.03). In contrast, hostility was not associated with PEP among those with higher depressive symptom severity (β=.26, p=.13). In sum, our findings suggest that hostility is accompanied by increased sympathetic activation only when depressive symptoms are minimal or absent. One possible explanation for our results is that hostile individuals who are also depressed may withdraw socially, which may limit the number of behavioral tasks in the laboratory, consisting of a 5 min stroop task and a 5 min mirror tracing task. Cortisol was also sampled over the day, and the CAR was defined as the difference between levels on waking and 30 minutes later. Participants were excluded if the reported time between waking and taking the sample was greater than 10 minutes. Analyses adjusted for age, gender, grade of employment, body mass index, and smoking behaviour. Dismissive attachment was associated with increased salivary cortisol in response to acute stress exposure, both immediately post task and during the subsequent recovery periods (p<.05). Significant differences were also observed for the CAR between attachment styles. Again dismissive individuals had higher CARs than their secure, fearful and preoccupied counterparts (p=.04).

Significant differences were reported between attachment styles in social support, with secure individuals reported higher levels of social support (p=.001). However no significant relationships were found between social support and cortisol levels. These results suggest that insecure attachment may contribute to HPA regulation independently of social support.

191) Abstract 1382

TRAIT HOSTILITY IS ASSOCIATED WITH ENDOTHELIAL CELL APOPTOSIS IN HEALTHY ADULTS

Lauren T. Wasson, MD, Leah Rosenberg, BA, Shuqing Zhao, MS, Sangbeen Hong, BA, Padmini Iyer, BS, Sujith Kuruvilla, MD, Department of Internal Medicine, Columbia University Medical Center, New York, NY.

Purpose of study: Trait hostility is associated with increased risk of incident cardiovascular disease (CVD) events. Underlying biological mechanisms remain poorly characterized. Endothelial cell-derived microparticles (EMPs) are phospholipid-rich, submicron particles shed from the membranes of activated or apoptotic endothelial cells (ECs). They play an important role in the pathobiology of atherosclerosis formation and CVD development by inhibiting nitric oxide bioavailability, promoting inflammation via leukocyte activation and transendothelial migration, and activating the coagulation cascade. We examined the association between trait hostility and EMPs in healthy adults without CVD. Subject sample and systematic review: Methods: Apparently healthy, medication-free adults (N=27, mean age=37.1 +/- 12.0 years, 63% female) completed the 50-item Cook-Medley Hostility scale, and the Barefoot Hostility (Ho) score (27-item summary score) was calculated. Blood was obtained and flow cytometry assessed circulating EMPs. EMPs were defined as the number of particles with a diameter <1.5 um that were negatively labeled by fluorescein isothiocyanate-conjugated monoclonal antibody to CD42 (specific to platelets) and positively labeled by phycoerythin-conjugated monoclonal antibody to CD31 (EC apoptosis marker), CD51 (EC apoptosis and activation marker), or CD62E (EC activation marker).

The relations between Ho scores and EMP levels (CD31, CD51, CD62E) were estimated by linear regression. Summary of results: Univariate analysis demonstrated a significant relationship between hostility and levels of EMPs expressing CD31 (beta=.409, p=.034) and CD51 (beta=.399, p=.039), but not CD62E (p=.562). The relations were similar after adjusting for age, sex, and BMI (for CD31, beta=.681, p=.007; for CD51, beta=.524, p=.036; for CD62E, p=.240). Our findings demonstrate that greater trait hostility scores are associated with greater circulating levels of EMPs. Because EMPs associated with hostility were mostly phenotypic for EC apoptosis, these findings suggest that trait hostility may contribute to incident CVD events through EC injury and death.

192) Abstract 1478

PHANTOM SHOCKS AS MARKERS OF UNDERLYING PTSD AND DEPRESSION

Anita Danicanic, MA, Jane Irvine, DPPhil, Psychology, York University, Toronto, Ontario, Canada, Adrienne Kovacs, PhD, Cardiology, University Health Network, Toronto, Ontario, Canada, Ann Hill, RN, Doug Cameron, MD, Clinical Electrophysiology, Toronto General Hospital, Toronto, Ontario, Canada, Joel Katz, PhD, Psychology, York University, Toronto, Ontario, Canada.

Implantable cardioverter defibrillator recipients sometimes report phantom shocks, defined by a patient’s report of having experienced a shock without objective evidence of having received one. This mixed-methods study aimed to gain an understanding of the phenomenological experience of phantom shocks. It was also hypothesized that phantom shocks are related to an increased level of posttraumatic stress disorder (PTSD) symptoms. METHODS: Nine phantom shock participants were recruited and matched on sex and age with participants who had received objective shocks, n=8, 100% male. We interviewed and completed measures of PTSD (PTSD Checklist - Civilian Version [PCL-C]), depression and anxiety (Hospital Anxiety and Depression Scale [HADS]), disease-specific distress (Cardiac Anxiety Questionnaire, Florida Patient Acceptance Survey), psychological vulnerability to trauma (Pain Anxiety Symptoms Scale [PASS-20]), pain quality ratings (short-form McGill Pain Questionnaire) and social desirability (Socially Desirable Response Set). RESULTS: Three themes emerged from the qualitative analysis: 1) Phantom shocks - a somatic experience, 2) The emotional impact of phantom shocks, 3) Searching for meaning. Quantitative analysis showed that both groups exhibited elevated trauma and anxiety levels. Medium effect size differences, where the phantom shock group showed elevated levels compared to the objective shock group were found on HADS depression (M=8.02, SD=3.87 vs. M=5.50, SD=3.38, respectively, eta2=.12), PCL-C avoidance (M=4.00, SD=2.00 vs. M=3.13, SD=1.89, eta2=.06) and numbing (M=11.31, SD=5.01 vs. M=9.00, SD=3.89, eta2=.07), and PASS-20 (M=41.57, SD=33.11 vs. M=28.28, SD=23.16, eta2=.06). A small effect was seen on the PCL-C re-experiencing subscale (phantom shock group: M=10.38, SD=4.63 vs. objective shock group: M=9.63, SD=4.10, eta2=.01). CONCLUSION: Phantom shocks are often indistinguishable from objective shock therapy, true or false alarms. More research is needed for the individual. Taken together the data suggest that for some
participants, symptoms of PTSD and depression contribute to the experience of phantom shocks.

193) Abstract 1487

THREAT VIGILANCE AND METABOLIC RISK FACTORS

Threat vigilance and metabolic risk factors. Though many theories suggest that vigilance is detrimental to health, there has been little effort to evaluate this proposition empirically. Therefore, the current study uses a novel implicit, behavioral task to measure vigilance toward threat cues and establish its link to metabolic outcomes. Forty-seven adults from diverse ethnic and social backgrounds (M = 31.63 years, SD = 12.19, 74% female) completed a computerized visual discrimination task. Participants were briefly exposed to a series of images containing guns or tools (200 ms per stimulus). After each image they had to quickly decide (within 500 ms) whether it was a gun or tool. On some trials the image was preceded by a threatening prime (e.g., a picture of a menacing dog), whereas on others it was preceded by a neutral prime (e.g., a picture of a cow). To quantify vigilance toward threat-related cues, we counted the number of false positive responses (mistaking a tool for a gun) subjects made following both threat and neutral primes. Blood was drawn and assayed for triglycerides and cholesterol. After controlling for age, gender, ethnicity, and socioeconomic status, greater vigilance for danger cues was associated with higher levels of triglycerides. Specifically, subjects who had higher rates of false positive responses had higher levels of triglycerides, both when they had been primed with threat images (B = .330, t(45) = 2.42, p = .020) and neutral images (B = .328, t(45) = 2.54, p = .015). Cholesterol levels were not significantly associated with vigilance following negative or neutral images (p's > .05). These findings suggest that increased vigilance to threat in the context of both negative and neutral cues may contribute to certain aspects of metabolic dysfunction. Thus, vigilance toward threat cues may be an important pathway by which individual difference factors and features of the social environment contribute to early manifestation of cardiovascular disease.

194) Abstract 1399

BIOFEEDBACK IN THE TREATMENT OF HEART FAILURE
Dana L. Frank, BS, Cardiovascular Medicine, Lamesh Khorshid, PsyD, Jerome Kiffer, MA, Psychiatry and Psychology, Christine S. Moravec, PhD, Cardiovascular Medicine, Michael G. McKee, PhD, Psychiatry and Psychology, Cleveland Clinic, Cleveland, OH

Heart failure (HF) occurs when the heart is unable to adequately pump blood to the body. To increase cardiac output, the sympathetic nervous system is activated. Unfortunately, this compensatory mechanism is maladaptive when chronic, and numerous studies have shown that sympathetic hyper-activation predicts a worse prognosis in HF patients. Many studies indicate that restoring a normal balance of sympathetic and parasympathetic activity is associated with improved cardiovascular health. One way by which individuals can learn to voluntarily regulate autonomic nervous system function is through biofeedback (BFT). We hypothesize that a decrease in sympathetic activity and an increase in parasympathetic activity in HF patients who are able to regulate their own physiological state using BFT, will produce meaningful changes in the cellular and molecular biology of the heart, in the direction of recovery. We are enrolling HF patients who are awaiting cardiac transplantation at the Cleveland Clinic and randomizing them to receive or to not receive BFT. Those in the BFT group participate in 11 individual 1-hour sessions with a certified therapist. At transplantation, heart tissue from each patient is collected, and biological measures are compared between patients who had BFT and those who did not. Patients who do not get BFT but do require a left ventricular assist device (LVAD) before transplant, serve as our positive control group because it is well-established that the LVAD is able to reverse the HF phenotype. Our results show that failing hearts supported by an LVAD exhibit a 24% increase in the response to beta-adrenergic stimulation (developed tension increased by 0.76±0.09 g/mm2 in non-failing, 0.38±0.07 in failing, and 0.68±0.10 in failing + LVAD; P<0.01), accompanied by an increased density of beta-adrenergic receptors (58.7±5.6 fmol/mg protein in non-failing, 26.2±3.8 in failing, and 63.0±8.3 in failing + LVAD; P<0.05). This experimental approach provides the first study to demonstrate a direct effect of psychophysiological therapy on biological remodeling of the failing human heart.

195) Abstract 1238

COGNITIVE PREDICTORS OF POSTTRAUMATIC STRESS SYMPTOMS SIX MONTHS FOLLOWING ACUTE CORONARY SYNDROME
Anna Wikman, PhD, Gemma Randall, MSc, Epidemiology & Public Health, University College London, London, United Kingdom, Gerard Molloy, PhD, Psychology, University of Stirling, Stirling, Scotland, United Kingdom, Andrew Septoe, DPhil, Epidemiology & Previous research has highlighted the importance of emotional reactions to acute cardiac events in predicting later psychosocial adjustment. However, an individuals' perception of their illness or condition could also have an effect. The objective of this study was to investigate patients' illness representations assessed soon after an acute coronary syndrome (ACS) as predictors of posttraumatic stress symptoms at six months. Illness representations were assessed in 160 ACS patients using standard measures at a home visit three weeks after discharge from hospital, and posttraumatic stress symptoms at six months. Patients were aged 61 years on average, the majority being men (87.5%) of white European decent (86.9%). Greater posttraumatic stress symptoms at six months were associated with stronger timeline beliefs (illness will last a long time), stronger cyclical time perspective, greater representations of threat cues and establishing its link to metabolic outcomes. Forty-seven adults from diverse ethnic and social backgrounds (M = 31.63 years, SD = 12.19, 74% female) completed a computerized visual discrimination task. Participants were briefly exposed to a series of images containing guns or tools (200 ms per stimulus). After each image they had to quickly decide (within 500 ms) whether it was a gun or tool. On some trials the image was preceded by a threatening prime (e.g., a picture of a menacing dog), whereas on others it was preceded by a neutral prime (e.g., a picture of a cow). To quantify vigilance toward threat-related cues, we counted the number of false positive responses (mistaking a tool for a gun) subjects made following both threat and neutral primes. Blood was drawn and assayed for triglycerides and cholesterol. After controlling for age, gender, ethnicity, and socioeconomic status, greater vigilance for danger cues was associated with higher levels of triglycerides. Specifically, subjects who had higher rates of false positive responses had higher levels of triglycerides, both when they had been primed with threat images (B = .330, t(45) = 2.42, p = .020) and neutral images (B = .328, t(45) = 2.54, p = .015). Cholesterol levels were not significantly associated with vigilance following negative or neutral images (p's > .05). These findings suggest that increased vigilance to threat in the context of both negative and neutral cues may contribute to certain aspects of metabolic dysfunction. Thus, vigilance toward threat cues may be an important pathway by which individual difference factors and features of the social environment contribute to early manifestation of cardiovascular disease.

196) Abstract 1079

DAYTIME SLEEP DOES NOT INFLUENCE CARDIOVASCULAR REACTIVITY TO STRESS
Ryan Brindle, Amy Kimicata, Neuroscience, Catie Vance, Mathematics, Lenny Costantini, David Domachowski, Biology, Sarah Conklin, PhD, Neuroscience and Psychology, Allegheny College, Meadville, PA

Over the last century, average sleep duration has notably decreased and this pattern of abbreviated sleep has been linked with increased risk of cardiovascular disease and other health complications. Given that chronic sleep restriction increases risk for cardiovascular morbidity and mortality, we explored how daytime sleep supplementation might influence same day cardiovascular reactivity to stress in the laboratory. Individuals exhibiting elevated reactivity to psychological stress are also at an increased risk for cardiovascular morbidity. Based on this literature, it was hypothesized that daytime sleep supplementation may reduce stress reactivity. Participants were healthy young adults, (n=104) were randomized to a daytime sleep condition (n=49, average sleep duration = 36(14) minutes, mean latency to sleep onset = 16(10) minutes) where they had the opportunity to sleep for one hour, or a no sleep condition (n=57). Sleep was measured using an Emblla S4500 Polysomnograph. Participants (n=18) were excluded for self reported sleep disorders, medication use and/or procedural problems. All participants then completed a standard cardiovascular reactivity test, with a Dynamap monitor was used to measure blood pressure and
pulse during three phases (baseline, stress, and recovery) of the test. A 2x2 ANCOVA with group and phase as independent variables, and baseline values as covariates, was conducted to analyze group differences. Group differences on calculated reactivity variables were analyzed with an ANOVA. No significant between subject group differences were noted during the stress and recovery periods (p<.05). In addition, on the parameter of reactivity (the difference of means between stress and baseline phase) no significant difference was found between the groups. These findings suggest that daytime sleep supplementation does not influence cardiovascular reactivity or recovery to a mental stress task. Given that chronic sub-optimal nocturnal sleep duration is increasingly common in our society and has a number of associated health risks, further research is needed to explore the potential benefit of daytime sleep supplementation on stress and health.

197) Abstract 1455

IL-6 PRODUCTION ASSOCIATED WITH ACUTE MENTAL STRESSORS IN CORONARY ARTERY DISEASE PATIENTS

Stephen K. Williams, MD, Emir Veledar, PhD, Cardiology, Emory University School of Medicine, Atlanta, Georgia, Gina Eubanks, Mustafa Hassan, MD, Cardiology, University of Florida, Gainesville, Florida, Arshed A. Quyyumi, MD, Viola Vaccarino, MD / PhD, David S. Sheps, MD, Cardiology, Emory University School of Medicine, Atlanta, Georgia

Background: Mental stress in coronary artery disease (CAD) patients has been linked to adverse cardiovascular outcomes, but the exact mechanisms are unknown. Inflammation plays an important role in the pathogenesis of CAD and adverse cardiovascular events. In healthy populations, mental stress has been shown to increase inflammatory cytokine levels such as IL-6, but whether mental stress raises cytokine levels in CAD patients is poorly studied. Purpose: The goal of this study was to investigate changes in IL-6 levels in response to standardized mental stress testing in a population with CAD. Methods: In 202 patients with CAD, plasma IL-6 levels were obtained at baseline and 45 minutes after induction of mental stress using a public speaking task. Post-stress values were compared to baseline values for each patient using paired t-tests. Parametric and nonparametric statistical techniques were used to study whether there were any differences in the composition of responders (those with increases in IL-6 levels post stress) versus non-responders (those with decreases in IL-6 levels post stress) based on gender, diabetes, hypertension, hyperlipidemia, smoking status, body mass index (BMI), depression status or use of statins, beta-blockers or aspirin. Results: The mean age of the study population was 64.3 years, and 69% were males. The mean baseline IL-6 level was 3.63 (± 8.90) pg/ml; the mean post-stress level was 3.97 (± 7.90) pg/ml. The mean within-person change was 0.33 pg/ml (p < 0.05). Increase in IL-6 levels in response to mental stress was observed in 62.4 % of the study population. No significant differences in population composition characteristics (detailed above in methods section) were noted between responders and non-responders. Conclusions: This is the largest study reported to show that acute mental stress is associated with an increase in IL-6 levels in CAD patients. Exposure to repeated mental stressors, with concurrent increases in IL-6, may lead to a pro-inflammatory state in CAD patients with potential adverse cardiovascular outcomes. Longitudinal data from this study will need to be evaluated in order to determine the prognostic implications of these baseline findings.

198) Abstract 1816

EFFECT OF GENDER ON LONG TERM QUALITY OF LIFE IN CARDIAC SURGERY PATIENTS

Sari D. Holmes, PhD, Lisa M. Martin, PhD, Sharon Hunt, MBA, CardioSurgery Research, Niv Ad, MD, Cardiac Surgery, Inova Heart and Vascular Institute, Falls Church, VA

Objective: To evaluate the effect of gender on the longitudinal measurement of quality of life (QOL) and outcomes in cardiac surgery patients. Methods: Study recruitment to examine QOL is ongoing, with ~1600 cardiac surgery patients who have completed baseline assessment. 390 patients (312 males & 78 females) have undergone cardiac surgery (mostly CABG, valve, and/or Maze) and have prospective follow-up data on clinical variables, events, and QOL for two years. EuroSCORE was used to predict mortality from cardiac surgery and calculated from relevant risk factors. The SF-12 was used to measure QOL, both physical and mental components (PCS & MCS), at baseline (preoperative), 6 months, 12 months, and 24 months postoperative. Higher SF-12 scores indicate better QOL. Results: Female patients presented at baseline with higher additive EuroSCORE (6.0 ± 2.8 vs 4.7 ± 3.1; t=3.4, p<0.001) and lower QOL, both PCS (t=4.3; p<0.001) and MCS (t=3.0; p<0.01) than male patients. Repeated measures ANOVAs indicated main effects of time and gender on PCS and MCS scores, but no significant interaction effects. PCS improved at all time points from baseline (F=25.77, p<0.001), although scores began to decrease after 1 year. MCS scores only improved significantly at 6 months (F=3.12, p<0.05). Overall, male patients had higher PCS (F=14.22, p<0.001) and MCS (F=7.21, p<0.01) scores. Logistic regression was conducted on all patients who completed the baseline SF-12 (1181 males & 423 females). For each one point increase in baseline PCS score, but not MCS score, there was a decrease in risk for follow-up mortality (OR=0.965, CI=0.95-0.98, p<0.001) after controlling for age, gender, and EuroSCORE. Conclusions: Female cardiac surgery patients are at greater risk for mortality due to higher EuroSCORE and lower QOL prior to surgery as compared to male patients. In addition, female patients continue to report lower QOL after surgery. Therefore, particular care should be given to identifying and addressing the differences in risk for males and females presenting for cardiac surgery with a new focus on the effects from QOL before and after surgery.

199) Abstract 1263

DEPRESSIVE SYMPTOMS AND B-TYPE NATRIURETIC PEPTIDE AS PREDICTORS OF MORTALITY IN HEART FAILURE PATIENTS: THE CARDIOVASCULAR HEALTH STUDY

Krista C. Van den Broek, PhD, CoRPS - Medical Psychology, Tilburg University, Tilburg, The Netherlands, Christopher R. deFilippi, MD, FACC, Department of Medicine, Robert H. Christenson, PhD, Department of Pathology, Stephen L. Seliger, MD, John S. Grotti, MD, FACC, William J. Kop, PhD, Department of Medicine, University of Maryland School of Medicine, Baltimore, MD

Purpose of the study: Depression and B-type natriuretic peptide (BNP) predict adverse clinical outcomes in heart failure (HF), but the risk associated with the combined presence of depression and elevated NT-proBNP levels is unclear. This study examined the independent and joint effect of depression and elevated amino-terminal pro-BNP (NT-proBNP) for cardiac-related and all-cause mortality in patients with HF from a sample of older community-dwelling adults Methods: Participants in the Cardiovascular Health Study with HF at baseline (N=208; mean age 75.2±6.1 years; 49.0% males) completed the CES-D to measure depression. Serum levels of NT-proBNP were assessed using the Elecsys 2010 system (Roche Diagnostics, Indianapolis, Indiana). Covariates included demographics, cardiac risk factors, health behaviors, and indices of cardiac disease severity. Results and Conclusions: Over 80% (168/208) of HF patients died during follow-up (median duration until mortality = 5.8 years (range 0.06-14.0 years). Elevated levels of depression (CES-D≥8) were found in 36% of HF patients. Cox proportional hazards analyses showed that depressed HF patients were at elevated risk of cardiac mortality (HR=2.07, 95%CI=1.31-3.27) and all-cause mortality (HR=1.49, 95%CI=1.05-2.11), independent of NT-proBNP and covariates. Depression was not correlated with NT-proBNP (p=0.99). The joint presence of depression and elevated NT-proBNP (cut off > 190pg/mL) was associated with a 5.4-fold (95%CI=2.38-12.36) covariate-adjusted risk of cardiac mortality and a 3.2-fold (95%CI=1.75-5.69) risk for all-cause mortality in HF patients. In conclusion, depression and NT-proBNP were independent predictors of mortality in HF patients. The joint presence of depression and elevated NT-proBNP may have additional value in identifying HF patients at risk for mortality. When implementing risk stratification in HF patients to prevent mortality, it may be worthwhile to screen for elevated levels of depression in addition to elevated NT-proBNP levels.
NONLINEAR ASSOCIATIONS BETWEEN CHRONIC STRESS AND CARDIOVASCULAR REACTIVITY AND RECOVERY

David K. Chatkoff, Ph.D., Behavioral Sciences, University of Michigan - Dearborn, Dearborn, MI; Karl J. Maier, Ph.D., Psychology, Salisbury University, Salisbury, MD

A mixed literature on the influence of chronic and acute stress on cardiovascular reactivity (CVR) and recovery suggests a need for improved modeling of these associations. We examined both linear and nonlinear (quadratic) models of perceived chronic stress relating to CVR and recovery. Data were collected on 129 healthy adults [59% female, ages 18-29 years (M = 19.34, SD = 2.06)] self-identifying as White (57%), Arab (21%), African American (8%), and Asian (7%). Participants completed the Perceived Stress Scale (PSS) after engaging in a physical arithmetic and a stress recall task. Heart rate (HR), systolic and diastolic blood pressure (SBP, DBP), and glucose (FG), triglycerides (TG), systolic (SBP) and diastolic blood pressure (DBP) were measured during rest, task, and recovery periods. Hierarchical linear regression was used to examine the association of chronic stress to CVR and recovery with initial cardiovascular values and body mass index entered first as covariates. PSS scores were entered next, followed by the squared value of PSS as the quadratic term (PSS2). For reactivity, a quadratic relationship between PSS scores and DBP was observed in females such that those scoring at moderate levels of stress displayed lesser reactivity than those scoring either low or high in perceived stress (PSS: delta R2 < .01, p > .05; PSS2: delta R2 = .06, p < .05). For recovery, a quadratic model was also supported for SBP among females, with moderate levels of stress associated with greater recovery relative to either low or high levels of stress (PSS: delta R2 = .01, p > .05; PSS2: delta R2 = .03, p < .05). Quadratic rather than linear modeling may better represent current theories of how chronic stress influences CVR and recovery. Our findings further suggest that these associations may be differentially evident for males and females, perhaps due to sex differences in reported stress levels, sex related task relevance, or physiological responsiveness.
pressure (DBP). Next, we examined whether BMI, which has been shown to be independently associated with the metabolic syndrome variables, mediated the relationship between anger expression and these risk variables. A path model in which anger expression indirectly predicts HDL-C, FG, TG, SBP, and DBP through the mediating effect BMI was examined. The overall fit of the model was excellent (X^2 (5) = 3.72, p > 0.05, CFI= 1.0, RMSEA < 0.01, SRMR< 0.01). This study found that anger expression does not have direct effects on the metabolic risk variables, rather its effects are mediated by BMI. The path model suggests that BMI exerts its influence on lipids, blood pressure, and fasting glucose, finding which is consistent with the hypothesis that obesity may be driving the metabolic syndrome clustering.

204) Abstract 1716

THE IMPACT OF DEPRESSIVE DISORDERS ON RESTING BLOOD PRESSURE IN MEN VERSUS WOMEN UNDERGOING EXERCISE STRESS TESTING
Lynn Jolicoeur, technologist, nuclear medicine, Xueli Zhao, PHD, research, Montreal Heart Institute, Montreal, Quebec, Canada, Simon Bacon, PHD, research, Montreal Heart Institute, Montreal, Canada, Caroline Kim Lavale, PhD, Psychology, Bernard Meloche, techologist, technologic research, Andre Arsenault, Md, nuclear medicine, Montreal Heart Institute, Montreal, Quebec, Canada

Background: Many studies report links between blood pressure and depression which are a both considered risk factors for cardiovascular disease (CVD). We studied the relationship between sex, blood pressure (BP) and depressive disorders (DD). Methods: A total of 67 patients (12 women, age mean 59.8 ± 1.2 years) referred for myocardial single photon emission computed tomography (SPECT) treadmill exercise stress tests underwent a structured psychiatric interview (PRIME-MD) and a forearm hyperemic reactivity (FHR) test, which is a SPECT variation of the well-established flow-mediated dilatation technique. Systolic (SBP) and diastolic blood pressure (DBP) was measured at rest on both arms prior to undergoing the FHR test. Significance of results: General linear model analyses revealed main effects for depression on SBP (F=20.8, p<0.001) and DBP (F=14.8, p<0.001), but no main effects of sex, such that depressive patients had significantly higher BP. Significant interactions were also found between depression and sex on SBP (F=10.0 p<0.003) and DBP (F=5.1 p<0.03), such that depressive women had higher resting BP compared to men, controlling for age and BP medication. Conclusion: These findings suggest that both men and women with depressive disorders have higher resting SBP and DBP, independent of age and BP medication, but that depressive women have higher resting BP than men. The interaction between sex and depressive disorders might be an indication of a multiplicative effect on risk for CVD.

205) Abstract 1677

AN EXAMINATION OF ANGER AND STRESS AS PREDICTORS OF BETWEEN-PERSON VARIATION IN THE LONGITUDINAL DEVELOPMENT OF C-REACTIVE PROTEIN
Celestina Barbosa-Leiker, PhD, Health & Wellness Services, Washington State University, Pullman, WA, Trynke Hoekstra, MS, Department of Health Sciences, VU University, Amsterdam, The Netherlands, Bruce R. Wright, MD, Health & Wellness Services, Virginia Feren, MS, Sterling McPherson, MS, Psychology, Washington State University, Pullman, WA

The aims of this research were to examine the development of C-reactive protein (CRP) over 6 years and determine if anger and stress explained between-person variation in the trajectory of CRP. This research utilized 336 participants (44% male, 49 yrs old (SD=10)) from the Spokane Heart Study who had high-sensitivity CRP values at baseline; participants returned for assessments every 2 years. Participants completed the Perceived Stress Scale and the State-Trait anger expression inventory at baseline. Latent Growth Modeling was performed to model the longitudinal trajectory of CRP over 6 years. After the best change model of CRP was determined, perceived stress, anger-in, and anger-out scores at baseline were added in to the model with traditional covariates (age, sex, and body mass index (BMI)). The best change model of CRP was a linear model with an unspecified time 4 slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03). The slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03). The slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03). The slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03). The slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03). The slope parameter estimate (X2(4)=8.01, CFI=.99, RMSEA=.06, SRMR=.03).
increase on the pessimism subscale, risk of disease was 2-6% higher depending on the outcome. Future studies should assess whether interventions designed to reduce pessimism would modify the risk of future disease and mortality.

207) Abstract 1438
CROSS-SECTIONAL AND LONGITUDINAL ASSOCIATIONS BETWEEN VITALITY AND PERIPHERAL ATHEROSCLEROSIS: RESULTS FROM THE AFRICAN AMERICAN HEALTH STUDY
Jesse C. Stewart, Ph.D., Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN, Fredric D. Wolinsky, Ph.D., Health Management and Policy, University of Iowa, Iowa City, IA, Margaret M. Herning, Ph.D., Physical Therapy, Saint Louis University, St. Louis, MO, Douglas K. Miller, M.D., Medicine, Indiana University, Indianapolis, IN

Evidence suggests that positive psychological factors are associated with a reduced risk of coronary artery disease and cerebrovascular disease; however, no study has evaluated whether this protective effect extends to peripheral arterial disease (PAD). We examined vitality, a sense of energy and enthusiasm, as a predictor of ankle brachial index (ABI) and 3 year change in ABI. ABI is measured as peripheral atherosclerosis, among American men and women aged 49-65 years and initially free of cardiovascular disease. Participants completed the Vitality scale of MOS 36-Item Short-Form Health Survey, the 11-item Center for Epidemiological Studies-Depression Scale, and a standard assessment of ABI at the Year 1 visit (n=159) and/or the Year 4 visit (n=224). 107 adults underwent the assessments at both visits. ABI was calculated as ankle/brachial systolic pressure; lower values indicate more severe atherosclerosis. Age and sex were covariates in all models. Cross-sectional regression analyses revealed that Year 1 vitality was not related to Year 1 ABI (p=0.65, n=159); however, Year 4 vitality was positively associated with Year 4 ABI (beta=.21, p=0.002, delta R-square=.04, n=224), even after adjustment for education, hypertension, diabetes, body mass, smoking, and physical activity (p=0.02). Longitudinal path analyses (n=107) revealed that Year 1 vitality was marginally and positively associated with 3-year change in ABI (beta=.15, p=0.09, delta R-square=.02) and that 3-year change in vitality was positively associated with 3-year change in ABI (beta=.20, p=0.02, delta R-square=.06). Adjustment for additional covariates weakened these relationships (p=.26 and p=.09, respectively). Depressive symptoms were not associated with ABI. In sum, adults with higher vitality at Year 4 had less extensive peripheral atherosclerosis at Year 4, and persons with higher vitality at Year 1 and those with greater 3-year increases in vitality tended to exhibit less atherosclerotic progression over time. Our findings suggest that the cardioprotective effect of positive psychological factors may extend to PAD.

208) Abstract 1188
HIGH JOB STRESS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE
En-Young N. Cho, MD, Rafael J. Cámara, MD, Stefan Begré, MD, Roland von Känel, MD, General Internal Medicine, Bern University Hospital, Bern, Bern, Switzerland

Background: Research suggests an influence of stress on inflammatory bowel diseases (IBD). As yet, the relationship between job stress and IBD has not been studied. We therefore investigated the level of job stress, as measured by the effort-reward imbalance (ERI) model among a representative sample of IBD patients, and its association with disease activity. Methods: Cross-sectional analysis of 933 IBD patients included in the Swiss Inflammatory Bowel Disease Cohort Study group. Data on disease activity and the ERI questionnaire were collected at study enrollment. Disease activity was measured by the Crohn's Disease Activity Index (CDAI) for Crohn's Disease (CD) and the Truelove-Witts-Index for ulcerative colitis (UC). Greater ERI scores mean greater job stress. Log transformation of the ERI score was carried out for statistical analyses. Associations were evaluated using partial correlation analysis controlling for age and gender. Results: Mean value ± standard deviation was 43 ± 15 years. Of the 933 patients, 489 (52%) were women. 537 patients (58%) had CD, 369 (40%) had UC, 27 (2%) had indeterminate colitis. Median ERI score was 2.0 ± 1.1 (range 0.45-5.0) for CD and 2.1 ± 1.2 (range 0.39-5.0) for UC. When corrected for the effect of age and gender, Pearson's correlation coefficient for the association between disease activity and log transformed ERI score was 0.02 (p=0.76) for CD and -0.04 (p=0.57) for UC. Conclusions: Results suggest that IBD patients endorse an imbalance between high effort and low reward at work. This job strain is clearly higher than, for instance, shown in recent studies on German teachers (ERI 1.4) and the Danish working population (ERI<0.7). Job stress was not significantly associated with disease activity, even when taking into account age and gender. Future studies should investigate if certain personality profiles and coping strategies are associated with higher vulnerability of IBD patients to job stress and whether job stress is a predictor of poor IBD course.

209) Abstract 1265
INDEPENDENT ASSOCIATIONS BETWEEN SOCIAL SUPPORT AND FACTOR VIII COAGULANT ACTIVITY AND PLATELET COUNT IN PATIENTS WITH A VENOUS THROMBOEMBOLIC EVENT
Paul S. Lukas, lic. phil., General Internal Medicine, Franziska D. Teodori, M.D., General Internal Medicine, Bern University Hospital, Bern, Bern, Switzerland

Background: Poor social support (SS) prospectively increases the risk of coronary artery disease. In turn, high SS is associated with favorable health outcomes. Factor VIII (FVIII) is a key component in the coagulation cascade. Heightened levels of FVIII clotting activity (FVIII:C) were previously associated with increased risk for arterial and venous thrombotic events. Research has also shown that increased platelet count is associated with higher risk for venous thromboembolism (VTE). Methods: A consecutive sample of 244 patients with previous VTE was enrolled between February 2006 and September 2009. The ENRICHD Social Support Instrument (ESSI) was sent to the patients 10 days prior to blood collection for thrombophilia work-up. FVIII:C and platelet count were determined by routine laboratory assays. Results: The ESSI sum score independently predicted FVIII:C (r² = 0.16; p = 0.048) and platelet count (r² = 0.20; p = 0.001) after controlling for age, gender, socioeconomic status, body mass index, oral anticoagulants, aspirin, and the time elapsed since the last thrombotic event. Conclusions: The findings suggest that lower SS is associated with higher FVIII:C and platelet count being risk factors for VTE. Thus, SS might reduce the VTE risk. FVIII:C and platelet count previously increased with acute psychological stress and FVIII:C was also increased under chronic psychological stress. Given that SS may act as a buffer of physiological responses to stress, future studies may want to investigate whether the decrease in FVIII:C and platelet count seen with high SS may be explained by the stress buffering theory.

210) Abstract 1537
ALGOMETRY WITH A CLOTHESPIN
Niklaus Egloff, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland, Nicole Klinger, MS, Rafael J. A. Cámara, MD, Roland von Känel, MD, Psychosomatic Division, Michele Curatolo, MD, Anaesthesia Division, Elizabeth Marti, MD, Orthopedics Department, Marie-Louise Gander, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland

Background and Aims: Measurement of mechanical pain sensitivity is widely used in pain research to explore aspects of central hypersensitivity. Typically, this assessment is performed by electronic pressure algometry. However, the costs related to the equipment limit its widespread use. Pressure algometry. However, the costs related to the equipment limit its widespread use. The aim of our study was to develop a simple, low-priced, standardized pain sensitivity assessment (Clothespin-Algometry) and to define to what extent the measurements of this new instrument and an established device (Somedic®-Algometry) correlate. Methods: At the Bern University Hospital, 137 adults were recruited with either acute or chronic pain. The clothespins used for algometry were calibrated to 12 Newtons at an extension of 5 mm and showed stable values in pilot tests. In a cross-over study, the two methods were tested on the middle
fingers and ear lobes. The Clothespin-Algometer was applied for 10 seconds and participants indicated the pain intensity on a visual analogue scale (VAS, range 0-10) with higher scores suggesting a lower pain threshold. The pain threshold was measured with the Somedic®-Algometer and recorded in kilopascal. We computed Spearman correlation coefficients to estimate the degree of correlation between the two methods. Results: There was a strong inverse correlation between the two methods: for the right finger rho = -0.508, left finger rho = -0.539, right ear lobe rho = -0.546, left ear lobe rho = -0.572, n = 137. All p-values were below 0.0001. According to Cohen’s conventions, these are large correlation sizes. In other words, when pain was experienced as high on VAS by the Clothespin-Algometer, then the pressure applicable for pain threshold through the Somedic®-Algometer was low. The correlations between the two methods were significant for acute as well as chronic pain. Conclusions: The information about pain sensitivity provided by a calibrated clothespin and an established algometer correlate at a clinically meaningful level. This simple and cheap method to test pain sensitivity deserves further investigation, since it has the potential for becoming widely applicable in clinical practice.

211) Abstract 1518

STRESS-HEMOCENTRATION EFFECTS ON BLOOD COAGULATION
Anthony W. Austin, M.A., Stephen M. Patterson, PhD, Christopher D. Overe, B.S., Dianna L. Darr,, Leslie A. Muhlenkamp,, Psychology, Ohio University, Athens, OH

Behavioral medicine researchers frequently use the Dill & Costill (1965) equation to correct for plasma volume shifts when examining the effects of acute psychological stress on coagulation factors and clotting time. This study tested a new reconstitution technique developed in our laboratory designed to correct for plasma volume shifts during acute stress and compared it against the arithmetic correction technique. Blood was collected from 10 male participants during the last minute of a 20-min baseline and a 6-min math stressor. Plasma volume shifts from baseline plasma were determined both with the methods described to determine hematocrit and hemoglobin using the Dill & Costill equation. For the new reconstitution technique, plasma obtained during the math task was reconstituted with both baseline plasma and physiological saline equal to the amount of plasma lost during the stress-induced plasma volume shift. Prothrombin time (PT), activated partial thromboplastin time (APTT), fibrinogen and percent clotting factor VIII activity (FVIII%) were determined from baseline plasma, math plasma, math plasma reconstituted with baseline plasma, and math plasma reconstituted with saline. Paired t-tests showed that uncorrected PT and APTT (p < .01) during math were significantly longer and uncorrected FVIII% was significantly higher (p = .029) than during baseline. Repeated measures ANOVAs revealed that math APTT was not significantly shorter than baseline APTT when adjusting arithmetically for plasma volume shifts or with either reconstitution technique. Math PT became significantly longer than baseline PT when adjusting arithmetically (p = .007), but was not significantly different than baseline PT when adjusting with either reconstitution technique. No overall effects were found for FVIII% or fibrinogen. Mathematical adjustment appears to over-correct for plasma volume shifts when examining clotting time of the extrinsic pathway of the clotting system (i.e., PT). Adjusting for plasma volume shifts with the reconstitution technique used in this study provides a new method for examining stress-induced hemocoagulation effects of coagulation.

212) Abstract 1519

RELATIONSHIPS BETWEEN RESTING LIPIDS AND CARDIOVASCULAR REACTIVITY OVER TIME
Anthony W. Austin, M.A., Stephen M. Patterson, PhD, Psychology, Michael R. Kushnick, Ph.D., Michael J. Kautson, B.S., Mark L. McGlynn, B.S., Recreation and Sport Sciences, Ohio University, Athens, OH

The goal of this study was to examine relationships between changes in lipid levels over time with changes in resting and stress-induced cardiovascular levels among young college students. Participants were 19 (15 male; 4 female) nonsmoking freshman and sophomore university students of normal weight who attended two laboratory sessions, one at the beginning of the academic quarter and one approximately six weeks later. In both sessions, participants completed a 10-min rest period, a 6-min mental subtraction math task, a 10-min recovery period and a 3-min cold pressor (CP). Systolic (SBP) and diastolic (DBP) blood pressure, and heart rate (HR) were measured each minute. Cardiac output (CO), stroke volume (SV) and total peripheral resistance were measured continuously. Change in serum cholesterol levels was positively correlated with change in resting DBP (r = - .51, p < .01) and HR (r = -.47, p < .05) and HR during the cold pressor (r = -.52, p < .05). Change in low-density lipoprotein (LDL) levels was positively correlated with change in resting DBP (r = -.55, p < .05) and HR during the cold pressor (r = -.50, p < .05) and negatively correlated with change in resting SV (r = -.59, p < .05) and SV during a math stressor (r = -.55, p < .05). A series of repeated measures ANOVAs were carried out to compare changes in cardiovascular reactivity across the two sessions. Results revealed that SV and CO were significantly higher throughout the experimental protocol at time 2 than at time 1 (p < .05). When covarying for change in serum cholesterol or LDL levels, however, this effect was no longer significant. No other time effects were observed. Significant task effects were also observed for SV and CO, with SV being lower during math and cold pressor than during baseline and during baseline math than during baseline or cold pressor (p < .01), but these effects were no longer significant when covarying for change in serum cholesterol or LDL levels. These results suggest that resting lipid levels may influence cardiovascular reactivity to acute laboratory stress.

213) Abstract 1440

EXECUTIVE FUNCTIONING, STRESS, AND ABDOMINAL OBESITY
A. Janet Tomiyama, Ph.D., Robert Wood Johnson Health & Society Scholar Program, Mary F. Dallman, Ph.D., Physiology, Robert H. Lustig, MD, Clinical Pediatrics, Elissa S. Epel, Ph.D., Psychiatry, University of California, San Francisco, San Francisco, CA

Background: Chronic stress and stress-eating of highly palatable food underlie accumulation of abdominal fat and associated insulin resistance in animal models. Neuroscience has shown that stress in humans also shifts neural connections to high limbic activity and low prefrontal cortex (PFC) activity, functionally knocking out the PFC. The present study hypothesized that those performing worse on executive functioning measures will have accumulated greater abdominal fat, as measured by higher waist-hip-ratios (WHR), ostensibly due to greater exposure to chronic stress and stress-related eating of high fat food. Method: 60 female participants completed a battery of tests to measure executive functioning and had measures of BMI and WHR taken. Measures: Participants completed a short measure of IQ and selective attention using the STROOP (with errors indicating poor inhibition) at baseline and serial subtraction task during a social stress test. We also tested tympanic membrane temperature asymmetry (presumably reflecting right hemisphere PFC bias). The dependent variable was WHR with Body Mass Index as a covariate. Results: Poorer executive functioning across measures and right ear temperature asymmetry bias were significantly correlated with higher WHR. Poorer executive function was still correlated with WHR after controlling for BMI (range of r = -.30 to r = -.42, all p < .05), indicating that the effect may be specific to visceral fat, which has been implicated in stress-induced weight gain. In addition, as expected, chronic life stress was significantly associated with a pattern of worse executive functioning across measures. Conclusions: PFC-mediated executive function, which is known to be important to emotion regulation and impaired during stress, appears to be impaired in people with abdominal obesity. Stress may be both impairing cognitive function and promoting visceral fat deposition. Alternatively, insulin resistance, which is associated with abdominal obesity, may be impairing cognitive performance. The negative effects of stress at the brain level may be an important underlying factor promoting stress-related obesity.
INTERACTIVE EFFECTS OF TONIC AND PHASIC RESPIRATORY SINUS ARRHYTHMIA ON AFFECTIVE RESPONSES TO STRESS
Matthew R. Cribbet, M.S., Psychology, The University of Utah, Salt Lake City, Utah, Paula G. Williams, Ph.D., Heather E. Gunn, M.S., Holly K. Rau, M.S., Psychology, University of Utah, Salt Lake City, Utah

Adaptive affective responses in the face of environmental challenges require flexible physiological responding. The present study examined the extent to which tonic respiratory sinus arrhythmia (RSA,a putative marker of regulatory capacity,moderated the association between stress-related changes in RSA (i.e., phasic RSA) and concurrent changes in affect. Ninety eight healthy young adults completed ratings of affect during a resting baseline and following the recall of a recent stressor. Paired samples t-tests demonstrated that the stress task resulted in an increase in participant ratings of negative affect (NA), t = 2.82, p<.05, and a decrease in ratings of positive affect (PA), t = 2.82, t= -3.95, p<.0001. Tonic RSA moderated the association of phasic RSA with stress-related change in positive affect (PA), B = .12, p<.05, "R2 = .02, such that change in RSA had a nonsignificant positive association with PA for individuals with higher tonic RSA, B = .09, p=.32, and a modest negative association for those with lower tonic RSA, B = -.16, p = .07. Examination of specific aspects of PA indicated that phasic RSA was associated with an increase in ratings of attentive engagement among individuals with higher tonic RSA, B = .18, p<.05, "R2 = .04, but was unrelated among those with lower tonic RSA. These findings inform our understanding of phasic RSA and suggest that associations with social engagement may be primarily true for individuals with better regulatory capacity. Findings also support the notion that flexible parasympathetic nervous system functioning is an important component of adaptive stress regulation.

EFFECTS OF FLUID LOADING ON PAIN PERCEPTION
Christopher D. Ovre, B.A., Stephen M. Patterson, Ph.D., Tyler C. McDaniel, Psychology, Ohio University, Athens, Ohio

Previous research indicates an association between the changes in cardiopulmonary baroreceptor activity and changes in pain threshold. However, results from previous research are mixed. The purpose of this study was to explore whether increases in blood volume via fluid loading (12ml/kg) influences pain threshold and tolerance ratings. Sixteen healthy participants (7 female; 9 male) were randomly divided into experimental (fluid loading) and control (no fluid loading) groups. Total body water (TBW) levels were assessed before the fluid loading manipulation and at the end of the study session. A series of 6 pairs of thermal stimulations (thermal threshold; thermal tolerance) were delivered with a Medoc TSA-II NeuroSensory Analyzer (start temperature: 30°C, rise: 5°C/sec) to the underside of the right arm. Participants clicked an attached mouse when their thermal pain threshold was reached (temperature goes from warm to painful) and when the temperature crossed their thermal tolerance (pain becomes no longer bearable). Blood pressure readings were taken during a 5-minute baseline period and immediately following thermal tolerance stimulations. Fluid loading occurred after the first 3 pairs of thermal stimulations, followed by a 25-minute fluid absorption period. The final 3 pairs of thermal stimulations occurred during the fluid absorption period. A series of within-between repeated measures ANOVAs revealed that TBW significantly increased following fluid loading (p<.001). Results also revealed that pain threshold decreased significantly following fluid loading in comparison to pre-fluid loading pain threshold (p=.017). Significant gender effects were also observed such that males had higher pain threshold (p=.045) than females. No significant differences in pain tolerance were found between conditions, possibly due to limitations in maximum allowable thermal stimulation. Results of this study appear to indicate that hydration status alters pain threshold and that changes in blood volume alters cardiopulmonary baroreceptor activity, altering the sensation of pain.

RELATIONSHIP OF CIRCULATING INFLAMMATORY BIOMARKERS TO PERFORMANCE ON THE PSYCHOMOTOR VIGILANCE TASK IN OBSTRUCTIVE SLEEP APNEA
In-Soo Lee, MD, Psychiatry, University of California San Diego, San Diego, CA, Paul J. Mills, Ph.D, Sonia Ancoli-Israel, Ph.D, Wayne A. Bardwell, Ph.D, Joel E. Dimsdale, MD, Psychiatry, University of California San Diego, La Jolla, CA

Inflammation is increasingly suspected to lurk behind the symptoms of obstructive sleep apnea. The psychomotor vigilance task (PVT) is widely used in studies of sleep disorders, including obstructive sleep apnea (OSA). This study examined if PVT performance could be predicted by circulating inflammatory biomarkers after controlling for age, body mass index (BMI), blood pressure, apnea severity, depression, and fatigue. The sample included individuals across a wide range of apnea severity. Forty-one participants (mean age 48.8 ± 8.3 years) had their sleep monitored with polysomnography. Fatigue was assessed by Multidimensional Fatigue Symptom Inventory -short form (MFSI-sf). Depressed mood was assessed by the Center for Epidemiologic Studies-Depression (CES-D) Scale. A 10-minute PVT computerized visual reaction-time task was administered. Blood samples were obtained for inflammatory biomarkers (i.e., TNF-α, sICAM-1, CRP) and soluble TNF receptor 1(sTNF-R1), C-reactive protein (CRP), and soluble intercellular adhesion molecule-1 (sICAM-1). The main outcome variable was the PVT lapse count. The AHI ranged from 0.9 to 100.2 (mean AHI 29.3 ± 23.4). Results revealed that the PVT lapse count was significantly associated with log sICAM-1 (r=0.420, p=0.006), MFSI-sf physical fatigue (r=0.355, p=0.027), and CES-D (r=0.321, p=0.043). In a hierarchical regression model controlling for age, BMI, blood pressure, apnea severity, depression, and physical fatigue accounting for 44.4% of the variance (F=4.794, p<0.001), sICAM-1 was associated with the PVT lapse count. The findings suggest that some aspects of psychomotor vigilance performance are influenced by degree of generalized inflammation.

ACUTE EXPERIMENTAL STRESS SELECTIVELY MOBILIZES CD16+ NATURAL KILLER CELLS IN HEALTHY FEMALE VOLUNTEERS
Alexander D. Praslick, MSEd, Mount Sinai School of Medicine, New York, NY, Dana H. Boebig, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Purpose: Therapeutic modulation of natural killer (NK) cell trafficking is emerging as an important area of clinical investigation. Acute stress has long been known to increase mobilization of NK cells into circulation, but possible selective effects on NK cell subsets have received little attention. We examined the effects of acute stress on mobilization of well-established subsets defined by the differential expression of CD56 and CD16. Subjects & Methods: Participants were 36 healthy women. The experimental stressor was a block of 6 Stroop Color-word inference trials, each 2 minutes long. Blood was collected at 4 time points by IV catheter: (T1) 20 minutes post catheterization and rest period; (T2) after an initial practice and color-word Stroop task; (T3) upon completion of all Stroop tasks; (T4) after 30 minutes rest following task completion. Four-color, flow cytometric analyses were performed blind to quantify NK subsets at each time point, using fluorescent labeled antibodies against CD45, CD3, CD56, and CD16. NK subsets were quantified as cells per ul peripheral blood, calculated by multiplying the total lymphocyte count (CBC) by the percentage data determined by flow cytometric analysis. Results: Significant increases were seen in both NK cell subsets that were CD16+: CD3-CD56bright CD16+ NK cells increased significantly (p<0.05) from a low of 2.84 at T1 to a high of 5.27 at T3; CD3-CD56dim CD16+ NK cells also increased significantly (p<0.05) from a low of 54.36 at T1 to a high of 84.02 at T3. No significant changes were seen in either of the NK subsets that were CD16dim-. Conclusion: NK cells that express high levels of CD16, the IgG Fc receptor that mediates antibody dependent cytotoxicity, are mobilized by acute stress, while NK cells that express CD16 at low levels are not. These findings suggest an acute stress mechanism that might have important implications for the assessment of NK cell subsets in clinical settings;
and point to possible innovative strategies for modulating the trafficking of NK cell subsets for therapeutic purposes.

219) Abstract 1808

POINT-OF-USE ASSESSMENT OF SALIVARY ALPHA AMYLASE AND ITS ASSOCIATION WITH SELF-REPORTED DISTRESS

Vivek Shetty, DDS, Dr Med Dent, Oral and Maxillofacial Surgery, Theodore F. Robles, PhD, Psychology, Corwin M. Zigler, Biostatistics, Dori A. Glover, PhD, Psychiatry, University of California, Los Angeles, Los Angeles, CA, Masaki Yamaguchi, PhD, Biomedical Engineering, Iwate University, Morioka, Japan

Salivary alpha amylase (sAA) is being increasingly scrutinized as a biological correlate of the psychological response to stressful life events. Recent advancements in biosensor technology allow point-of-care reporting of sAA levels while approaching the precision and accuracy of conventional laboratory-based testing. We deployed a portable prototype sAA biosensor in a study of academic examination stress, predicting that sAA would be higher during final exams compared to a lower stress period, and that sAA levels would not differ between the low stress and exam stress period. Subjective distress ratings were elevated (p < .001) during the high-stress period (mean = 4.97) compared to the low stress period (mean = 2.86). Greater sAA levels were related to higher ratings of subjective distress averaged across the day (r = .28, p < .001) and at each measurement point. Individuals who reported clinical distress on the BSI above clinical cutoffs showed lower sAA levels during exams compared to baseline, and individuals who reported baseline distress below clinical cutoffs showed greater sAA levels during exams compared to baseline (p = .04, for the interaction). Overall, these data demonstrate that sAA levels covary with self-reported subjective distress, and that clinical distress may influence the relationship between stressful event exposures and sAA levels. Results from this study, in combination with data from our accompanying presentation showing excellent comparability between the biosensor and clinical chemistry assessment, suggest that the sAA biosensor is a promising tool for point-of-use measures of exposure to stress.

220) Abstract 1466

INTRA-INDIVIDUAL RELIABILITY OF THE CORTISOL AWAKENING RESPONSE IN YOUTH

Sivan Rotenberg, B.Sc., Jennifer J. McGrath, Ph.D., M.P.H., Pediatric Public Health Psychology PPHP Laboratory, Concordia University, Montreal, Quebec, Canada

The reliability and stability of the cortisol awakening response is largely consistent in adults. Less is known about the psychometric properties of the awakening response in youth. Differences may exist in the reliability and stability of youth response levels due to developmental factors (e.g., pubertal status, growth, sleep cycles) on the hypothalamic-pituitary-adrenal axis. Previous studies examining the cortisol awakening response in youth can be criticized for their small participant sizes, few saliva samples, and inconsistent sampling times. The aim of the present study was to evaluate the psychometric properties of the cortisol awakening response to address these earlier limitations. As part of the longitudinal Healthy Heart Project at Concordia University, healthy girls and boys (N = 211; M = 12.68 yrs, SD = 2.11 yrs; 45.5% girls) collected three saliva samples on two weekdays and one weekend day. Samples were collected at home upon awakening and at +45 minutes post awakening. Participants also completed a standardized questionnaire to assess Tanner pubertal stage. Two indices of the cortisol awakening response were examined using intra-class correlations across two days: the overall concentration of cortisol released relative to ground (AUCAG) and the dynamic increase (AUCI). The total cortisol concentration released during the awakening response in youth was moderately stable (AUCAG, ICC = 0.64), although the dynamic increase was less so (AUCI ICC = 0.35). The two-day reliability of the AUCAG (r = .51) was comparable to that observed in adults (r = .52; Edwards et al., 2001), while the two-day reliability of the AUCI (r = .22) was lower (r = .34; Edwards et al., 2001). Similar results were found after controlling for important covariates (time of awakening, pubertal stage, age, sex). These results suggest that while two days of measurement may be adequate to reliably examine the concentration of cortisol released during the awakening response in youth, the timing of sampling may be particularly salient for youth in order to adequately capture the dynamic increase of the cortisol awakening response.

221) Abstract 1314

INDIVIDUAL VARIABILITY ON RESTING BRAIN FUNCTION MEASURED BY ASL PERFUSION

Michiko Kano, MD, PhD, Behavioral Medicine, Tohoku University, Sendai, Miyagi, Japan, Steven J. Coen, PhD, Adam D. Farmer, MB BS BS BSc: MRCP, Neurogastroneterology, Wingate Institute, QMUL, London, UK, Shin Fukudo, MD,PhD, Behavioral Medicine, Tohoku University, Sendai, Japan, Qasim Aziz, MD, PhD, Neurogastroneterology, Wingate Institute, QMUL, London, UK, Ruth L. O'Gorman, PhD, Neuroimaging, King's college hospital, London, UK

Background: Blood oxygen level dependent (BOLD) contrast functional magnetic resonance imaging (fMRI) is commonly used to assess individual differences in task-related brain activity. However, fMRI relies on measurements of relative change in neural activity and is limited in assessing resting brain activity, which may be critical in
interpreting the BOLD response. Arterial spin labeling (ASL) magnetic resonance (MR) imaging provides a method by which the quantification of regional brain tissue perfusion is possible. Purpose: To examine the influence of personality and gender on individual variability in resting cerebral perfusion in a healthy human population, using ASL imaging at 3Tesla. Methods: Resting ASL perfusion data were collected in thirty healthy subjects (15 females). The Eysenk Personality Questionnaire-Revised (EPQ-R) was used to assess five personality traits including neuroticism and extraversion in each subject. Potential associations between the perfusion and personality were tested at the voxel cluster level by fitting a multiple regression model at each intracerebral voxel. Gender differences in perfusion were evaluated by fitting an analysis of covariance (ANCOVA) model at each intracerebral voxel. Results: Significant negative correlations between neuroticism and regional cerebral perfusion were identified in the left insula, anterior cingulate cortex, Thalamus, Precuneus, Inferior frontal gyrus, precentral gyrus, and cerebellum (p < 0.05, corrected). Strong positive correlations were observed between extraversion and resting brain perfusion in right parahippocampal gyrus, right fusiform gyrus, left precingual gyrus, and precuneus (p < 0.05, corrected). Areas where resting brain perfusion was higher in the female than those in the male were the Thalamus, Cuneus, left middle frontal gyrus, Inferior Parietal Gyrus and cerebellum (p < 0.05, corrected). Conclusion: These baseline perfusion differences may be important when interpreting activity-related brain activity in neuroimaging studies. Furthermore, such differences may have implications for volunteer selection criteria in future studies involving functional brain imaging.

222) Abstract 1386

NEURAL BASIS OF MODURATION EFFECT OF ANTICIPATION ON PAIN AND DAILY PHYSICAL COMPLAINTS
Motoharu Gondo, Department of Psychosomatic Research, Yoshiya Moriguchi., Department of Psychophysiology, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan; Norko Sato., Department of Radiology, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan; Gen Komaki., Department of Psychosomatic Research, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan

Our purpose was to examine the relationship between brain response to anxiety-induced exacerbation of pain and chronic physical complaints using fMRI. Healthy right-handed volunteers (n=18, 12 female, mean age=29.3y.o) completed somatization measurement (SCL-90-R). They underwent conditioning session with 20 trials; each trial has short visual cue (circle, square, or triangle), followed by short electric stimulation to the right leg, and following visual analog scale (VAS) of subjective perception of intensity of pain. Circle predicts no painful tactile stimulus. Pain after the square was moderate but constant which produces low anxiety (middle-pain low-anxiety; MPLA). Triangle was followed by pain with unexpected variable intensity (either moderate or high pain) which induced high anxiety (moderate-pain high-anxiety; MPHA or high-pain high-anxiety). Then BOLD responses were obtained through four 15-trials fMRI runs in the same event-related fashion. The data were analyzed by SPM5. Result of VAS showed pain in the MPHA condition was scored higher than in the MPLA (Z=5.19), such that the conditioning was effective. BOLD response to the presentation of HA triangle cue vs LA square cue was correlated with somatization scores in the right amygdala (r=0.73, p<0.001), suggesting that amygdala activity in anticipation of pain was associated with somatization. BOLD response to the electric stimulation in the MPHA condition was stronger than in the MPLA in the left anterior cingulate cortex (ACC; Z=3.20) and right medial prefrontal cortex (Z=3.25). The BOLD contrast of MPHA vs MPLA were correlated with somatization score in the right dorsolateral prefrontal cortex (DLPFC; r=0.64, p<0.001), such that DLPFC is involved in producing physical complaints through modulating process of pain perception. Individual BOLD responses to HA vs LA visual cue in the right amygdala were positively correlated with the responses to pain perception in MPHA vs MPLA in the right temporal pole (Z=4.24) and right ACC (Z=3.51), and negatively in the left midbrain (Z=-3.77), indicating the coupling of anticipation-related amygdala activity and modulatory system of pain perception in these regions.

223) Abstract 1721

WHY DOESN'T SELF-REPORTED AFFECT CORRESPOND TO CARDIOVASCULAR RESPONSES?
Matthew J. Zawadzki, M.S., Psychology, Nicholas M. Rockower, M.A., Biobehavioral Health, The Pennsylvania State University, University Park, PA; Regina E. Lopez, M.S., Psychology, Universidad Complutense de Madrid, University Park, PA; Tanya M. Goyal, PhD, Department of Medicine, Columbia University, New York, NY; William Gerin, PhD, Biobehavioral Health, The Pennsylvania State University, University Park, PA

Little association has been observed between self-reported affect (SRA) and concomitant blood pressure (BP) changes (Feldman et al., 1999). We have reported that angry cognitions, however, are associated with BP following an anger recall (AR) task (Gerin et al, 2006). Here, we describe the next set of analyses, concerning the role of SRA in sustained elevated BP during recovery from AR. Study Design: Within Ss (N=60), 2 sessions, counterbalanced; 3 study phases: baseline, AR, and post AR rest/recovery. Ss were treated identically until the end of AR, when they were randomly assigned to a Distraction (posters, magazines in room) or No Distraction (bare room) condition for the 15-minute recovery period. Ss were instrumented with a BP (finger) cuff throughout; affect was reported (1-5 scale) at the end of baseline and AR, and at 5 intervals during recovery. The scales were Angry, Anxious, Sad, and Happy. Reported earlier, the Distraction condition produced fewer angry cognitions, and better BP recovery, than No Distraction, suggesting that angry thoughts persisting after the provocation are associated with sustained BP elevation. For the present analysis, we examined the effect of AR on self-reported affect. As expected, Ss reported more anger, anxiety, and sadness, and less happiness, following AR, which tended to return almost to baseline levels during recovery. However, in spite of the observed correspondence between angry thoughts and BP, there was no correspondence between affect and neither cognitions nor BP (all ps > .15, except for happy and sad at recovery). Rather, affect during recovery - all 4 measures - was best predicted by SRA at baseline (all ps < .01 except for angry no distraction) - i.e., the level of the affect with which they entered the lab - which predicted SRA at recovery (all ps <.001). Moreover, the Distraction/No Distraction manipulation had little effect on SRA, as SRA - for all 4 - followed virtually identical patterns. The results suggest that SRA may follow a more consistent pattern across time and situations - more trait-like - and are therefore less responsive to situational demands.

224) Abstract 1008

GRADUATE SCHOOL STRESS & WELLNESS
Jude A. Bergkamp, M.A., Carly Pereira, M.A., Clinical Psychology, Antioch University Seattle, Olympia, WA

Graduate Student Stress and Wellness Jude Bergkamp M.A., Carla Pereira M.A., Misha Klementev M.S., Kelley S. Jones M.A., Margaret Drewlo M.A., Karen Bryan J.D., Maille Bay J.D. This study measured perceived stress, coping skills, and wellness strategies in a sample of 55 Psy.D. student volunteers. An 89-question survey was developed and administered to evaluate the stress levels, coping mechanisms, wellness strategies, and demographic data of the population. Three significant results emerged when demographic groups were compared on the stress and wellness measure: 3rd- and 4th-year students reported significantly less stress than 1st-year students; women experienced more stress than men; and participants self-identifying as part of a non-dominant culture indicated higher levels of perceived stress than other students. No significant relationship existed between stress level and income, age, relational status, number of years between past schooling and reentry into the program, number of children, or employment. Potential recommendations included interventions specific to groups reporting significant levels of perceived stress. This study identified one possible mediating factor for student wellness: Participants with higher coping scores had increased levels of wellness.
225) Abstract 1512

TRAIT EMPATHIC CONCERN PREDICTS SYMPATHETIC NERVOUS SYSTEM RESPONSE TO ANOTHER PERSON’S STRESS
Tony W. Buchanan, PhD, Sara Bagley, BS, Psychology, Saint Louis University, St. Louis, MO, Stephanie D. Preston, PhD, Psychology, University of Michigan, Ann Arbor, MI

Resonating, empathic responses to another's sadness and pain have been demonstrated in behavior, heart rate, facial expression, facial electromyography, and neural activity (Preston & de Waal, 2002). However, research has yet to look for resonating responses in neurohormonal systems such as the sympathetic nervous system (SNS) and hypothalamic pituitary adrenal (HPA) axis. These systems are reliably activated when subjects are challenged by a stressful laboratory task where they must give a speech and perform mental arithmetic in the presence of experimenters (the Trier Social Stress Task; TSST). The TSST thus provides a straightforward way to measure the neurohormonal responses of observers to another's stress, by testing the experimenters during the task. The relation between trait empathy (from the Interpersonal Reactivity Index; Davis 1983) and resonating SNS (salivary alpha amylase) and HPA (salivary cortisol) activation were tested during the TSST in 59 speakers (30 female) and 12 experimenters (8 female). Replacing prior studies, the TSST increased salivary alpha amylase and cortisol in the speakers. Experimenters' salivary alpha amylase responses to the speakers' stress increased as a function of their trait empathic concern (r = 0.73, p < 0.01), but there was no such relationship between cortisol and empathy. These findings suggest that SNS activity may serve as a physiological index of empathy toward another person's stress. The involvement of the SNS in empathy for others accords with older behavioral models of altruism that require trait dominance and agency (along with sympathetic, nurturing feelings) to achieve active helping and altruism. Future work will associate these measures with actual helping from the experimenters to speakers.

226) Abstract 1778

RELATIONSHIP BETWEEN SOCIAL SUPPORT PERCEPTIONS AND STRESS-INDUCED CARDIOVASCULAR REACTIVITY
Lynne M. Rochette, MS, Psychology, Ohio University, Athens, OH, Stephen M. Patterson, PhD, Katherine A. Mastangelo, PhD, Psychology, Ohio University, Athens, Ohio

This study was designed to assess the effects of social support provision on stress-induced cardiovascular reactivity. Prior to an experimental session, 86 female participants were randomly assigned to undergo a laboratory visit with either a close friend, acquaintance, or stranger. During the testing session, systolic (SBP) and diastolic (DBP) blood pressure, and impedance cardiography assessments of heart rate (HR), stroke volume (SV), cardiac output (CO), and pre-ejection period (PEP) were assessed during a fixed order protocol: baseline, adaptation baseline, math task, intermediate baseline, speech prep period, speech task, and recovery. The assigned support provider was present from adaptation baseline throughout the remainder of the protocol. Task minus baseline change scores were computed for cardiac measures to assess differences in cardiovascular reactivity during math and speech tasks. Average support and stress perceptions were assessed using a 6-item bipolar adjective scale for the support provider (e.g., supportive vs. unsupportive, helpful-unhelpful) and stress (e.g., stressed-relaxed, clam-excited). Daily stress preceding the lab visit, as well support and stress perceptions during tasks, were included in analyses. Multivariate analysis for math reactivity revealed a significant multivariate effect for support perceptions during the task (p<.01), with significant univariate effects on PEP and SBP (all p<.05). Multivariate analysis for speech reactivity revealed a significant multivariate effect for support perceptions during the task (p<.01), with significant univariate effects on HR, SV, CO, PEP, SBP, and DBP (all p<.05). Greater support perceptions were related to less reactivity on all cardiac measures except for PEP, which was related to more reactivity. None of the univariate effects for the type of social support provider were significant. The results of this study therefore suggest that perceptions of support during acute stress has a greater impact on cardiovascular reactivity than stress perceptions before or during acute stress or the type of social support provider.

227) Abstract 1806

ADULT ATTACHMENT AND CARDIOVASCULAR RESPONSE TO ACUTE STRESS
Cinnamon A. Steller, PhD, Psychology, Furman University, Greenville, SC

Close social relationships have important implications for well-being and disease risk. Adult attachment style can influence experiences in close relationships, but the link between adult attachment style and health is not well understood. The attachment system is activated during times of interpersonal distress and may moderate the body’s physiological response. The current study explored whether insecure attachment styles (high in anxiety and/or avoidance) were associated with different patterns of cardiovascular reactivity during acute stress compared to secure attachment styles. Fifty-four healthy adults completed an adult attachment style questionnaire (Griffin & Bartholomew, 1994) and underwent a 20 minute social-evaluative stressor (Trier Social Stress Task; TSSST). Multivariate analysis for speech reactivity revealed a significant multivariate effect for support perceptions during the task (p<.01), with significant univariate effects on PEP and SBP (all p<.05). Multivariate analysis for math reactivity revealed a significant multivariate effect for support perceptions during the task (p<.01). Replacing prior studies, the TSSST increased salivary alpha amylase and cortisol in the speakers. Experimenters' salivary alpha amylase responses to the speakers' stress increased as a function of their trait empathic concern (r = 0.73, p < 0.01), but there was no such relationship between cortisol and empathy. These findings suggest that SNS activity may serve as a physiological index of empathy toward another person's stress. The involvement of the SNS in empathy for others accords with older behavioral models of altruism that require trait dominance and agency (along with sympathetic, nurturing feelings) to achieve active helping and altruism. Future work will associate these measures with actual helping from the experimenters to speakers.

228) Abstract 1304

CHILDHOOD ADVERSITY PREDICTS RECURRENT DEPRESSION, LUPUS ACTIVITY AND ADJUSTMENT IN SLE
Elizabeth A. Bachen, Ph.D., Psychology, Mills College, Oakland, CA, Margaret A. Chesney, Ph.D., Medicine, University of Maryland, Baltimore, MD, Lindsey A. Criswell, MD, Medicine, UCSF, San Francisco, CA

Childhood adversity has been associated with a range of poorer health outcomes in adulthood. This is the first study to evaluate associations between childhood adversity and health outcomes in 304 Caucasian women with systemic lupus erythematosus (SLE) (mean age = 48 yrs). Each participant underwent the Composite International Diagnostic Interview (CIDI), an interview that yields lifetime diagnoses based on DSM-IV criteria, and completed the Systemic Lupus Activity Questionnaire, Multidimensional Assessment of Fatigue Scale, Beck Depression Inventory II, Impact of Illness Scale, and RA Self-Concepts questionnaire modified for SLE. Adverse events occurring < 17 years of age were measured using items from the CIDI and the Life Stressor Checklist, and included abuse and neglect, parental loss, foster care, and other household adverse events (e.g., witnessing family violence, economic hardship). The mean number of adverse events was 2.12 (SD = 2.42). Regression analyses predicting health outcomes in the sample adjusted for demographic (current age, education, income, marital status) and clinical (SLE duration, prednisone use, nephritis) characteristics, current depressed mood, and history of alcohol abuse. Adverse events were associated with higher odds of having recurrent major depressive disorder (MDD) (for > 3 events, OR 2.71, 95% CI 1.04 - 7.06; p = .042), an earlier onset of MDD (R = 0.55, p = .00), and higher current depressed mood (R = .34, p = .04). Adverse events also predicted greater self report SLE activity (R = .66, p = .002) and fatigue (R = .64, p = .001), an earlier reported onset of SLE symptoms (R = .72, p = .001), and greater effect of illness perception (R = .59, p = .001). Women with more adverse events were less likely to accept their SLE (R = .49, A-87
p = .02) and experienced greater deprivation of life values (R = .72, p = .001). These results indicate that childhood adversity influences risk for serious and persistent mood disorder in SLE, earlier and more severe reports of SLE activity, and poorer adjustment to the disease.

229) Abstract 1744

RELATION OF HYDRATION STATUS TO MEMORY AND WORKING MEMORY IN OLDER ADULTS
Stephen M. Patterson, Ph.D., Julie A. Safr, Ph.D., Psychology, Ohio University, Athens, Ohio, Kahi Hefnner, Ph.D., Psychiatry, University of Rochester, Rochester, New York, Anthony W. Austin, M.A., Psychology, Ohio University, Athens, Ohio
Prior studies have suggested a relationship between dehydration and poor cognitive performance. The present study examined relationships among hydration status, declarative memory and working memory skills, and blood pressure in a sample of older community-dwelling females. Twenty-one healthy postmenopausal women (mean age 60.3, SD 8.03) were included in the study. Resting blood pressure was recorded and hydration status (total body water by weight) was measured using bioelectrical impedance. Cognition was examined using the Auditory Verbal Learning Test (AVLT) which assesses declarative memory, and the Auditory Consonant Trigrams (ACT) which assesses working memory. For the AVLT, a word list was presented 5 times to participants, who were asked to recall as much of the list as possible, followed by an intrusion list with recall, and finally participants were asked to recall as many words from the original list as possible. For the ACT, participants heard a three-digit number, and participants were asked to recall the three-digit number. The counting backward delay varied in length, from either 0, 3, 9, or 18 seconds. Results revealed that total body water by weight was related to working memory, r = .47, p = .04, and declarative memory skills, r = .54, p = .01. Total body water by weight was also related to diastolic blood pressure, r = -.56, p = .01, which in turn was related to working memory, r = -.67, p = .002, and declarative memory skills, r = -.57, p = .002. Resting systolic blood pressure was accounted for, the relationship between hydration status and cognitive skills was attenuated. Therefore, the results of this study emphasize the importance of considering hydration status and blood pressure when interpreting cognitive performance in older adults.

230) Abstract 1675

MIND-BODY MEDICINE (YOGA BASED) COMPREHENSIVE LIFESTYLE INTERVENTION IN HYPERTENSIVE PATIENTS
Alok K. Mishra, Ph.D, Dr. Tara Singh, Ph.D, Psychology, Barkatullah University,, Bhopal, M.P, India, Dr. R Sagar, M.D., Psychiatry, All India Institute Of Medical Sciences(AIIMS), Delhi, Delhi, India
Sedentary life style, obesity, dietary habits, along with stresses is known risk factors of hypertension. Mind-Body Medicine (Yoga Based) as a science widely practiced health care practices is claimed to increase longevity along with therapeutic and rehabilitative effects. This study was conducted to examine the effect of Mind-body medicine on hypertension in subjects between 18 and 65 years of age. Pulse rate, systolic and diastolic blood pressure was studied in 30 control subjects (not doing any type of physical exercise) and 30 study subjects who had undergone a systemically designed Mind-Body medicine yoga classes and training at our centre. A well standardized questionnaire was asked by subjects to investigate its impact on well being, quality of life and anxiety level. Subject, sample and methods: The total duration of the study was 60 days.Intervention was two months in which 9 days for intervention of yoga and rest of days follow up. Recap in 15 days two times was follow up period.Both SBP and DBP were significantly lower in the study group (SBP= 131.72±7.35, DBP=83.88±4.970) compared to that in control group (SBP=138.20±11.6, DBP=89.00±5.4) in following order SBP, p value P<0.01 and DBP P value P<0.001) group as well as in the control group. The parameters were recorded in morning at 1st to 9th day and at 60th day. Results: In the study, significant reduction in the pulse rate occurs in subjects underwent yoga (P<0.01). The differences in the mean variation of blood pressure between study group and control group was also statistically significant (P<0.01). The systolic and diastolic blood pressure showed positive correlation with age in the study group as well as in the control group . A significant improvement in Quality of life and (QOL) and reduction in anxiety, stress as well as reductions in depression was observed. Conclusions: On the basis of findings, it can be concluded that Mind-Body Medicine (Yoga based) comprehensive life style intervention may be beneficial in improvement of QOL, psychological and hypertensive status.

231) Abstract 1227

SINGLE NUCLEOTIDE POLYMORPHISM AT BASE PAIR 145 ON THE ADRENERGIC RECEPTOR ‘1’ GENE PREDICTS POORER NEUROCARDIAC FUNCTION AND BLOOD PRESSURE
Meghan McLain, M.A., Psychiatry and Behavioral Science, Eastern Virginia Medical School, Norfolk, VA, Davin Raatola, Chemistry, Old Dominion University, Norfolk, VA, Richard Jennings, Ph.D., Psychiatry, Matthew Muldoon, M.D., Medicine, Robert Ferrell, Ph.D., GSPH-Human Genetics, Stephen Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA, Serina Neumann, Ph.D., Psychiatry and Behavioral Sciences, Eastern Virginia Medical School, Norfolk, VA
Reduced heart rate variability (HRV) and high blood pressure (BP) are heritable risk factors for the development of cardiovascular disease. Heart rate and BP are modulated by autonomic nervous system activity (commonly indexed by HRV). Since ANS regulation is influenced by adrenergic receptors, DNA sequence variation in genes that code for these receptors may contribute to individual differences in HRV and BP. The present study examined relationships among hydration status, declarative memory and working memory skills, and blood pressure in a sample of older community-dwelling females. Twenty-one healthy postmenopausal women (mean age 60.3, SD 8.03) were included in the study. Resting blood pressure was recorded and hydration status (total body water by weight) was measured using bioelectrical impedance. Cognition was examined using the Auditory Verbal Learning Test (AVLT) which assesses declarative memory, and the Auditory Consonant Trigrams (ACT) which assesses working memory. For the AVLT, a word list was presented 5 times to participants, who were asked to recall as much of the list as possible, followed by an intrusion list with recall, and finally participants were asked to recall as many words from the original list as possible. For the ACT, participants heard a three-digit number, and participants were asked to recall the three-digit number. The counting backward delay varied in length, from either 0, 3, 9, or 18 seconds. Results revealed that total body water by weight was related to working memory, r = .47, p = .04, and declarative memory skills, r = .54, p = .01. Total body water by weight was also related to diastolic blood pressure, r = -.56, p = .01, which in turn was related to working memory, r = -.67, p = .002, and declarative memory skills, r = -.57, p = .002. Resting systolic blood pressure was accounted for, the relationship between hydration status and cognitive skills was attenuated. Therefore, the results of this study emphasize the importance of considering hydration status and blood pressure when interpreting cognitive performance in older adults.

A-88
physician's office, that would be most efficient from the point of view of diagnosis. Methods: We measured patients' BP in the clinic by the physician (CBP); in a "non-clinical" (NC) room separate from the clinic (note: This was also at the "doctor's office" setting, but outside the clinical area); at home (8 weeks); and using 36-hour ABPM. We examined the effect of the setting - clinic, NC setting, and home measurements - on ABP as the outcome in 212 patients. Based on ABP and CBP, 47.6% were normotensive, 12.7% were WC (CBP 140+ or 90+ mmHg, ABP >135 and 85mmHg (SBP/DBP)), 27.3% were "true" hypertensives (HTN), and 12.2% had "masked" HTN (CBP <135 and 85mmHg, and ABP 140+ or 90+ mmHg (SBP/DBP)). Results: CBP, HBP, and NCBP SBP and DBP were highly correlated with ABPM. However, in a multiple regression analysis, CBP was not significant; HBPM and NCBPM (p<.001) explained 94%/87% of the variance in ambulatory SBP/DBP. The NC setting produced the highest betas ( β=90.82 (SBP/DBP); both p<.0001). Thus, BP measurements taken at the doctor's office, but in a nonclinical room, were strong predictors of ABP, suggesting that such measurements can be useful when ABP and/or HBP are not reasonable alternatives. We note that we found in a previous study that physician measurements were higher than those taken by a nurse, and both were substantially and significantly higher than those taken using an automated device. Taken together, these data suggest that using an automated BP device in a non-threatening setting may provide clinical BP measurements that are as useful as those taken using ABP monitoring.

233) Abstract 1670

NAIVE NEUTROPHIL PSEUDOPOD FORMATION STIMULATED BY PLASMA FROM PATIENTS WITH NORMAL OR ELEVATED BLOOD PRESSURE
Bassem M. Shoucri, B.S., Bioengineering, Kate M. Edwards, Ph.D., Psychiatry, Geert W. Schmid-Schonbein, Ph.D., Bioengineering, Paul J. Mills, Ph.D., Psychiatry, University of California. San Diego, La Jolla, CA

Purpose of the study: Leukocyte activation is characterized by formation of pseudopods (PP), which are actin-filled membrane projections that function in cell motility and phagocytosis. PP formation has been identified as a cause of increased hemodynamic resistance and is associated with other forms of activation including increased expression of cell adhesion molecules and release of radical oxidative species and proteases during degranulation. Associations between naive neutrophil activation and blood pressure, as well as a number of other physiological and demographic variables were investigated. Subjects and Methods: Thirty three otherwise healthy subjects with normal blood pressure (BP) (N=11, BP=116/73mmHg) or elevated BP (N=22, BP=148/84mmHg) participated. Naive neutrophils were isolated from the whole blood of the same young, healthy donor for all assays. Red blood cell sedimentation was followed by centrifugation over a Percoll gradient. After washing, the cells were diluted in PBS to a concentration of 2.4x10^7 cells/ml. Cells were incubated with study subject's plasma (sodium heparin anticoagulant) diluted in PBS to a concentration of 2.4x10^7th cells/ml. Cells were then washed, fixed with glutaraldehyde and imaged using light microscopy (60X). The longest diameter of 40 activated and 5 non-activated cells was determined using Image J (NIH). An activation index (AI) was calculated as mean activated length minus mean non-activated length. Summary of Results: A significant difference in AI was found between normal (7.7±2.0 pixels) and elevated BP (9.3±1.6 pixels) (p<.001). Correlation further, all subjects a correlation was seen between resting BP and AI (r= .430, p=.016; r=.538, p<.001). Association was seen between resting BP and AI (SBP: r=.430, p=.016, DBP: r=.538, p<.001). To investigate the possibility that stress appraisal accuracy mediates the relationship between N and recovery, N and stress appraisal scores were entered simultaneously in regression. N was no longer statistically significant (B= -.066, p=.48); stress appraisal continued to predict BP recovery (B=-.538, p<.001). Importantly, descriptive analyses indicated that over- and accurate-reporters were higher in N than under-reporters (p=.012 and .016, respectively). These findings suggest that individual differences in accuracy of stress appraisal may be important for effective stress regulation.

235) Abstract 1710

ANXIETY, NEGATIVE MOOD, AND CATECHOLAMINE LEVELS IN WOMEN UNDERGOING SURGERY FOR SUSPECTED ENDOMETRIAL CANCER
Timothy S. Sannes, M.S., Stacy Dodd, M.S., Clinical and Health Psychology, University of Florida, Gainesville, FL, Sally Jensen, Ph.D., Kellogg Cancer Care Center, NorthShore University HealthSystem, Chicago, IL, Linda Morgan, M.D., Department of Obstetrics and Gynecology, Wendy Carcamo, B.S., Molecular Cell Biology, Edward Chan, Ph.D., Department of Oral Biology, Deidre B. Pereira, Ph.D., Clinical and Health Psychology, University of Florida, Gainesville, FL

Purpose: Catecholamines are a group of endogenous hormones released by the sympathetic nervous system during periods of stress. These hormones have been implicated in carcinogenesis/cancer progression in vitro models. However, very few investigators have examined circulating catecholamines in cancer populations in vivo. Sample & Methods: Subjects (Ss) were women attending a clinic appointment for the evaluation of suspected endometrial cancer (EC). On the day prior to surgery, Ss underwent psychological assessment and blood draw for the measurement of Epinephrine (EPI) and Norepinephrine (NE). Anxiety was assessed using a modified Structured Interview Guide for the Hamilton Anxiety Scale; mood was assessed using the Incredibly Short Profile of Mood States (ISPOMS); serum EPI and NE concentrations were assessed using ELISA. Results: Ss were 30 women (M age=62 yrs., SD age=10 yrs.) with premalignant disease or EC. On the day prior to surgery, Ss underwent psychological assessment and blood draw for the measurement of Epinephrine (EPI) and Norepinephrine (NE). Anxiety was assessed using a modified Structured Interview Guide for the Hamilton Anxiety Scale; mood was assessed using the Incredibly Short Profile of Mood States (ISPOMS); serum EPI and NE concentrations were assessed using ELISA. Results: Ss were 30 women (M age=62 yrs., SD age=10 yrs.) with premalignant disease or EC. Circulating EPI (M =69.0pg/mL, SD=40.7pg/mL) was significantly correlated with anxiety (r=.35, p=.049) and marginally correlated with mood (r=.35, p=.056). Analyses examining potential control variables revealed that only number of days elapsed since abnormal endometrial biopsy (β time since biopsy) was correlated with circulating EPI (r=.66, p<.001). After controlling for time since biopsy, circulating EPI was no longer associated with anxiety (β=.18, ns.) or mood (β=.28, ns.). Exploratory analyses revealed that one particular ISPOMS item, greater sadness/depressed mood, was significantly associated with greater EPI (β=.32, p<.05) after controlling for time since biopsy. Circulating NE was not related to any control variables examined (all p's=ns.). In summary, fewer days
elapsed between abnormal endometrial biopsy and oncology evaluation (a possible reflection of greater perceived need for urgent oncology evaluation) and greater sadness/depressed mood were independently associated with greater EPI in women with endometrial tumors. Future research should attempt to replicate/expound upon these findings in a larger sample.

236) Abstract 1575

EFFECTS OF STATE POSITIVE AFFECT ON CORTISOL AUC AMONG RHEUMATOID ARTHRITIS PATIENTS
Sunmi Song, MA, Courtney A. Whetzel, PhD, Laura C. Klein, Ph.D., Jennifer E. Graham, PhD, Biobehavioral Health, Pennsylvania State University, University Park, PA

Emerging evidence suggests that higher positive affect (PA) is related to lower average cortisol levels over the day, less pain, and better quality of life among those with rheumatoid arthritis (RA). Using preliminary data from a larger investigation of the effects of mood on physiological responses to pain, we examined the hypothesis that state PA would be uniquely and inversely associated with cortisol area under the curve (AUC) among RA patients. Participants (N=6) were female, White, mean age 56.83 years (SD = 16.46) and had been diagnosed with RA for an average of 14 years (SD = 15.90). Exclusion criteria included anti-TNFα medication use, BMI≥40, excessive alcohol and caffeine use, co-morbid diseases, and prednisone >7.5 mg/day; participants refrained from taking as-needed pain medication the night before their visit. After intake at a General Clinical Research Center, numbing cream was applied to an intravenous (IV) catheter insertion site; participants completed questionnaires during a 30 minute recovery period. Mean IV insert pressure was ~ 102.0mm, pressure was applied with a palppometer until pain was reported and that level of pressure was maintained for 30 seconds each to participants’ three most tender joints. Serum cortisol levels were measured 4 times: baseline (at 9:40am), and at 10, 60, and 100 minutes post-pain. State PA and state negative affect (NA) were assessed with reliable adjective checklist subscales. Using linear regression to control for state NA and caffeine use, we found state PA uniquely predicted cortisol AUC AUC during the visit (B = -.92, p < .05). State NA was not associated with cortisol AUC. Overall, the present research suggests that state PA, but not state NA, is associated with lower cortisol AUC among those with RA. Future research on the effects of manipulating PA will help elucidate the potential clinical value of PA on stress hormone responses and pain.

237) Abstract 1400

PAIN AND HEART RATE VARIABILITY: IS THERE A LINK?
Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH, Adrian Loerbroks, PhD, Marc N. Jarczo, Dipl. rer. soc., Joachim E. Fischer, MD, Mannheim Institute of Public Health, Heidelberg University, Mannheim, Germany

Objective: The vagus nerve is 80% sensory. Pain is one of the sensations that is transmitted via the vagus. Further, pain is a component of inflammation, which is inversely associated with heart rate variability (HRV), a proxy measure for vagal activity. As previous studies are sparse, we aimed to assess the association between pain and HRV. Methods: We drew on cross-sectional data (collected in 2003/2004) from an occupational cohort (n=1367) from Germany. HRV was recorded such a dysregulated system. Participants rated the pain intensity increased as the actual temperature of the probe increased, F2,26 = 14.1, p = 0.001. Results also showed that there was a significant and progressive decrease in pain intensity reported to each of the three temperatures over the course of the study, F5,77 = 9.3, p = 0.001. The reduction in QT/psychophysical response to heat pain stimuli suggests that VNS had an effect on the sensitivity of the nociceptive system. Patients reported large decreases in pain ratings from the pre-stimulation baseline to the end of the acute study phase, and these changes persisted throughout the remaining study visits. These data suggest that VNS may tune down the pathophysiological pathways responsible for lower cognitive and mood dysregulation, a potential mechanism as to how VNS can reduce widespread musculoskeletal pain in FM. Experiments designed to test pain regulatory mechanisms, such as diffuse noxious inhibitory controls, are needed to further determine the mechanisms of vagus nerve stimulation on pain. Supported by NIH R01 AR-053732.

238) Abstract 1239

PSYCHOPHYSICAL RESPONSE TO PAIN PROBES DURING A YEAR OF VAGUS NERVE STIMULATION (VNS) AS A TREATMENT FOR FIBROMYALGIA (FM)
Dane Cook, PhD, Kinesiology, University of Wisconsin -Madison, Madison, WI, Gudrun Lange, PhD, Radiology, UMDNJ-New Jersey Medical School, Newark, NJ, Benjamin H. Natelson, MD, Neurology, Albert Einstein College of Medicine, New York, NY

We completed a preliminary study of efficacy of VNS in FM with surprisingly positive results. We evaluated 11 patients for diagnostic criteria for FM 3, 5, 8 and 11 months following VNS implantation and found that 5 patients no longer fulfilled either widespread pain or multiple tender point criteria at study end. Although the cause of FM is unknown, recent evidence suggests central dysregulation of nociceptive processing. Concurrent with clinical evaluations, we used psychophysical testing to a heat probe on the volar surface of the forearm using a Medoc 2001 TSA 2001 to test the hypothesis that VNS normalized such a dysregulated system. Participants rated the pain intensity as the actual temperature of the probe increased, F2,26 = 14.1, p = 0.001. Results also showed that there was a significant and progressive decrease in pain intensity reported to each of the three temperatures over the course of the study, F5,77 = 9.3, p = 0.001. The reduction in QT/psychophysical response to heat pain stimuli suggests that VNS had an effect on the sensitivity of the nociceptive system. Patients reported large decreases in pain ratings from the pre-stimulation baseline to the end of the acute study phase, and these changes persisted throughout the remaining study visits. These data suggest that VNS may tune down the pathophysiological pathways responsible for lower cognitive and mood dysregulation, a potential mechanism as to how VNS can reduce widespread musculoskeletal pain in FM. Experiments designed to test pain regulatory mechanisms, such as diffuse noxious inhibitory controls, are needed to further determine the mechanisms of vagus nerve stimulation on pain. Supported by NIH R01 AR-053732.

239) Abstract 1292

POSITIVE AFFECT AS A RESILIENCE FACTOR IN PATIENTS WITH COMPLEX SYMPTOM DISORDERS
Afton L. Hassett, Psy.D., Shantal Y. Savage, BA, Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ, Sarah E. Dhillon, MA, Psychology, University of Maryland, Baltimore, MD, Steve Buyske, Ph.D., Statistics, Rutgers University, Piscataway, NJ, Naomi Schlesinger, MD, Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ

Purpose: Complex symptom disorders (CSD) such as fibromyalgia and chronic fatigue syndrome are associated with high rates of depression and disability. Yet, most studies find that a subgroup of CSD patients displays resiliency by possessing protective psychosocial characteristics that result in better functioning, less mood disturbance and greater life satisfaction. The purpose of this study was to explore the role of positive affect (PA) for its potential contribution to better outcomes in patients with CSD. Methods: Sixty primary and tertiary care patients with suspected CSD were evaluated using the Composite International Diagnostic Interview for somatic symptoms. Men with >4 and women with >6 poorly explained symptoms completed questionnaires including: Positive and Negative Affect Scale, Health Assessment Questionnaire, Quick Inventory of Depressive Symptomatology, Satisfaction with Life Scale, and Symptoms Checklist. Participants were then categorized as having High PA (½ standard deviation [SD] above the mean) and Low PA (½ SD below the mean). The Normal PA group consisted of participants scoring within ½ SD from the mean. Differences in number of symptoms, disability, depression and life satisfaction were evaluated. Results: Patients in the High PA group reported significantly fewer symptoms than those in the
Normal PA (p = 0.003) or Low PA (p = 0.0001) groups. Also, those with High PA reported less disability and greater life satisfaction than those with Low PA (p = 0.004 and p = 0.001, respectively). Depression was more common in Low PA compared to Normal (p = 0.004) and High PA (p < 0.0001). Patients in the High PA group were more likely to be Caucasian and have more years of education than patients in the other PA groups. There were no differences among PA groups regarding level of negative affect. All significant differences for outcomes remained significant after applying a Bonferroni correction for multiple testing. Conclusions: A subgroup of patients with CSD who have high levels of positive affect experience fewer symptoms, less depression, decreased disability, and greater life satisfaction than those with lower levels of positive affect.

240) Abstract 1617

GENDER EFFECTS IN CLASSICAL CONDITIONING OF PLACEBO ANALGESIA
Magne Arve Flaten, PhD, Espen Bjerkedal, MA, Peter S. Lyby, Cand. Psychol, Psychology, University of Tromsø, Tromsø, Norway, Yngve Figgenschau, MD, Clinical Chemistry, University Hospital of North Norway, Tromsø, Norway, Per M. Asklen, PhD, Psychology, University of Tromsø, Tromsø, Norway.

Purpose: Studies where placebo analgesia has been induced by verbal information have shown larger placebo analgesic responses in males compared to females. In the present study, the role of subject gender in classical conditioning of placebo analgesia was investigated. The Conditioned group received capsules containing an inactive ingredient with subsequent reduction in the intensity of a painful stimulus. Two other groups controlled for reduced pain intensity, and whether depression was administration of the capsules decreased pain in the absence of programmed pairings of capsules with reduced pain. It was predicted that placebo analgesia should be observed in the Conditioned group compared to the control groups. Subjects and methods: Sixty-nine participants (38 females) received -10 degrees C to the arm for two minutes in a pre-test. The subjects were told that the capsules may or may not contain an active ingredient. Therefore, the Conditioned group received one capsule, followed after 10 minutes by application of 0 degrees C for two minutes. After a brief pause the subjects received one more capsule followed after 10 minutes by application of +5 degrees C to the arm. Thereafter, a third capsule was administrated. Finally, a post-test identical to the pre-test was administrated. The Capsule control group received the same capsules as the Conditioned group, but -10 degrees C in all stimulations. The Pain control group did not receive the capsules, but received the same painful stimulation as the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group.

243) Abstract 1388

THE RELATIONSHIP BETWEEN STRESS SYSTEMS AND THE METABOLIC SYNDROME
Brenda W. Penninx, PhD, Carmilla M. Licht, MSc, Sophie Freeburg, MSc, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands, Arianne K. van Reeth-Dortland, MSc, Psychiatry, Leiden University Medical Center, Leiden, The Netherlands, Nicole Vogelzangs, MSc, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands, Eric J. Gillay, MD/PhD, Frans G. Zitman, MD/PhD, Psychiatry, Leiden University Medical Center, Leiden, The Netherlands, Eco J. de Geus, PhD, Biological psychology, VU University, Amsterdam, The Netherlands.

Introduction: Stress has been suggested to lead to metabolic dysregulations which ultimately may result in cardiovascular disease and diabetes. The underlying biological stress mechanisms are, however, unclear. We examined the relationship between two main stress systems - the autonomic nervous system (ANS) and the hypothalamic-pituitary-adrenal (HPA) axis - with metabolic abnormalities and the metabolic syndrome. Methods: Data were from 1933 participants of the Netherlands Study of Depression and Anxiety. ANS measures included heart rate (HR), respiratory sinus arrhythmia (RSA) and pre-ejection period (PEP). HPA axis measures included the cortisol awakening response, evening cortisol and a 0.5 mg dexamethasone suppression test, as measured in saliva. Metabolic syndrome was based on the ATP III criteria (Alberti et al. 2005). Results: A subgroup of patients (38 females) received -10 degrees C to the arm for two minutes in a pre-test. The subjects were told that the capsules may or may not contain an active ingredient. Therefore, the Conditioned group received one capsule, followed after 10 minutes by application of 0 degrees C for two minutes. After a brief pause the subjects received one more capsule followed after 10 minutes by application of +5 degrees C to the arm. Thereafter, a third capsule was administrated. Finally, a post-test identical to the pre-test was administrated. The Capsule control group received the same capsules as the Conditioned group, but -10 degrees C in all stimulations. The Pain control group did not receive the capsules, but received the same painful stimulation as the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group. The post-test was identical in all groups. Results: Pain unpleasantness: main effect of Group (F = 6.53, p = 0.003) due to lower pain ratings in the Conditioned group compared to the Pain control group. Similar findings for pain intensity. Lower pain in the Capsule control group compared to the Pain control group. Cortisol: Lower in males in the Conditioned group.
negative association between cortisol awakening response and waist circumference and a positive association between evening cortisol and blood pressure. Conclusion: Our findings suggest that both decreased parasympathetic and increased sympathetic nervous system function were strongly associated to a multitude of metabolic abnormalities, whereas HPA-axis measures were generally not.

244) Abstract 1612
IS ALEXITHYMIA A PROTECTIVE FACTOR AS REGARDS THE ADJUSTMENT TO A SEVERE CHRONIC DISEASE?
Sylvie Pucheu, PhD, Silla M. Consoli, PhD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, Ile de France, France, Dominique Cupa, PhD, Laboratory of Somatic and Identity Alterations, Paris Ouest La Defense University, Nanterre, Ile de France, France
Objective: to study the prevalence of alexithymic characteristics and the links between alexithymia and the severity of the disease in patients suffering from four different chronic diseases and to explore the potential protective role of alexithymia on quality of adjustment in the severe forms of disease. Methods: 145 subjects suffering from 4 different diseases (35 insulin-dependent diabetes (Db), 33 non diabetic End Renal Stage Disease on haemodialysis (Hd), 37 cardiac failure (Cc) and 40 colon cancer (Cc)) completed the BDI-13 (depressive mood), the TAS-20 (alexithymia) and PAIS-SR (adjustment difficulties) and the TAS-20 (alexithymia) Each population was first divided into 3 grades of severity, according to clinical criteria. Slightly severe and moderately severe cases were then pooled for comparisons with very severe cases. Results: 31.7% of the patients could be considered as alexithymic (mean TASC score ≥ 56) without a significant difference between pathologies. There was no association between alexithymia and the severity of the disease (rho=0.04 and r=0.30; p=0.001). In total population PAIS-SR scores were higher both in severe cases and alexithymic patients, with no interaction effect (two way ANOVA). Separate analyses carried out in each clinical group found only a severity effect (p<0.053) in CC patients, only an alexithymia effect (p<0.05) in Db patients (p=0.008) and in CF patients (p=0.014). Db patients exhibited more adjustment difficulties in severe cases within the non alexithymic group and fewer difficulties within the alexithymic one. CF patients exhibited more adjustment difficulties in severe cases only within the non alexithymic group. Conclusion: Results support the hypothesis of a protective role of alexithymia in severe forms of a chronic disease, but only in some types of diseases: insulin-dependent diabetes and cardiac failure. Further studies are needed to understand such an effect dependent of the type of the disease.

245) Abstract 1610
DOES THE ASSOCIATION BETWEEN DEPRESSIVE MOOD AND ALEXITHYMIA DEPEND ON THE SEVERITY OF A CHRONIC DISEASE?
Silla M. Consoli, PhD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, Ile de France, France, Sylvie Pucheu, PhD, C-L Psychiatry, Georges Pompidou European Hospital, Paris, Ile de France, France
Background: the association between depressive mood and alexithymia is already well documented as the role of the severity of a somatic disease in adjustment disorders with depressive mood. Objective: to search for an interaction between alexithymic characteristics and the severity of a somatic disease on depressive mood in patients suffering from four different chronic diseases. Methods: 145 subjects suffering from 4 different diseases (35 insulin-dependent diabetes (Db), 33 non diabetic End Renal Stage Disease on haemodialysis (Hd), 37 cardiac failure (Cc) and 40 colon cancer (Cc)) completed the BDI-13 (depressive mood), the TAS-20 (alexithymia) and the NEO-PI-R (personality). Each population was first divided into 3 grades of severity, according to clinical criteria. Slightly severe and moderately severe cases were then pooled for comparisons with very severe cases. Results: univariate analyses depressive mood was neither associated with gender, nor with age or educational level, but positively correlated with the severity of disease (rho=0.19; p=0.023), alexithymia (r=0.38; p<0.001) and neuroticism (r=0.60; p<0.001). It also differed according to the type of the disease (p=0.01), with higher scores in Hd and Cf than in Db or Cc patients. Alexithymia was not related to severity. In multivariate analyses, after controlling for neuroticism and the type of disease, a significant interaction effect was found between categorical alexithymia and the severity of the disease (p=0.005), with increased depressive scores in severe cases of disease in non alexithymic patients and lower depressive scores in severe cases, in alexithymic patients. Separate analyses per disease confirmed these findings only in Db and Hc patients. Conclusion: alexithymic patients suffering from severe forms of a somatic disease, especially diabetics and haemodialysis patients, express and/or perceive less depressive symptoms than their non alexithymic counterparts. Alexithymia could thus act as an enhancing vs. blunting factor as regards depressive suffering, according to the severity of the disease.

246) Abstract 1701
REDUCING DIABETIC DYSLIPIDEMIA: A RANDOMIZED TRIAL OF TRANSCENDENTAL MEDITATION VERSUS DIET AND EXERCISE IN OLDER AFRICAN AMERICAN WOMEN
Kenneth G. Walton, Ph.D., Carolyn Gaylord-King, Ph.D., Maxwell Rainforth, Ph.D., Sanford L. Nidel, Ed.D., John Salerno, Ph.D., Physiology, Maharishi University, Fairfield, Iowa, Otello S. Randall, MD, Cardiology, Howard University College of Medicine, Washington, D.C., Shichen Xu, MD, Cardiology, Howard University Hospital, Washington, D.C., Gregory Stayhron, MD, Charlie L. Harris, Ph.D., Family Medicine, Morehouse Medical School, Atlanta, Georgia, Robert H. Schneider, MD, Physiology, Maharishi University, Fairfield, Iowa, Older African American women are at high risk for death from CHD and stroke due to the disproportionate occurrence of obesity, diabetes, and elevated blood pressure. Low HDL-cholesterol (HDL-c) and high triglyceride (TG) levels are key expressions of dyslipidemia in diabetics. Low HDL-c predicts both coronary outcomes and stroke, and contributes to CVD risk after other treatment targets have been achieved. This randomized, controlled, clinical trial evaluated the effects of a Transcendental Meditation (TM) program on levels of HDL-c, TG, and other risk factors in diabetic older African American women (mean age 65.5, range 55-85). Patients were randomly allocated to a group that learned and practiced this meditation technique or to a time-and-attention-matched group that received diet-and-exercise training. Diabetic patients with HDL-c lower than 50 mg/dL and/or with TG higher than 150 mg/dL were considered dyslipidemic. Study-entry and 12-month study-end tests were completed by 49 patients (69% of all entry-tested diabetics), and 40 of these (82%) were dyslipidemic. Comparisons were by ANCOVA and t-test. Dyslipidemic patients in the TM group showed a greater increase in HDL-c [Difference in Means 13.5 mg/dL, 95% CI 7.6 to 19.3 mg/dL; F(1, 23) = 12.68, P=0.002] and a greater decrease in TG [Difference in Means -47.3 mg/dL, 95% CI -14.4 to -80.2; F(1, 23) = 4.44, P=0.05] than dyslipidemic patients in the diet and exercise group. Changes in diet and exercise were not significantly different. Adding this meditation program to usual care in this subgroup of high-risk diabetic patients produced a 29% greater rise in HDL and a 20% greater drop in TG than adding intense diet and exercise training. Further studies of this meditation intervention in diabetic populations appear warranted.

247) Abstract 1208
WORK-RELATED STRESS AND INABILITY TO RELAX AFTER WORK PREDICT ASTHMA INCIDENCE IN ADULTS
Adrian Loerbroks, PhD, Michael C. Gadinger, Mannheim Institute of Public Health, Mannheim Medical Faculty, Heidelberg University, Mannheim, Germany, Jos A. Bosch, PhD, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, UK, Til Stürmer, MD, MPH, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, Manfred Amelang, PhD, Institute of Psychology, Heidelberg University, Heidelberg, Germany
Objective: There is an extensive literature linking stressful work conditions to adverse health outcomes. Notwithstanding, the association with asthma has not been examined, although such an association seems plausible due to earlier studies linking various other
measures of psychological stress to asthma. Therefore we set out to investigate the relationship between work stress and asthma prevalence and incidence. Methods: The present study drew on data from a dataset-based cohort study. At baseline (1992-1995), 5114 men and women completed questionnaires. In 2002/2003, 83% (n=4,110) of those alive were followed up by questionnaires. Asthma was measured by self-reports. Psychologically adverse working conditions were described on the basis of factor analyses of a larger list of work-condition items. These analyses yielded two factors: work stress (4 items) and inability to relax (3 items). For each factor, mean scores were calculated which were employed as both continuous z-scores and as categorized variables in analyses. Associations between psychologically adverse work conditions and asthma were estimated by prevalence ratios (PRs) and risk ratios (RRs) using Poisson regression with a log-link function. Analyses were restricted to those in employment (n=3341). Results: Cross-sectional analyses showed that work stress z-scores and inability to relax z-scores were positively associated with asthma prevalence (PR=1.15, 95%CI=0.97,1.36 and PR=1.43, 95%CI=1.12,1.83, respectively). Prospective analyses suggested that for each 1 standard deviation increase in work stress and inability to relax scores the risk of asthma increased by approximately 40% (RR for work stress=1.46, 95%CI=1.06,2.00; RR for inability to relax=1.39, 95%CI=1.01,1.91). Similar patterns of associations were observed in analyses of categorized exposure. This is the first study to suggest that work stress is associated with asthma incidence.

248) Abstract 1187

PSYCHOSOCIAL CORRELATES OF ACTION PLAN USE IN MODERATE-SEVERE ASTHMA
K Ouellet, BA, M Boudreau, BA, S L. Bacon, PhD, Kim L. Lavoie, PhD; Psychology; Pneumology; MMBC, UQAM; Hôpital du Sacré-Cœur de Montréal, Montréal, Quebec, Canada

Background: Asthma is a chronic respiratory disease that requires daily self-management in order to avoid symptom exacerbations and use of investigational services (1). One of the most important treatment tools is a written action plan, which describes what the patient is to do in the event of symptom exacerbation. Proper implementation of actions plans may rely upon psychosocial factors such as self-efficacy and social support. However, relatively little is known about the psychosocial factors associated with greater action plan use. The goal of the present study was to assess the extent to which social support (cohabitation), socioeconomic status (SES), asthma self-efficacy, and depression were associated with levels of confidence in patients' ability to implement their action plan in a sample of moderate-severe tertiary care asthmatics. Methods: 604 adult asthma patients underwent a sociodemographic and medical history interview, including questions about social support, SES, and use of action plans, and completed a battery of questionnaires including the Beck Depression Inventory-II (BDI-II) and Asthma Self-Efficacy Scale (ASES) on the day of their asthma clinic visit. Summary of Results: Results indicated that the only psychosocial variable associated with greater confidence in the ability to implement their action plan was asthma-related self-efficacy (F=4.37, p=0.038), such that patients with higher overall asthma-related self-efficacy were more likely to have confidence in their ability to implement their action plan. There were no associations between confidence in action plan use and SES, social support, or depression. These findings indicate that confidence in your ability to manage asthma may be critical to the proper implementation of action plans. Given these are among the most common self-management tools used with asthmatics, self-efficacy should be routinely assessed and treated as part of asthma self-management programs.

249) Abstract 1244

PSYCHOLOGICAL DISTRESS AND CORTISOL CONCENTRATIONS IN PREGNANT WOMEN SHORTLY AFTER THE DIAGNOSIS OF A STRUCTURAL FETAL ANOMALY
Anne Kaasen, MSc, Anne Helbig, MD; Obstetrics and Gynecology, Ulrik F. Malt, Professor; Neuropsychiatry and Psychosomatic Medicine, Jens Bollerslev, Professor; Medicine, Gutterm Haugen, Professor; Obstetrics and Gynecology, Oslo University Hospital-Rikshospitalet, 0027 Oslo, Norway

Purpose: To assess the relation of acute psychological distress with the concentration of salivary cortisol or the ratio of serum cortisol to cortisol binding globulin (ratio) in pregnant women after the diagnosis of a structural fetal anomaly. A comparison group of pregnant women with normal ultrasound findings was included. Methods: Pregnant women with (Group 1, n=180) or without (Group 2, n=111) a fetal structural anomaly detected after 12 weeks gestational age (GA) were included within a week after the diagnostic ultrasound. We used standardized psychometric instruments, i.e. Impact of Event Scale (IES-22), General Health Questionnaire (GHQ-28), and Edinburgh Postnatal Depression Scale (EPDS), to assess psychological distress, including subscales. Ratio was measured in the morning and salivary cortisol in the evening. Summary of results: Mean GA at assessment was 21 (SD 6.5) and 19 (SD 2.0) weeks in Group 1 and 2, respectively. Group 1 had significantly higher levels of distress than Group 2 in all psychometric outcome measures (p<0.001, e.g. IES intrusion >20 in 71 vs. 8 %). Salivary cortisol and ratio were correlated (r=0.22, p=0.001). There was no significant correlation of ratio with GA in any of the groups. In Group 1, using two-way ANOVA, ratio was significantly higher in women with high IES arousal (p=0.020) and lower in women with high IES avoidance (p=0.025). The mean (95%CI) ratio values were 1.37 (1.04-1.74) and 1.33 (0.29-4.07) for high and low arousal, and 0.33 (0.26-0.41) and 0.41 (0.38-0.45) for high and low avoidance, respectively. Salivary cortisol was positively related to GA using correlation (r=0.32, p=0.001 in Group 1, r=0.28, p=0.004 in Group 2) or two-way ANOVA (p=0.001 in Group 1, p=0.018 in Group 2), but was not related to any of the psychometric variables. In conclusion, salivary cortisol measured in the evening may reflect the normal physiological change in pregnancy according to GA, while ratio measured in the morning reflects the elevated stress response with significant differences in IES avoidance and arousal.

250) Abstract 1408

CORTISOL, TRAUMA AND STRESSFUL LIFE EVENTS PREDICT SYMPTOMS OF DEPRESSION AND ANXIETY DURING PREGNANCY AND POSTPARTUM
Jane Leserman, PhD, Nacire Garcia, MS, Melissa Stansbury, BS, Cort A. Pedersen, MD, Psychiatry, University of North Carolina, Chapel Hill, NC

Previous research has shown elevated cortisol levels in persons with major depression; the relationship of cortisol and depression during pregnancy and postpartum has been less clear. We examined the relationship overtime between cortisol and depressed and anxious mood in pregnant and postpartum women. We studied 42 women during the 35-36th week of pregnancy and at 6 and 12 weeks postpartum. Two mood scales were given at all time-points: Montgomery Asberg Depression and Hamilton Anxiety (averaging 6 and 12 weeks postpartum). Cortisol levels were measured in the morning and evening on the day of the prenatal visit, and on the day of the postpartum visit, on salivary cortisol. We measured the ratio of cortisol to creatinine in the evening. Summary of results: Mean GA at assessment was 21 (SD 6.5) and 19 (SD 2.0) weeks in Group 1 and 2, respectively. Group 1 had significantly higher levels of distress than Group 2 in all psychometric outcome measures (p<0.001, e.g. IES intrusion >20 in 71 vs. 8 %). Salivary cortisol and ratio were correlated (r=0.22, p=0.001). There was no significant correlation of ratio with GA in any of the groups. In Group 1, using two-way ANOVA, ratio was significantly higher in women with high IES arousal (p=0.020) and lower in women with high IES avoidance (p=0.025). The mean (95%CI) ratio values were 1.37 (1.04-1.74) and 1.33 (0.29-4.07) for high and low arousal, and 0.33 (0.26-0.41) and 0.41 (0.38-0.45) for high and low avoidance, respectively. Salivary cortisol was positively related to GA using correlation (r=0.32, p=0.001 in Group 1, r=0.28, p=0.004 in Group 2) or two-way ANOVA (p=0.001 in Group 1, p=0.018 in Group 2), but was not related to any of the psychometric variables. In conclusion, salivary cortisol measured in the evening may reflect the normal physiological change in pregnancy according to GA, while ratio measured in the morning reflects the elevated stress response with significant differences in IES avoidance and arousal.
the postpartum period was consistently predicted by more stressful life events and presence of those dysphoric symptoms during pregnancy. Clearly more attention needs to be paid to stress and trauma as risk factors for depression during pregnancy and postpartum.

251) Abstract 1115
CBI EFFECTS IN IVF TREATMENT
Dalia Merari, Ph.D., Health Professions, Tel Aviv University, Petah-Tikva, Israel, Giora Kaplan, M.A., Psychosocial Aspects of Health Research Unit, Gertner Institute, Sheba Medical Center, Tel Hashomer, Israel
CBI Effects in IVF Treatment Purpose The study’s purpose was to examine the effect of cognitive-behavioral intervention (CBI) on stress indicators among women undergoing IVF treatment and on the rates of pregnancy and delivery among these women. Methods The subjects were 52 women who applied for IVF treatment. All participants filled a specially designed questionnaire which dealt with demographic, medical and general infertility issues, as well as the following tests: (1) Spielbergers’s State-Trait Anxiety Inventory; (2) the Depression Adjective Check List (DACL); and (3) Cantri’s Self-Anchoring Ladder. The participants were then randomly allocated into an intervention group (N=26) or a matched control group (N=26). The intervention group underwent 10 CBI sessions, while control group participants were not exposed to any intervention. Each CBI session lasted two and a half hours. At the end of the CBI sessions both groups took the above-mentioned tests again. Results After the intervention, the mean depression score (DACL test) of the intervention group decreased significantly (p<0.05) from 12.0 to 7.1, while the control group's mean depression score remained unchanged (10.1 and 10.7). The difference between the intervention and the control groups in post-intervention depression scores was statistically significant (p<0.05). The mean score of the State Anxiety Test of the intervention group decreased after the intervention (p<0.05) from 44.7 to 37.2, while the control group's mean score increased from 45.0 to 48.4. The difference in the mean score after the intervention between the intervention and the control group was statistically significant (p<0.05). The intervention group improved in "present satisfaction with life," as measured by Cantri’s Self-Anchoring Ladder (p<0.05). The mean score after intervention (7.5) was higher (p<0.05) than the mean score of the controls (6.8). Women who participated in the intervention group had a higher number of pregnancies and deliveries compared to the controls. However, the difference between the groups was not significant. The results of this study suggest that CBI may reduce stress among IVF patients.

252) Abstract 1479
THE EFFECTS OF VARIOUS TYPES OF DISCRIMINATION ON HEALTH AMONG AFRICAN AMERICANS AND EUROPEAN AMERICANS
Collette P. Eccleston, PhD, Joshua M. Smyth, PhD, Psychology, Syracuse University, Syracuse, NY, Martin J. Sliwinski, PhD, Human Development and Family Studies, Pennsylvania State University, University Park, Pennsylvania
Most research on the effects of discrimination on health examines racial discrimination among African Americans (AA). Yet people often have various aspects of identity that may interact to impact perceptions of and experiences with discrimination. The purpose of the current research is to compare perceptions of various types of discrimination and their impact on AA and European Americans (EA). Community volunteers (122 AA and 169 EA; mean age=51, range 21-83) rated the frequency with which they experienced 8 types of mistreatment. They indicated whether each of 15 reasons was or was not a primary reason for mistreatment. Participants also completed measures of self-efficacy, negative affect, and depression, along with broader health measures. AA (M=15.77) reported more frequently experiencing mistreatment than EA (M=13.93), p <.01. A greater proportion of AA attributed discrimination to race (M=.64) than EA (M=.11), p<.01. AA were also more likely than EA to attribute discrimination to other status characteristics, including gender (49 vs.22, p=.01), education (45 vs. 25, p<.05), and occupation (50 vs. 31). Racial differences in attributions of mistreatment to socioeconomic status (SES) generally held after controlling for actual differences in SES. Perceptions of SES and race based discrimination had similar effects. Among AA and EA who attributed mistreatment to race, more frequent mistreatment was related to less self-efficacy (b =-.15, p<.05), more negative affect (b =.44, p<.05), and more depression (b =.93, p<.0001). Similarly, among AA and EA who attributed mistreatment to SES, more frequent mistreatment was related to less self-efficacy (b =-.08, p<.01), more negative affect (b =.33, p<.0001), and more depression (b =.80, p<.0001). These results suggest that experiences with racial discrimination may lead AA to be more sensitive and/or vulnerable to other types of discrimination. Perceptions of SES discrimination were as likely as racial discrimination to negatively affect health, among EA and especially AA. In order to understand the effects of discrimination on health, it is important to go beyond consideration of racial discrimination.

253) Abstract 1097
PSYCHOSOCIAL AND SOCIOECONOMIC PREDICTORS OF INTERLEUKIN-6 IN THE MIDUS NATIONAL SAMPLE
Jennifer A. Morozink, B.A., Carol D. Ryff, Ph.D., Psychology, University of Wisconsin-Madison, Madison, Wisconsin
Inflammation has been suggested as a plausible mechanism linking psychosocial and socioeconomic factors to health outcomes. This investigation built on such work to examine whether educational attainment, psychological well-being, and positive and negative affect, independently and interactively, predicted interleukin-6 (IL-6). Participants (N = 874; 53% female; Ages 35-86; M = 58.3, SD = 11.6) from the Survey of Mid-life in the U.S. (MIDUS) provided educational attainment and psychosocial information (depressive symptoms, anxious symptoms, positive affect, and eudaimonic well-being) via mail survey and phone interviews. Health information and a fasting blood sample for measurement of IL-6 were obtained during an overnight clinic visit. Hierarchical multiple regression models were utilized to examine main and interactive effects of education, well-being, and affect on IL-6, taking into account demographic factors, health behaviors, and health status indicators. Higher education predicted lower levels of IL-6 (p<.01), and these effects remained significant after taking demographic factors and health behaviors into account. Further controlling for body mass index, waist-to-hip ratio, and chronic health conditions attenuated these effects to marginal significance (p = .09). Positive affect (p < .01), environmental mastery (p = .02), positive relations with others (p = .03), and depressive symptoms (p = .02) significantly interacted with education to predict IL-6. Results were such that for individuals with a high school education or less, higher well-being and positive affect predicted lower IL-6. Conversely, higher depressive symptoms predicted higher IL-6 for individuals with a high school education or less. Results imply that body mass, central adiposity, and chronic health conditions are key contributors to educational gradients in IL-6. However, psychosocial factors can moderate this gradient independent of demographic factors, health behaviors, and health status indicators. Higher education may paradoxically indicate a lower likelihood of psychosocial strengths mitigate the risk of increased IL-6 associated with lower educational attainment, whereas depressive symptoms exacerbate this risk.

254) Abstract 1413
THE EFFECT OF MUSIC ON ENDOCRINE AND AUTONOMIC STRESS RESPONSES
Myriam V. Thoma, M.Sc., Ulrike Ehler, Professor, Urs M. Nater, PhD, Psychology, University of Zurich, Zurich, Zurich, Switzerland
The experience of stress and its biological consequences may dramatically influence health. Music has been suggested to have a beneficial impact on health via stress-reducing effects. However, the exact mechanisms through which music affects psychobiological stress systems are poorly understood. It was the purpose of the current study to address this gap in the literature and examine the underlying mechanisms of how relaxing music might impact endocrine and autonomic stress responses. Sixty healthy female volunteers (m = 25.37 y) were exposed to a laboratory stress test after having been randomly assigned to one of three different conditions prior to the stressor for ten minutes: 1) relaxing music (Miserere and Allegro), 2) sound of rippling water (WS) and 3) rest (R) (i.e. no acoustic stimulation). Psychological
stress (e.g. visual analogue scale), endocrine (salivary cortisol) and autonomic parameters (salivary alpha amylase) were repeatedly measured in all conditions. We hypothesized that listening to music prior to the stressor, compared to R or WS, would result in a significantly attenuated stress response. The stressor caused significant changes in all measured variables in all three groups over time (p = 0.001). The three conditions significantly differed regarding cortisol responses (p = 0.025). The music intervention did not result in a significant attenuation of perceived stress and cortisol, whereas the WS condition did. The three conditions did not significantly differ in amylase responses (p = 0.272), except in the recovery phase, when listening to music resulted in lower amylase levels (p = 0.005). Listening to music prior to a stressor does not influence the subsequent psychological and endocrine stress response. In contrast, listening to WS seems to be effective in attenuating the endocrine response. Interestingly, listening to music seems to facilitate autonomic recovery after a stressor. Listening to music differentially affects the autonomic and the endocrine system.

255) Abstract 1202

TYPE D PERSONALITY, DEPRESSIVE SYMPTOMS AND WORK-RELATED HEALTH OUTCOMES

Patrick C. Mommersteeg, Ph.D., Johan Denollet, Ph.D., Elisabeth J. Martens, Ph.D., Center of Research on Psychology in Somatic diseases, Tilburg University, Tilburg, Netherlands

Purpose: Sick-leave, burnout and disability pension are work-related health outcomes which have a large impact on the working community and are an economic burden. Personality may play a decisive role in perceiving work-related characteristics as stressful, consequently leading to adverse health outcomes. Type D personality is characterized by increased negative affectivity and social inhibition (the tendency to actively inhibit self-expression in social interactions). The negative affectivity component shows overlap with depressive symptoms, but is thought to precede state depression. We hypothesize that Type D personality is related to reported sick-leave, burnout and disability pension, mediated by depressive symptoms. Sample & Methods: Type D personality was assessed with the DS14. High and Low Trait Ruminators were selected from an undergraduate research pool using the Revised Emotion Control Questionnaire (Roger & Najarian, 1989). Participants (standardized beta range -.207 to -.136, p range .001 to .04). DHA was inversely related to total hostility on the Cook-Medley Hostility Inventories, and relative concentrations of phospholipid fatty acids in supplements. Subjects completed a battery of personality scales and inventories, and relative concentrations of phospholipid fatty acids in fasting serum samples were determined with capillary gas chromatography. Linear and logistic regression analyses were conducted with age, gender and race as covariates. Both EPA and DHA were inversely related to total hostility on the Cook-Medley Hostility Scale and subscales measuring cynicism and social avoidance (standardized beta range -.207 to -.136, p range .001 to .04). DHA was related inversely to current depressive symptomatology on both the Beck Depression Inventory (score >5, B= -1.53, p=0.03) and the Center for Epidemiologic Studies Depression Scale (score >10, B= -2.03, p=0.007). DHA was inversely related to Nutritional (beta=-.129, p=.046), and positively with Openness to Experience (beta=206, p=.001) on the NEO Personality Inventory-Revised. Finally, DHA was inversely related to total impulsivity (beta=-.151, p=.018), and non-planning impulsiveness (beta=-.150, p=.018) on the Barratt Impulsiveness Scale. These cross-sectional associations suggest that omega-3 fatty acid levels, particularly DHA, may modulate individual differences in multiple aspects of emotion regulation and related cognitive processes. Such associations may underlie, in part, the salutary effects of omega-3 fatty acids on cardiovascular disease.

256) Abstract 1160

TRAIT AND STATE PERSEVERATIVE COGNITION AND THE CORTISOL AWAKENING RESPONSE

Peggy M. Zoccola, M.A., Sally S. Dickerson, Ph.D., Ilona S. Yin, Ph.D., Psychology and Social Behavior, University of California, Irvine, CA

Evidence suggests that perseverative cognition (i.e., rumination, worry) may amplify or maintain cortisol activation. The present study examined the effects of trait and state perseverative cognition on the cortisol awakening response (CAR), a measure useful for understanding individual differences in hypothalamus-pituitary-adrenal axis regulation. We hypothesized that trait rumination and the prior day’s rumination and/or worry would be associated with greater CARs. High (N=77) and Low (N=42) Trait Ruminators (60% female) were selected from an undergraduate research pool using the Revised Emotion Control Questionnaire (Roger & Najarian, 1989). Participants provided information about their worries about upcoming events and ruminations on past events that occurred throughout the day in a diary at home. The next morning, saliva samples were collected 0, 30, 45, and 60 minutes after awakening for assessment of the CAR. Area under the curve with respect to increase (AUCI) and ground (AUCG) were calculated to capture the salivary cortisol increase and total output in the hour after awakening. Contrary to our hypothesis, there was no effect of trait rumination on the CAR. Neither AUCI nor AUCG CAR values differed between High and Low Trait Ruminators, f’s < .47, ns, suggesting that High and Low Trait Ruminators did not differ in cortisol increases or total cortisol output in the first hour after awakening. In contrast, state rumination and worry and were associated with the CAR. Those who either ruminated on past events (N=19) or worried about upcoming events (N=26) or ruminated and worried (N=42) the day before had greater AUCI CARs compared to those who did not report worrying or ruminating (N=29). F(3,104) = 6.50, p < .001. In addition, those who worried and/or ruminated had greater AUCG CARs compared to those who neither worried nor ruminated, t(106) = 2.59, p < .05. Our findings suggest differential effects of trait and state perseverative cognition on the CAR and highlight the importance of considering proximal measures of perseverative cognition in examining individual differences in the CAR.

257) Abstract 1648

OMEGA-3 FATTY ACIDS, NEGATIVE AFFECT, HOSTILITY AND IMPULSIVITY

Matthew F. Muldoon, MD, Medicine, University of Pittsburgh, Pittsburgh, PA, Sarah M. Conklin, PhD, Neuroscience, Allegheny College, Meadville, PA, Jeffrey K. Yao, PhD, Psychiatry, VA Pittsburgh Healthcare System and University of Pittsburgh, Pittsburgh, PA, Janine D. Flores, PhD, Psychology, Queens College/CUNY, Flushing, NY, Stephen B. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Low dietary intake of the long-chain, omega-3 fatty acids, eicosapentaenoic and docosahexaenoic acids (EPA and DHA), has been related to both incident cardiovascular disease and major psychiatric disorders. Limited research further links low consumption of these nutrients to negative affective disorders, such as depression, and to cognitive and behavioral disturbances, such as distractibility, impulsivity, and anxiety. This study reports on the association between dietary intake of long-chain omega-3 fatty acids and negative affect, hostility, and impulsivity in healthy American adults. Cross-sectional associations between dietary intake and outcome measures were subsequently evaluated in a multivariate regression model: Linear and logistic regression analyses were conducted with age, gender, race, and smoking status as confounders. The results of this study provide evidence that omega-3 fatty acid levels, particularly DHA, may modulate individual differences in multiple aspects of emotion regulation and related cognitive processes. Such associations may underlie, in part, the salutary effects of omega-3 fatty acids on cardiovascular disease.

258) Abstract 1152

MATERNAL HOLOCAUST EXPOSURE AND HEALTH COMPLAINTS IN ADULT OFFSPRING

Janine D. Florio, Ph.D., Psychology, Queens College/CUNY & James J Peters VA Medical Center, New York, NY, Linda M. Bierer, M.D., Psychiatry, James J Peters Bronx VA Medical Center, Bronx, NY, Rachel Yehuda, Ph.D., Psychiatry, Mount Sinai School of Medicine & James J Peters VA Medical Center, Bronx, NY

Although the link between chronic stress and the development of cardiovascular and metabolic diseases of adulthood has been known for
some time, there is growing recognition that early environmental influences may mediate this association or affect the developmental trajectory of disease progression. The current study evaluated the relationship between parental exposure to the Holocaust, which has been associated with reports of childhood trauma exposure and parental bonding, and self-reported health ratings and metabolic syndrome conditions made by their adult offspring (i.e., second generation Holocaust survivors). A total of 137 subjects were evaluated. Regression analyses demonstrated that maternal but not paternal exposure to the Holocaust was related to poorer subjective impressions of emotional and physical health in offspring. This relationship was diminished when the offspring's own level of trait anxiety was considered. Offspring with maternal, but not paternal, Holocaust exposure also reported greater use of psychotropic and other medications, including medications for the treatment of hypertension and hyperlipidemia. The mechanism linking these health outcomes and maternal exposure deserves further investigation, including the possibility that fetal or early developmental programming, is involved.

259) Abstract 1216

PARENTS’ SOCIOECONOMIC STATUS FROM THEIR CHILDHOOD IS ASSOCIATED WITH BLOOD PRESSURE IN THEIR YOUTH

Hannah M. Schreier, MA, Edith Chen, PhD, Psychology, University of British Columbia, Vancouver, British Columbia, Canada

We investigated whether parents’ socioeconomic status (SES) during their childhood could predict blood pressure (BP) trajectories in their children across a 12-month study period. Previous research suggests that it may be possible for aspects of the childhood social environment to be carried over from one generation to the next, but it remains unclear whether parent childhood SES can impact youth’s BP and through which mechanisms this process may occur. In this study, 88 youth (aged 9-18, M = 13 ± 2.4, 57% male) and their parents (83% mothers) participated in 3 study visits, each 6 months apart. BP was assessed in parents and youth at each visit and parents reported on current and their own childhood SES (education and crowding). Hierarchical linear modeling (HLM) techniques were used to model change in BP across the 3 study visits to test whether these changes were related to parent childhood SES. Parent childhood SES was significantly related to youth BP profiles over time, such that if parents' childhood environment was higher in SES, their children displayed decreasing SBP (but not DBP) over the 12-month period (B = -.434, p < .01 for education and B = -.433, p < .05 for crowding). These effects persisted even after controlling for current SES (B = -.457, p < .01 and B = .2.365, p < .05, respectively) and parent BP (B = -.413, p = .001 and B = .2.422, p < .01, respectively). The effects of parents' childhood SES (education) and parents' childhood crowding also remained significant after controlling for parent depression (B = -.423, p < .01; B = .2.667, p < .05), parent perceived stress (B = -.425, p < .01; B = .2.601, p < .05), genetic family bonding (B = -.431, p < .05), social bonding (B = -.427, p < .01 and B = .2.463, p < .05) and youth smoking behaviors (B = -.427, p < .01 and B = .2.636, p < .05). Our study suggests that the SES environment parents grow up in may influence physical health across generations, here, SBP in their children, and hence that intergenerational histories are important to consider in predicting cardiovascular health in youth.

260) Abstract 1696

WORK-RELATED STIGMATIZATION IS ASSOCIATED WITH DEPRESSIVE SYMPTOMS AND POOR SELF-REPORTED SLEEP QUALITY AMONG MEDICAL EXAMINER PERSONNEL

Elizabeth Bronodola, PhD, Psychology, St. John’s University, Jamaica, New York, Douglas L. Delahanty, PhD, Psychology, Kent State University, Kent, Ohio

Race-related stigmatization and social distancing have been associated with depression and poor sleep in prior studies. The aim of this study was to examine the health effects of work-related stigmatization and social distancing in personnel working in medical examiner (ME) offices. MEs are responsible for medicolegal death investigations, specifically with determining the cause and manner of death. Across cultures, individuals involved in handling the dead have been stigmatized and are often assigned lower social status. We examined the relationship between perceived work-related stigmatization, depression, and sleep quality in 154 (58% women; 72% Caucasian, 13% Latino(a)) employees of ME offices, including medical examiners, investigators, autopsy technicians, administrators, and laboratory personnel. Perceived work-related stigmatization was assessed with a 3-item measure (I am concerned that other people might be disturbed by the things I do at work; I sometimes think I am different from other people, because of this job, I sometimes worry that other people avoid me, because of what I do at work). Depressive symptoms were assessed with the BDI-II, and sleep difficulties were assessed with 3 items drawn from the Pittsburgh Sleep Quality Index, scale, inquiring about the frequency of difficulties falling asleep, interrupted sleep, and overall sleep quality. Controlling for age and gender, perceived work-related stigmatization was significantly negatively correlated with both depression (r = .30, p = .0003) and self-reported sleep difficulties (r = 0.19, p = .02). Mediational analyses suggested that depressive symptoms significantly mediated the relationship of perceived workplace stigmatization and sleep quality (Sobel test = 3.31, p < .0001). The findings suggest that experiences of work-related stigmatization and social distancing may be depressogenic, and may consequently affect sleep quality.

261) Abstract 1777

HIGH SUBJECTIVE SOCIAL STATUS IS ASSOCIATED WITH LOW SLEEP EFFICIENCY IN ADOLESCENTS AND YOUNG ADULTS

Jutta M. Wolf, PhD, Stephen Gray, Daniel S. Harris, Leah Robsman, Jason Wong, Rachel Elman, Aya Bashina, Nicolas Rohleder, PhD, Psychology, Brandeis University, Waltham, MA

The association between socioeconomic status (SES) and health is a well described finding and one potential mediator is thought to be sleep. Mostly in middle-aged and older adults, several studies revealed a positive relationship between SES and sleep. Furthermore, sleep characteristics in children has been linked to SES. However, relatively little is known about the role of subjective social status with regard to sleep quantity and quality in adolescents and young adults. The current study investigated 22 female and 10 male students (19±1.1 yrs). Sleep quantity was assessed over a full week by actigraphy, while sleep quality was assessed by daily diary. All participants further reported on their subjective social status as well as on objective indicators of SES. No associations were found between parameters assessing sleep quality and quantity and any of the objective indicators of SES (all p>10). However, while sleep quality measures were also not related to subjective social status, the average sleep efficiency correlated negatively with the participants’ report on their standing relative to other people in the United States (r(31)= -.539, p<.05). Comparing sleep efficiency over the course of a week between participants reporting high versus low subjective social status confirmed these findings (group: F(1,19)=4.98, p=.04; time: F(5,95)=0.72, p=.55; group-by-time: F(5,95)=0.54, p=.66). Neither gender, age, BMI, nor perceived stress mediated this association (all p<.05). The present study showed for the first time that subjective social status rather than objective indicators of SES is associated with sleep efficiency in healthy adolescents and young adults. However, contrary to findings in older adults, young adults with high subjective social status showed lower sleep efficiency assessed over a week compared to young adults with low subjective social status. These findings suggest that adolescence and young adulthood is a unique period in life during which keeping up a high subjective social standing may come at the cost of lower sleep efficiency.

262) Abstract 1322

PERCEPTIONS OF HEALTH STATUS AND CHOLESTEROL LEVELS

Clive O. Callender, M.D., Surgery, Howard University Medical School, Washington, DC, Alfonso L. Campbell, PhD, Camara J. Harrell, PhD, Psychology, Howard University, Washington, DC

The present study examined the relationship between patients’ reports of their health status and objective health indicators. Further, we sought
to identify psychological and physical sources of these perceptions of health. We tested models that proposed body mass (BMI), perceived psychological stress, and depressive symptomatology mediate the relationship between health perceptions and cholesterol. These models suggest that health perceptions may correlate with objective indices of disease because poorer health is often associated with weight problems and negative affect. One hundred and twenty African American adults (58 men) completed the Beck Depression Scale, Cohen’s Perceived Stress Inventory, and the General Health Perception domains of the SF-36 Health Survey. HDL and LDL levels were obtained from blood samples. Health perceptions and the candidate mediators were not related to LDL. However, positive perceptions of health were associated with higher HDL levels (std ² = .41, p < .01). To test for mediation, we first determined that HDL levels were predicted by BMI (std ² = .52), perceived stress (std ² = -.20) and depression (std ² = -.21). Then we determined that that General Health Perceptions were negatively related to BMI (std ² = -.24), perceived stress (std ² = -.23), and depression (std ² = -.34). However, using separate multiple regression analyses, the final step in testing mediation revealed that the relationship between General Health Perceptions persisted when BMI (std ² = .28, p < .01), depression (std ² = .40, p < .01), or perceived stress (std ² = .39, p < .01) were controlled. Hence, though health perceptions tended to be related to body mass, stress, and depression, these variables did not account for the relationship between health perceptions and HDL. The findings mandate that physicians attend closely to reports of health status that patients provide. (Supported by NCMHHD Grant #1P20MD000512-04).

263) Abstract 1585

EMOTION REGULATION STYLES PREDICT WHO BENEFITS FROM INTERPERSONAL EMOTIONAL DISCLOSURE

Olga M. Slavin-Spenny, M.A., Lindsay Oberleitner, M.A., Psychology, Wayne State University, Detroit, Michigan, Jay L. Cohen, Ph.D., Psychology, John Dingell VA Medical Center, Detroit, Michigan, Mark A. Lamley, Ph.D., Psychology, Wayne State University, Detroit, Michigan.

Emotional disclosure about trauma can decrease stress symptoms, but people vary in responses, perhaps as a function of their emotion regulation styles. We recruited 95 young adults (mean age: 22, 82.1% female) who reported an unresolved traumatic event, and randomized them to talk to a therapist for one, 30-min session under 1 of 3 conditions: a) disclose about trauma to a facilitating therapist who actively encouraged more disclosure and processing of feelings; b) disclose about trauma to an attentive but passive therapist, who provided no facilitation; or c) control talking to a passive therapist. At baseline, participants completed the Emotional Approach Coping Scale (assessing emotional processing and expression) and the Ambivalence over Emotional Expression Questionnaire, and at baseline and 6-week follow-up, they completed the Impact of Event Scale to assess cognitive intrusions and avoidance symptoms of unresolved stress. Moderated regressions found that emotion regulation styles significantly (p<.05) differentially predicted outcomes (change from baseline) for the three disclosure conditions. Greater ambivalence about expression predicted more avoidance after facilitated disclosure (r=.44, p=.01), but less avoidance after passive disclosure (r=-.30, p=.08), and was unrelated to avoidance after control talking (r=.02). Greater emotional approach coping predicted some decrease in both avoidance (r=-.23) and intrusions (r=-.29) after facilitated disclosure, but significant increases in avoidance (r=.5, p=.002) and intrusions (r=-.43, p=.01) after passive disclosure, which also differed from controls (r=-.02 and r=.02). We conclude that emotion regulation influences how people respond to interpersonal disclosure: those who are amenable to expressing feelings respond best to a passive listener, whereas those with good emotional processing and expression are better served well to a facilitating listener, but are stressed by a neutral, passive listener. These interactions suggest that interpersonal responses should be tailored to the emotion regulation style of the disclosing person.

264) Abstract 1729

ASSESSING SELF-REPORTED STRESS AND CORTISOL IN PREGNANT AFRICAN AMERICAN AND HISPANIC WOMEN

Sophia E. Green, B.S., Huaiyu Zhang, M.S., Joy D. Beckwith, M.A., Eugene K. Emory, Ph.D., Psychology, Emory University, Atlanta, GA

To enable accurate diagnosis and possible treatment, health professionals strive to understand the relationship between a woman's self-reported and biological (i.e., salivary cortisol) presentation of distress. In the current study, we recruited a volunteer sample of 184 pregnant women (158 African American and 26 Hispanic) for a short-term longitudinal study of maternal depression and perinatal outcomes. Salivary cortisol samples and questionnaires (assessing depression, anxiety and perceived stress) were obtained from participants at four time points; second trimester, third trimester, birth and four week post birth. There was modest support for our hypothesis at four weeks post birth; a statistically significant relationship was found between salivary cortisol and self-reported anxiety, r(41)=0.302, p<.05, depression, r(41)=0.398, p<.01, and perceived stress, r(41)=0.330, p<.05.

Using an age-matched subset (N=52; 26 African American and 26 Hispanic subjects), there was also support for our hypothesis about ethnic differences in self-reported stress. There were significant ethnic differences in maternal perceived stress endorsement at the second and third trimester for African American women had higher perceived stress scores during the third trimester, t(38)=4.065, p<.01, while Hispanic women had higher perceived stress scores at birth, t(24)=3.049, p=.01. Additionally, there was a trend (p=.08) suggesting that pregnant African American women endorse more cognitive vs. affective symptoms of depression than Hispanic women. Previous studies of stress and mental illness in pregnant women suggest these variables are related to negative fetal outcome. The current study may contribute to the psychological assessment of pregnant women by delineating interrelationships between self-reported stress and HPA activity across varying ethnic groups.

A-97
266) Abstract 1422

SIMULTANEOUS ASSESSMENT OF GABAERGIC NEUROSTEROIDS IN WOMEN WITH HISTORIES OF DEPRESSION
Monica E. Lindgren, B.A., Patrizia Porcu, Ph.D., Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, Rebecca R. Klatzkin, Ph.D., Psychology, Washington College, Chestertown, MD, A. Leslie Morrow, Ph.D., Pharmacology, Susan S. Girdler, Ph.D., Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Neurosteroids are stress-responsive endogenous neuromodulators affecting GABAergic neurotransmission. Despite substantial information on the progesterone derivative 3 alpha,(5 beta)-T HP (allopregnanolone), including consistent evidence for lower levels in patients with depression, the physiological significance of other endogenous GABAergic neurosteroids remains unknown. Using GC-MS (gas chromatography and mass spectrometry) procedures we simultaneously measured levels of four neurosteroids derived from progesterone (P), and deoxycorticosterone. We assessed neurosteroids (3a,5a-THP and 3a,5b-THP, as well as 3a,5a-THDOC, 3a,5b-THDOC) before and 160 minutes after an oral P challenge (300mg) in healthy women. Testing occurred during the early follicular phase of the menstrual cycle, when endogenous P is low. Half the women (n = 12) were recruited to have histories of depression (DEP) (>7 mos. in full remission) and the other half (n = 17) constituted the never DEP group. Groups did not differ in pre-P serum levels but women with prior DEP had marginally lower post-P progesterone levels (p = .07). P increased 3a,5a-THP, 3a,5b-THP and 3a,5a-THDOC (ps < .05), indicating that these neurosteroids have biological relevance. Following P, a nonsignificant pattern for lower levels of all neurosteroids was observed in women with prior DEP. The neurosteroid/P ratios were examined as an index of metabolism of P to neurosteroids. Before P administration only the ratio of 3a,5a-THP to P was elevated in women with prior DEP. Following P administration women with prior DEP had elevated ratios of 3a,5a-THP and 3a,5b-THP (ps < .05) as well as 3a,5a-THDOC (p < .06). These findings suggest a differential regulation of progesterone conversion of P to neurosteroids and prior DEP. This increased conversion of P to GABAergic neurosteroids may reflect an adaptation to a decrease in naturally-occurring endogenous levels consistently documented in patients with DEP. Alterations in the conversion of P to neurosteroids and/or their stress responsiveness may have implications for stress-related disorders, including depression.

267) Abstract 1426

BODY-ORIENTED THERAPY FEASIBILITY AND ACCEPTABILITY IN WOMEN'S ADDICTION TREATMENT
Cynthia J. Price, PhD, Biobehavioral Nursing and Health Systems, Elizabeth Wells, PhD, School of Social Work, Dennis Donovon, PhD, Psychiatry and Behavioral Sciences, University of Washington, Seattle, WA, Marissa Brooks, MPH, Residence XII, Kirkland, WA

Purpose: To study an intervention, Mindful Awareness in Body-oriented Therapy (MABT), delivered in women’s addiction treatment. A high proportion of women entering addiction treatment have a history of interpersonal violence, and risk of relapse among women is associated with vulnerability to interpersonal stress. MABT is designed to facilitate emotional regulation and reduce avoidant coping and trauma symptoms, behavioral outcomes important for relapse prevention in women. The primary two aims of the study examine: 1) recruitment and retention feasibility, and 2) MABT acceptability. Sample and Methods: Participants were receiving inpatient women’s addiction treatment; eligibility required outpatient program enrollment. The design, a 2-group RCT, involved randomization to MABT plus usual care or usual care only. MABT sessions were 1.5 hours/week for 8 weeks; delivery spanned inpatient and outpatient treatment. A post-test satisfaction survey and written questionnaire aimed at treatment experience examined treatment acceptability. Analysis involved descriptive statistics and content analysis. Summary: Sixty women were screened, 46 were eligible and 45 enrolled. Using a 2:1 randomization ratio, 30 were assigned to MABT and 15 to usual care only. Twenty-five percent screened positive for PTSD; 80% reported sexual or physical assault. Of those randomized to MABT, 12 were discharged from, or ended, outpatient program; receipt of MABT sessions was contingent on outpatient program attendance. Of the remaining 18, 16 completed 6-8 (75-100%) MABT sessions. The MABT retention rate is typical of behavioral interventions in addiction research; retention among participants not discharged from treatment indicates high MABT acceptability. Responses to post-test questionnaires were positive. MABT was perceived to increase emotional awareness, and provide new tools that increased capacity to cope with stress; these were perceived to reduce relapse risk. In conclusion, it is feasible to recruit and implement MABT in women’s addiction treatment; the acceptability and perceived benefit of MABT is high.

268) Abstract 1464

POSITIVE (BUT NOT NEGATIVE) WELL-BEING IS LINKED TO MAINTENANCE OF COGNITIVE FUNCTION IN THE OLDER-OLD
Philip D. Evans, PhD, Angela Clow, PhD, Cathrine Fredholm, Catherine Loveday, PhD, Psychology, Frank Hucklebridge, PhD, Human and Health Sciences, University of Westminster, London, United Kingdom, Elizabeth Atchison, Faculty of Health and Social Care Sciences, Denise Forte, Faculty of Health and Social Care Sciences, Kingston and St George's, University of London, London, United Kingdom

Cognitive function and well-being are common research outcome variables but a recent NIH report suggests they are too often studied in isolation and interactive influences ignored. We measured well-being and cognitive function in 50 older people (>60 years; Mn = 74; 34F/16M) in an in-depth study of a local community. Participants completed the GHQ-30, scored to yield validated measures of both positive and negative (i.e. stressful) well-being. Cognitive performance was defined as the principal component score derived from a comprehensive battery of nine cognitive tests. Diurnal cortisol measures, level and dynamic, were also ascertained as this hormone has been linked to both well-being and cognitive function. Cognitive performance correlated positively with well-being (r = 0.27; p<0.027), but not with negative well-being (r = -0.10; ns). We further examined whether the size of the positive well-being effect partially depended on age. Separate analyses were performed for young-old (60-73yrs; N=23) and old-old (74-91yrs; N=27) participants. Among the former there was no relationship between positive well-being and cognitive performance (r= -0.03; ns). Among the older sub-group the correlation remained significant (r = 0.33; p<0.045). We conclude that positive well-being may be more important than negative well-being in the maintenance of cognitive performance especially during later old age. Cognitive performance was positively associated with stepper falls in cortisol from post-awakening peak to mean level over the rest of the day (r = 0.31; p<0.014). There was also a tendency for cognitive performance to be inversely associated with mean cortisol level outside the sleep period immediately after awakening (r = -0.21; p<0.075). In our presentation, we will argue the case in studies of this kind for systematic examination of both positive and negative well-being, and their effects in younger and older old-age. Wider inclusion of biological measures, such as cortisol, which might bridge the domains of affect and cognition is also indicated.

269) Abstract 1737

MITIGATING FACTORS OF PERCEIVED STRESS: MOOD SELF-EFFICACY AND DEPRESSIVE SYMPTOMS
Kathleen S. Gali, BA, Janice T. Tooh, PhD, Psychiatry, University of California San Francisco, San Francisco, CA

This study explored the associations among mood self-efficacy, depressive symptoms, and perceived stress. Mood self-efficacy (MSE) referred to one’s perceived ability to regulate mood and its relations to thoughts, interpersonal contacts, and activities (Munoz & Le, 1998). We hypothesized that individuals with low MSE would experience higher levels of depression and perceived stress. This is a secondary data analysis based on cross-sectional data collected from a convenient sample of 226 English-speaking smokers from Northern California. All participants smoked at least 5 cigarettes in the past week to be eligible.
Data were collected by in-person or telephone interviews, and self-report questionnaires. The sample included 51% female (mean age = 38.2), 46% white, 25% African American, 19% Asian, and 11% other ethnicity; 48% reported a lifetime history of major depressive disorder, 59% had an elevated CESD score (16 or above). Multivariate logistic regression models were conducted to examine the associations among mood self-efficacy (measured by 9-item MSE Scale with Cronbach’s alpha = 0.85), depressive symptoms (20-item CESD), and perceived stress (16-item Perceived Stress Scale). As hypothesized, participants with low MSE were more likely to report elevated depressive symptoms, adjusted OR = 4.4 (95% CI: 2.3-8.4) with major depression history, smoking rate, and demographics controlled in the model. Similarly, those with low MSE were more likely to experience high level of perceived stress, adjusted OR = 3.1 (95% CI: 1.7-5.7). After CESD score was added to the final logistic regression model with MSE and other covariates, the association between MSE and perceived stress was no longer statistically significant (p = 0.085). CESD score predicted perceived stress; those who had elevated depression were more likely to experience a high level of perceived stress (OR = 9.3, 95% CI: 4.4-19.7). Results suggested a mediation effect of depressive symptoms between one’s ability to regulate mood and perceived stress. Future research is warranted to understand the concept of mood self-efficacy and its potential utility as a meaningful index of treatment efficacy for improving depressive symptoms and perceived stress.

270) Abstract 1702

RELATIONSHIPS BETWEEN BINGE EATING, DEPRESSION, AND AXIS II DISORDERS IN TWO INPATIENT SAMPLES
Neda Kharrazi, BA, Clinical Psychology, PGSP-Stanford PsyD Consortium, Palo Alto, CA, David D. Burns, MD, Dehra L. Safer, MD, Psychiatry & Behavioral Sciences, Stanford University School of Medicine, Palo Alto, CA
Purpose: In recent years, there has been heightened interest in the relationship between depression and binge eating, but the evidence remains mixed. In addition, personality disorders (PD) are frequently diagnosed among clinical and community samples with eating disorders, though the precise nature of the role of Axis II disorders in binge eating (BE) remains unclear. The present study aimed to investigate the relationships between binge eating disorder, depression, and PDs. Method: Two cohorts of patients admitted to the psychiatric inpatient unit of a university hospital were studied between 2004 and 2008 (total N = 160). Participants completed a self-assessment screening survey followed by structured diagnostic interviews with the EASY and/or SCID to confirm DSM-IV diagnoses. Relationships between depression, BE, and all 10 PDs were analyzed using Structural Equation Modeling with the Analysis of Moment Structures. Results: Paranoid PD, Schizotypal PD, Borderline PD, Dependent PD, Avoidant PD, and Compulsive PD were significantly and positively correlated with measures of BE in both samples using a Bonferroni correction (p<.05). However, when controlling for Dependent PD, the remaining 9 PDs were no longer significantly correlated with measures of BE. The maximum causal effects of the dependency and bingeing factors on BMI were 5.73 and 10.95 kg/m², respectively. When controlling for the dependency factor, none of the measures of depression or emotional dysregulation had any significant causal effects on the bingeing factor in either sample. Discussion: The current study confirms previous research that several PDs may play a role in the etiology or maintenance of binge eating disorder, but indicates this may be mediated by the association between the measures of Dependent PD and BE. Measures of depression and emotional dysregulation had no causal effects on the measures of BE when controlling for the dependency factor. This suggests that dependency may play a significant role in Axis II disorders and that it may be useful to assess dependency when treating individuals with BE.

271) Abstract 1270

CAROTID ATHEROSCLEROSIS ASSOCIATED WITH LATE ONSET DEPRESSIVE DISORDER: RESULTS FROM A LARGE COHORT STUDY
Adrie Seldenrijk, MSc, Psychiatry, Hein P. van Hout, PhD, Harm W. van Marwijk, MD PhD, General Practice, VU University Medical Center, Amsterdam, The Netherlands, Eric de Groot, MD PhD, Johan Gort, MSc, Vascular Medicine, Academic Medical Center, Amsterdam, The Netherlands, Cees Rustemeyer, MD PhD, Internal Medicine, Amstelland Hospital, Amstelveen, The Netherlands, Michaela Diamant, MD PhD, Internal Medicine, Brenda W. Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands Aim & Sample Carotid intima-media thickness (CIMT) and plaque presence have been established as subclinical markers of cardio- and cerebrovascular events. The association between psychopathology and systemic atherosclerosis markers still needs more examination. This study examined whether high CIMT and carotid plaques were more prevalent among persons with a psychiatric diagnosis of depressive and/or anxiety disorders (n=470) than in controls (n=179), using data from a subcohort (mean age=46 yrs, 65% women) of the Netherlands Study of Depression and Anxiety (NENSA). In addition, the role of clinical characteristics (symptom severity, duration, age of onset) was explored. Methods Depressive (major depression, dysthymia) and anxiety (generalized anxiety, social phobia, panic and agoraphobia) disorders were diagnosed using the DSM-IV based CIDI interview. CIMT and plaque information were obtained using an Acuson Aspen ultrasound instrument with a 5-10MHz broadband transducer. Regression analyses adjusted for sociodemographics, lifestyle and health factors were used to investigate the association between psychopathology and average CIMT and plaque presence. Results Mean CIMT value in this sample was 0.66 mm and 14.5% had one or more carotid plaques. Depressive or anxiety disorders were not associated with CIMT or plaque presence. However, of the clinical characteristics, age of onset of depressive disorder was strongly associated with CIMT (.01 mm per 10 yrs, p<.01) and plaque presence (OR=1.35 per 10 yrs, 95%CI=1.00-1.78, p=.05). As compared to controls, depressed persons with early onset (<40 yrs) had no increased plaque presence (OR=1.18, 95%CI=0.61-2.27, p=.63) but those with late onset (>40 yrs) had a 1.94 fold increased plaque risk (95%CI=0.94-4.03, p=.08). Conclusion These findings suggest that a higher prevalence of atherosclerosis may be specific for depressive disorders with a late onset. This adds to accumulating evidence that late-onset depression, as compared to early-onset depression, has a distinct pathophysiology involving a vascular component. Supported by NHF grant 2000C258

272) Abstract 1666

FEASIBILITY OF COMPUTERIZED ECOLOGICAL MOMENTARY ASSESSMENT IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER
Rika Nakahara, MDA, PhD, Psychiatry, Teikyo University Mizonokuchi Hospital, Kanagawa, Japan, Kazuhiro Yoshiuchi, MD, PhD, Psychosomatic Medicine, Yokohama National University, Tokyo, Japan, Akira Akabayashi, MD, PhD, Psychosomatic Medicine, University of Tokyo, Tokyo, Japan, Yoshinori Cho, MD, PhD, Psychiatry, Teikyo University Mizonokuchi Hospital, Kanagawa, Japan
Aim: We have recently applied computerized ecological momentary assessment (cEMA) to patients with major depressive disorder (MDD) in order to evaluate affective, behavioral, and cognitive aspects in natural settings. However, it was difficult to keep high level of compliance with repeated real-time assessments in some patients. Therefore, the aim of this study was to assess the relationship between compliance with recordings using cEMA and severity in patients with MDD. Methods: Subjects were 17 outpatients with MDD diagnosed according to DSM-IV. Patients wore a watch-type computer as an electronic diary for consecutive two or four weeks and recorded subjective symptoms into it several times a day. Recordings were prompted with a beep as a signal and they were programmed to be made randomly. One-back memory task installed in the watch-type computer was also conducted every morning. Hamilton Rating Scale for depression score was assessed at each visit. Non-compliance rates during the first two weeks were investigated. Results: Compliance
rate in real-time assessments of depression was 0.69 (SD 0.18). Compliance rate in one-back memory task was 0.68 (SD 0.28). Hamilton Rating Scale for Depression score did not show significant association with compliance rates in assessments of subjective symptoms or in one-back memory task. Conclusions: Although cEMA showed the feasibility in evaluating detailed clinical states in depressed patients, further studies are needed to find other factors than severity of depression that could influence the feasibility of cEMA in depression.

273) Abstract 1754
OVERNIGHT SERUM CONCENTRATIONS OF NPY AND GALANIN IN PTSD WITH AND WITHOUT CO-MORBID DEPRESSION
Jessica M. Gill, PhD, National Institute of Nursing Research, National Institutes of Health, Bethesda, MD
Background: Post-traumatic stress disorder (PTSD) occurs following a traumatic event, and is often co-morbid with major depressive disorder (MDD). Reductions in hippocampal volume are observed in PTSD, which are more severe when MDD is co-morbid. Neuropeptides including neuropeptide-Y (NPY) and galanin regulate responses to stress through preservation of neural plasticity and functioning, and may be protect from the effects of PTSD and co-morbid MDD following trauma. In animal models of acute stress, reductions in NPY or galanin result in the onset of PTSD-like symptoms, as well as hippocampal volume reductions. The role of NPY and galanin in PTSD are not well determined, especially the role of co-morbid MDD. Methods: Serum NPY and galanin concentration were measured hourly overnight (7 p.m. - 7 a.m.) in 9 participants with PTSD and no MDD (PTSD-MDD), 9 subjects with PTSD and MDD (PTSD+MDD), and in 13 non-traumatized healthy controls. Serum NPY correlates highly (.81) with NPY levels in the cerebral spinal fluid (CSF). Findings: There were significant reductions in serum concentrations of NPY and galanin during night-time hours in PTSD+MDD subjects compared to healthy controls (NPY: F 2, 29.1 = 8.8, p < 0.01) (galanin: F 2, 29.1 = 3.5, p = 0.04). NPY was lower between 10 p.m. and 12 a.m., and then again between 6 a.m. and 7 a.m. (p < 0.05). Galanin was lower between 10 p.m. and 12 a.m., and then lower between 1 a.m. and 3 a.m. (p < 0.05). Neither NPY, nor galanin, nor NPY was lower in PTSD-MDD compared to controls. Lowest peak NPY level correlated with PTSD severity (-.34, p < 0.05), and MDD severity (-.30, p < 0.05). The lowest peak galanin level correlated with PTSD severity (-.41, p < 0.05), but not MDD severity (-.20, p = 0.15). Conclusions: Reductions in peripheral concentrations of NPY and galanin may contribute to PTSD symptoms, especially when PTSD is co-morbid with MDD. Novel treatments aimed at retoring NPY and galanin activity may improve treatment outcomes, especially in PTSD+MDD.

274) Abstract 1529
DEPRESSION AND SMOKING: MEDIATING ROLE OF VAGAL TONE AND INFLAMMATION
Laine E. Taylor, DO, MBA, Department of Psychiatry, University of Arizona, Tucson, AZ, Adrian Loeberbrooks, PhD, Mannheim Institute of Public Health, University of Heidelberg, Mannheim, Germany, Richard D. Lane, MD, PhD, Department of Psychiatry, University of Arizona, Tucson, AZ, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH, Joachim E. Fischer, MD, Mannheim Institute of Public Health, University of Heidelberg, Mannheim, Germany
Purpose of study: Depressed adults are more likely to become nicotine-dependent and smokers are at increased risk for depression. Smoking and depression are each known to be associated with inflammation and vagal tone. We aimed to determine the extent to which the association between depression and smoking was direct or was mediated by inflammation, vagal tone or both. Methods: We studied a cross-sectional occupational sample of 647 participants (88.7% male) from South Germany. Smoking was quantified as the number of cigarettes smoked per day. Depression was assessed using the 7-item depression subscale of the Hospital Anxiety and Depression Scale. Heart rate variability as an indicator of vagal activity was assessed using 24-hour electrocardiographic recordings. Inflammatory markers consisted of serum C-reactive protein, white blood cell count (WBC), and fibrinogen. Correlation measures were used to estimate the association between depression and smoking, both unadjusted and adjusted for potential mediators. Results: We observed a significant positive association between smoking and depression (p < 0.05). Vagal tone and two inflammatory markers, WBC and fibrinogen, were found to significantly mediate the association between smoking and depression. These mediating effects were relatively weak, however, indicating that the smoking-depression relationship is only partially mediated by these variables. Conclusions: These are the first data to demonstrate that the association between smoking and depression is partially mediated by vagal tone and inflammatory markers. These mediating variables may provide new opportunities for clinical intervention to alter smoking in the context of depression or vice versa.

275) Abstract 1375
TREATMENT OF SLEEP DISTURBANCE IN PATIENTS WITH TBI
Adekola Alao, MD, Department of Psychiatry, SUNY Upstate, Syracuse, Syracuse, NY, shilpa sachdeva, MD, Psychiatry, SUNY Upstate, Syracuse, Syracuse, NY
Introduction Traumatic brain injury (TBI) affects nearly 1.5 million individuals in the United States each year. During peacetime, over 7,000 Americans with a diagnosis of TBI are admitted to military and veterans hospitals each year; this number increases significantly during combat, during which TBI may comprise up to 20% of survivor casualties. Pain and discomfort relating to injuries are frequent causes of insomnia or sleep disturbance in TBI patients. Sleep disturbance can manifest as difficulty falling or staying asleep, early morning waking and non-restorative sleep, and affects up to 30% of individuals with TBI. Because there are few studies on pharmacotherapy for sleep disturbances in TBI, many physicians base their intervention on experience with the general population. A literature review was performed and recommendations for treatment of sleep disturbances in patients with TBI are summarized here based on published findings. Conclusion Non-pharmacological means should be the first-line treatment for sleep disturbances in patients with TBI. These include sleep hygiene and cognitive behavioral therapy. Physicians and other clinicians should lend careful attention to the specific sleep complaint, adverse effect profile of the medication, as well as the anticipated duration of treatment before deciding upon a sleep agent for patients with TBI.

276) Abstract 1368
EFFECTS OF CUMULATIVE STRESS ON STRESS RESPONSIVE SYSTEMS: RESULTS FROM A POPULATION BASED COHORT STUDY
Sonja L. van Ockenburg, BSc, Lineke M. Tak, MD, Interdisciplinary Center Psychiatric Epidemiology, Stephan J. Bakker, MD, PhD, Rijk O. Gans, MD, PhD, Department of internal medicine, Peter de Jonge, PhD, Judith G. Rosmalen, PhD, Interdisciplinary Center Psychiatric Epidemiology, University Medical Center Groningen, Groningen, The Netherlands
Purpose The theory of allostatic load attributes the detrimental effects of psychosocial stress on health to dysregulation of stress responsive systems.
systems. However, evidence that stress exposure in the long run alters functioning of stress responsive systems is limited. Our objective was to assess whether self-reported adverse life events during lifespan are associated with current activity of the autonomic nervous system (ANS), the hypothalamic-pituitary-adrenal axis (HPA axis), and the immune system. Methods This study was performed in a population-based cohort of 1094 adults aged 28-79 years, average age 53.1 years, 46.3% male. Cumulative lifetime exposure to adverse life events was assessed through the list of threatening experiences. ANS function was assessed by spectral analysis of heart rate variability in the high frequency band (HRV-HF), reflecting parasympathetic activity. HPA axis function was assessed by 24-h urinary free cortisol (24-h UFC) excretion. Inflammation was assessed by high-sensitive C-reactive protein (hsCRP). Results Multivariable regression analyses adjusted for gender and age revealed a negative association between the lifetime score of adverse life events and HRV-HF (standardized beta -0.069, 95% CI -0.054 to -0.002, p = 0.03), but not with 24-h UFC (standardized beta 0.012, 95% CI -0.004 to 0.007, p = 0.70) or hsCRP (standardized beta 0.038, 95% CI -0.014 to 0.003, p = 0.24). Conclusion In a large population based cohort, the cumulative lifetime exposure to adverse life events was significantly associated with ANS function, but not with HPA axis function or inflammation. We, therefore, found limited support for the theory of allostatic load.

277) Abstract 1414

CHILDHOOD SOCIOECONOMIC STATUS IS ASSOCIATED WITH ADULT SLEEP STRUCTURE
Lianne M. Tomfohr, B.A., Sonia Ancoli-Israel, Ph.D., Joel E. Dimsdale, M.D., Psychiatry, University of California, San Diego. La Jolla, CA.

Purpose: Measures of adult socioeconomic status (SES) have been linked to sleep quality, such that as indices of SES decrease, measures of subjective and objective sleep quality also decrease. Childhood SES is a potent predictor of adult physical health, one whose influence expands beyond its association with adult social position. To date, little work has investigated how childhood SES impacts adult sleep structure. To address this gap, we investigated whether childhood SES was associated with adult sleep above and beyond the effects of current SES and health practices. Methods: The sample included 128 Black (42%) and White (58%) adults (43.0% women, mean age = 34.9). Childhood SES was defined by parental education and was coded dichotomously as parents having high school education or less versus at least some college. Sleep was assessed with standard polysomnography and self report questionnaires. Age, gender, body mass index (BMI), race, current objective and subjective SES, daily smoking, average number of alcoholic drinks per week, and average amount of physical activity per week, were entered as covariates. Results: After adjusting for covariates, childhood SES was significantly associated with the percentage of Stage 2 sleep (F [1,108] = 7.51, p < .01) and slow wave sleep (SWS) (F [1,108] = 8.09, p < .01). Individuals with low childhood SES spent more time in Stage 2 (i.e. lighter) sleep (44.0% vs. 49.3%) and less time in SWS (i.e. deep) (19.7% vs. 23.1%) than high childhood SES participants. There were no significant differences between the groups on measures of subjective sleep quality, total sleep time, sleep efficiency, wake after sleep onset, sleep latency, percentage of time spent in REM, or percentage of stage 1 sleep (p > .05). Conclusion: Results contribute to our knowledge about the impact of childhood SES on adult health by extending the literature into sleep. Understanding this relationship is likely to be critical in addressing the intractable problem of sleep and health disparities in our population.

278) Abstract 1662

PERCEIVED DISCRIMINATION, OPTIMISM, CYNICISM & CARDIOVASCULAR REACTIVITY TO ANGER RECALL IN AFRICAN AMERICANS (AA) WITH SICKLE CELL DISEASE (SCD): II. EFFECTS ON CLINICAL COURSE
Michael V. Stanton, B.A., Psychology and Neuroscience, Duke University, Durham, NC, Frederick B. Bartholomew, B.A., Comprehensive Sickle Cell Center, Duke University Hospital, Durham, NC, Charles R. Jonassaint, Ph.D., Duke Institute for Genome Sciences and Policy, Duke University, Durham, NC, Michael J. Helms, B.A., Redford B. Williams, MD, Psychiatry, Duke University Medical Center, Durham, NC.

Purpose: High optimism (OPT) & low cynicism (CYN) levels moderate effects of perceived discrimination (PD) cardiovascular reactivity (CVR) to anger recall (AR) in healthy AAs (Richman et al., 2007). We hypothesized that in AAs with SCD, increased CVR to stress could increase nerve damage & chronic pain via enhanced red blood cell sickling leading to reduced oxygen supply to body tissues, thereby affecting clinical course. Method: Measures of OPT, CYN and PD were obtained in 49 AA SCD patients who completed an AR task while SBP, DBP, MAP and HR were monitored. Multiple regression analyses controlling for sex, age, SES and baseline CV function tested effects of OPT, CYN, PD and CVR on the number of emergency dept (ED) visits and number and duration of hospitalizations (HOSPS) over the past year. Results: A PDxOPT interaction predicted number of HOSPS (b=.01, p=.021), ED visits (b=.01, p=.051), and length of HOSPS (b=.04, p=.054) such that those high PD/high OPT had the greatest healthcare utilization. High CYN patients had more ED visits (b=.13, p=.006) and more HOSPS (b=.09, p=.058). Higher DBP (b=.17, p=.009) and MAP (b=.14, p=.02) averaged over AR task periods predicted longer HOSPS. Higher average DBP also predicted more HOSPS (b=.03, p=.076). Poorer HR recovery predicted fewer ED visits (b=-.04, p=.022) and HOSPS (b=-.04, p=.021). Conclusions: AA SCD patients with high PD/high OPT and high CYN may benefit from increased healthcare utilization. This is consistent with prior work (Richman et al., 2007) showing healthy AAs with high PD/high OPT to have increased CVR and poorer recovery to AR, which could contribute to vasooclusive events. Patients with higher blood pressure levels across the AR task had longer and more frequent HOSPS. In contrast to expectations, poorer HR recovery was associated with less healthcare utilization. These findings suggest that discrimination history, coping styles, and CV function during acute mental stress influence clinical course in SCD patients. Supported by NHLBI (grant P01-HL036587).

279) Abstract 1108

CARDIAC AUTONOMIC FUNCTION BEFORE AND AFTER ENDOSCOPIC THORACIC SYMPATHOTOMY FOR HYPERHIDROSIS
John E. Schmidt, PhD, Psychiatry and Psychology, Tasha L. Pike, BS, College of Medicine, John L. Atkinson, MD, Neurosurgery, Robert D. Fealey, MD, Neurology, Nisha Charkoudian, PhD, John H. Eisenach, MD, Anesthesiology, Mayo Clinic, Rochester, MN.

Endoscopic thoracic sympathectomy (ETS) is the preferred treatment for primary hyperhidrosis, a condition characterized by excessive sweating of the hands and feet. In contrast to most other forms of surgery, there is no effect on the preoptic area, whereas emotional stress activates the anterior cingulated cortex and increases sympathetic cholinergic transmission at non-glabrous eccrine sweat glands. Endoscopic thoracic sympathectomy (ETS) is a bilateral minimally destructive disconnection between the stellate and T2 ganglion and the preoptic area of the hypothalamus, whereas emotional stress activates the anterior cingulated cortex and increases sympathetic cholinergic transmission at non-glabrous eccrine sweat glands. The purpose of this study was to determine the effect of ETS on cardiac autonomic function at rest. The patients in this study were 17 otherwise healthy patients (mean age: 25.2, SD: 4.57; 29% male; mean BMI: 23.1, SD: 3.3) assessed before and 1-12 months after ETS. Heart rate and continuous blood pressure data were collected during rest at both time points as part of a larger experimental protocol. To determine change in cardiac autonomic function, the heart rate variability indices of RMSSD, LF and HF (nu) power were calculated. Sequential baroreflex sensitivity was calculated from the SBP/ECG data. Arterial baroreflex gain was also assessed using the modified Oxford technique. Resting HR was significantly lower between assessments (p<0.001). Resting HRV significantly increased between assessments in both the HF and LF spectral ranges (P<0.05) while the increase in RMSSD was marginally significant (p<0.06). No change was detected in resting sequential baroreflex sensitivity or the baroslope obtained by modified Oxford. These results suggest a significant change in cardiac autonomic function before and after ETS as evidenced by the increase in resting parasympathetic tone. These results are consistent with previously reported post-ETS blunting of exaggerated sympathetic control associated with hyperhidrosis. Whether the system-wide change is due to anatomic alteration or improved psychological status associated with surgical outcome is speculative. No significant changes in the two

A-101
baroreflex indices suggest ETS did not significantly affect blood pressure regulation in these patients.

280) Abstract 1630

MODELLING THE EFFECT OF STRESS ON CHRONIC FATIGUE SYNDROME
Urš M. Nater, PhD, Brian Gurubaxani, PhD, Christine Heim, PhD, William C. Reeves, MD, Centers for Disease Control and Prevention, Atlanta, GA

Chronic fatigue syndrome (CFS) is a debilitating disorder for which no single aetiological factor has been identified. Stress has been suggested to play a role in the manifestation and maintenance of CFS. Various studies have shown associations between different aspects of stress (e.g., childhood trauma, maladaptive coping, adult chronic stress) and fatigue. However, no studies have simultaneously measured and analyzed multiple characteristics of stress in one single study of CFS. In the current population-based study, 501 participants took part and provided information on early life stress, personality characteristics, chronic stress, coping, cortisol as biological stress marker, and CFS symptoms. Data were analyzed using structural equation modelling (SEM, LISREL). After comparing various theoretically sound models, the strongest model focused on the combined effect of childhood trauma and personality features. This model shows a strong effect of maladaptive personality features on CFS symptoms, in part mediated by adult chronic stress and coping. The impact of childhood trauma was significant, but the effect was lower than that of personality. SEM analysis indicates a good fit of this model ($Chi^2 = 855.19$, $p=0.0$, $GFI = 0.88; AGFI = 0.85$, $CFI = 0.95$, $SRMR = 0.05; RMSEA=0.071, p (RMSEA) = 0.0$). Our findings indicate the importance of stress on CFS. We have combined various aspects of stress in our study and were able to test a model encompassing a broad variety of stress characteristics. Future studies should include longitudinal designs in order to test causal relationships. It seems critical to devote research resources to a detailed understanding of the processes that lead from stress to CFS in order to improve current treatment strategies.

281) Abstract 1027

PATTERNS OF CHANGE IN AFFECT AND ADRENOCORTICAL ACTIVITY OVER EXTENDED PERIODS OF SMOKING ABSTINENCE
Motokiro Nakajima, Ph.D., Mustafa Abi’l-Abi, Ph.D., Behavioral Sciences, University of Minnesota Medical School, Duluth, Minnesota

Research has evidenced a marked dysfunction in hypothalamic-pituitary-adrenocortical (HPA) axis in chronic smokers. Such dysregulated response may play an important role in early relapse. However, it is still unclear whether smoking-related alterations in HPA system are normalized by long-term abstinence, and whether these alterations contribute to smoking. Using a prospective approach, we analyzed multiple characteristics of stress in one single study of CFS. Participants who were abstinent across 4 weekly sessions (the abstinent group; N=18) and those who relapsed within the first week post-cessation (the relapsed group; N=39) were included. Participants attended a weekly assessment session for four weeks after their quit date. In each follow-up session, they completed multiple psychological assessments and provided biochemical measures (i.e., saliva cortisol, saliva cotinine, and carbon monoxide). We predicted the abstinent group would report lower negative affect and exhibit lower levels of cortisol over time than the relapsed group during the post-cessation assessments. The Total mood disturbance score as indicated by The Profile of Mood State questionnaire (POMS-TMD; McNair et al., 1992) did not differ between the two groups during the first two follow-up sessions. The abstinent group exhibited lower POMS-TMD during the third and fourth sessions however ($p < .05$). Similarly, cortisol also did not differ between the groups during the first three sessions, however, the abstinent group exhibited lower cortisol level than the relapsed group during the fourth session ($p = 0.05$). The results suggest that smoking-related increased negative affect and dysregulated HPA system may begin to normalize within a month after smoking cessation. The results have implications with regard to development of a theory on affective changes and addiction.

282) Abstract 1607

IS MINDFULNESS RELATED TO LOWER PSYCHOLOGICAL DISTRESS, INFLAMMATION AND INSULIN RESISTANCE FOLLOWING SUCCESSFUL WEIGHT LOSS?
Jeffrey M. Greason, PhD, Daniel M. Webber, MS, Psychiatry, Duke University Medical Center, Durham, NC, Michael J. Baime, MD, Medicine, University of Pennsylvania, Philadelphia, PA, Linda Sanders, MPH, General Internal Medicine, Ruth W. Wolter, PhD, Psychiatry, Duke University Medical Center, Durham, NC

Purpose: Among clinical populations, mindfulness-based interventions have been associated with lower levels of stress, inflammatory biomarkers and metabolic dysregulation. However, little is known about the relationship between individual differences in mindfulness and prognostic biomarkers of inflammatory-related chronic diseases. Methods: This cross-sectional study used structural equation modeling to test the hypothesis that greater mindfulness of thoughts and feelings is associated with lower systemic inflammation (serum IL-6, hsCRP) and estimated insulin resistance (HOMA2) as a function of lower psychological distress (PSS-10, POMS). Ninety-nine overweight adults [M(SD) age = 48(13); BMI = 30(6); 82% women] with an average 10% weight loss in the prior 3 years were enrolled in a randomized multicenter trial of Mindfulness-Based Weight Loss Maintenance. Pre-intervention baseline data were used for this analysis. Associations of inflammation and insulin resistance included age, gender, race/ethnicity, education, income, BMI, history of diabetes, smoking, alcohol use, and exercise. Results: As expected, higher dispositional mindfulness was strongly associated with lower distress (beta = -.65, $p<.001$), and systemic inflammation was positively associated with insulin resistance (beta = .22, $p<.05$). Failing to support our primary hypothesis, however, neither mindfulness nor distress related to inflammation or insulin resistance (betas < .10, p-values > .45). Age, race/ethnicity, BMI, and smoking were associated with one or both biomarkers. The final path model provided a good fit to the data and explained 42% of the variance in distress, 39% in inflammation, and 17% in insulin resistance. Conclusion: Individual differences in mindfulness may relate to lower levels of perceived stress and mood disturbance, yet circulating inflammatory and metabolic biomarkers may not correspond following a period of significant weight loss. This may be due to a reduction in insulin resistance and inflammation that persists following substantial weight loss.

283) Abstract 1175

INSTRUCTIONAL MANIPULATIONS IN WRITTEN EMOTIONAL DISCLOSURE INTERVENTIONS: AN EXPERIMENTAL TEST OF CONTENT EFFECTS ON CORTISOL, MOOD, AND LINGUISTIC CONTENT
Deborah Nazarian, PhD, Sierra Pacific MIRECC, VA Palo Alto, Stanford University School of Medicine, Palo Alto, CA, Joshua M. Smyth, PhD, Psychology, Syracuse University, Syracuse, NY

Expressive writing (EW) interventions encourage individuals to express their thoughts and emotions through writing about a stressful/traumatic event and are associated with various physical and psychological benefits. Recently, EW interventions have tested a range of altered intervention content, such as focusing on perceived benefits of past stress/truma, or trying to facilitate emotional processing. The purpose of this study was to manipulate EW intervention instructions to investigate if content alterations change the writing process and participant responses. Community and student participants (n=204) were randomized to 1 of 6 groups representing varying EW writing instructions thought to promote mechanisms of benefit: enhanced cognitive-processing (CP), exposure, self-regulation, and benefit-finding; each modified group was compared with a standard EW and emotionally-neutral control group. Participants wrote for 20 minutes per session, 1/week for 3 weeks. Outcomes included writing content and changes post-writing in salivary cortisol and mood. Experimental groups reliably differed from the control group as expected. Altered instructions produced both intended and unintended responses compared to a standard EW group. Some intervention manipulations produced the desired differential responses from standard EW instructions: CP based instructions led to more CP (p<.001) and instructions thought to promote self-regulation led to more positive affect (p=.003). In contrast, exposure-
based instructions lead to more extensive emotional habituation over time (p<.04) but also promoted the unanticipated response of greater CP (p<.04). These results suggest that altering EW instructions to presumptively target specific processes works on some levels, in that most intended processes were shifted as intended. Importantly, however, altered instructions also elicited process responses inconsistent with theoretical/clinical predictions, suggesting that instructions activated multiple processes. Thus, although modified intervention instructions can be used to enhance some processes, they may elicit a wider range of mechanisms than those thought to be unique to one instructional set.

284) Abstract 1004

LEPTIN MODERATES THE EFFECT OF STRESS ON SNACK INTAKE IN OBESE WOMEN
Bradley M. Appelhans, PhD, Basic Medical Sciences, University of Arizona, College of Medicine-Phoenix, Arizona, AZ

The effect of stress on energy intake varies significantly across individuals and the sources of this variability remain unclear. Prior studies have demonstrated that circulating levels of the adipocyte hormone leptin influence hunger and satiety, processing of food rewards, and task and palatability perception. This pilot study tested whether leptin accounts for variability in stress-induced changes in snack intake, and explores potential mechanisms underlying this effect. Thirty-four normal weight (BMI: 18.5-24.9) and class 1 obese (BMI: 30-34.9) women were exposed to a 30-minute mental stressor and a non-stressful control task in a counterbalanced order on consecutive days. Snack consumption following the tasks was surreptitiously measured. As would be expected, obese women had significantly higher circulating leptin concentrations than normal weight women (F(1,32)=50.54, p<.0001, eta2=.61). In repeated measures ANCOVAs controlling for body mass, lower leptin concentration was associated with increased snack intake following the stressor among obese women (F(1,15)=4.99, p=.04, eta2=.22), but not normal weight women (p=.55, eta2=.03). Results were unchanged when age, waist circumference, perceived life stress, or dietary restraint were entered individually as covariates in the model. Leptin concentration was not associated with stress-induced changes in hunger, but there was a trend for a positive association between leptin and palatability ratings for popcorn (F(1,14)=5.21, p<.04, eta2=.26) and cookies (F(1,14)=3.40, p=.086, eta2=.19). Overall, findings suggest that leptin may moderate the effect of stress on energy intake through mechanisms independent of hunger.

285) Abstract 1290

THE RELATIONSHIP BETWEEN PSYCHOMOTOR VIGILANCE PERFORMANCE AND QUALITY OF LIFE IN OBSTRUCTIVE SLEEP APNEA
In-Soo Lee, MD, Joel E. Dimsdale, MD, Psychiatry, University of California San Diego, La Jolla, CA

Purpose: Patients with obstructive sleep apnea (OSA) commonly report difficulty with sleep. The Psychomotor Vigilance Task (PVT) performance was related to quality of life in OSA. Subjects and methods: Fifty-seven participants had their sleep monitored with polysomnography. Quality of life was assessed by the short form health survey questionnaire (SF-36). Depressed mood was assessed by the Center for Epidemiologic Studies-Depression (CES-D) Scale. After sleep monitoring and psychological assessments, the 10-minute PVT was administered. The main outcome variables were the PVT lapse count and average response time (RT). Simple correlations and hierarchical linear regression were used to examine the association between age, body mass index (BMI), sleep variables, apnea hypopnea index (AHI), oxygen desaturation index (ODI), CES-D, and PVT performance. Results and conclusion: Both the PVT lapse count and RT were significantly associated with the SF-36 subscales (i.e., role limitation-physical, bodily pain, social functioning, and role limitation-emotional). In hierarchical regression, the PVT RT was an independent predictor of the SF-36 role limitation-physical (full model R2=0.294, p<.011), and of the SF-36 role limitation-emotional (full model R2=0.311, p<.007). The PVT lapse count was also an independent predictor of the SF-36 social functioning (full model R2=0.400, p<.000). The findings suggest that quality of life is associated with impaired psychomotor vigilance performance in apneic patients even after controlling for demographic variables, apnea severity, and depression.

286) Abstract 1660

THE INFLUENCE OF SOCIAL COMPARISONS ON HEALTH
Danielle Arigo, M.S., Joshua M. Smyth, Ph.D., Psychology, Syracuse University, Syracuse, NY, Jerry M. Suls, Ph.D., Psychology, University of Iowa, Iowa City, Iowa

PURPOSE: Self-perceptions of one's status in various domains have been shown to have important implications for health and well-being. Such perceptions are commonly shaped through comparison with others in the social environment, and comparisons made to 'better off' others (upward comparisons) vs. 'worse off' others (downward comparisons) can produce different responses. Social comparisons may be uniquely important for persons with chronic illness, as they respond to dynamic changes in their health and functioning. METHOD: Study 1 examined the difference in responses between upward and downward social comparisons in a sample of healthy young women (N=210). Study 2 extended this analysis by conducting a systematic review examining the effects of upward and downward social comparisons by patients with illnesses such as cancer, cardiovascular disease, and rheumatoid arthritis (K=34 studies). RESULTS: Social comparisons were frequent in healthy young women, who used upward targets more frequently than downward. More frequent upward comparison was associated with greater sleep difficulty, higher perceived stress, and more unhealthy eating habits (p<.04). In contrast, downward comparison was not associated with these negative experiences. Systematic review of studies on comparisons by chronic illness patients suggests that patients more often report using downward comparisons, although they state preferences for upward comparison targets when given the choice. CONCLUSION: Overall, downward comparisons appear to lead to positive affect and favorable self-evaluations more often than upward comparisons, although upward comparisons can have salutary effects (e.g., for coping options or inspiration). Individual differences (e.g., neuroticism) and contextual (e.g., illness severity) factors may help to determine the circumstances under which upward and downward comparisons are most beneficial. Together, findings in both samples suggest that certain social comparisons may be appropriate targets for health-related interventions, which may be particularly useful for patients with chronic illness.
PSS, and survival when the two groups were compared. At baseline, PSS was not different between patients who remitted (HDRS score<8) during the 12-week treatment, compared to patients who remained depressed (HDRS≥8) (p-value=0.1739). PSS was trichotomized based on change score over the 12 week period into three groups: PSS improved, worsened, or remained unchanged. Patients whose PSS improved or remained unchanged were significantly more likely to remit than those whose PSS worsened (improved=62.5%, unchanged=58.57%, worsened=41.25%, p-value=0.0085). There were no further differences among PSS status when compared to age, sex, race, marital status, CHF etiology, baseline HDRS, or CV events during the follow-up. PSS change over the 12-week had no impact on survival over an average of 2.36 years. Conclusion: PSS improvement may play a significant role in the remission of depression. PSS change does not appear to influence the survival of CHF patients; although this maybe related to the high proportion of patients who did not repeat the PSS measurement.

PROSPECTIVE RISK MARKERS FOR CHRONIC FATIGUE SYNDROME IN THE 1958 BRITISH BIRTH COHORT
Charlotte Clark, PhD, Laura Goodwin, PhD, Stephen A. Stansfeld, PhD, Centre for Psychiatry, Barts & the London School of Medicine, London, United Kingdom, Matthew Hotopf, PhD, Department of Psychological Medicine, Institute of Psychiatry, London, United Kingdom, Peter D. White, PhD, Centre for Psychiatry, Barts & the London School of Medicine, London, United Kingdom

Purpose Chronic Fatigue Syndrome/Myalgic Encephalomyelitis (CFS) is a common condition but little is known about its aetiology. Many proposed risk markers for CFS are also risk markers for adulthood psychopathology, which is an established risk marker for CFS and is often comorbid with CFS. Risk markers for CFS need to be determined taking adulthood psychopathology into account. Lifecourse risk markers for CFS at 42y were examined using the 1958 British Birth Cohort. Specific hypotheses relating to childhood and adulthood risk markers (childhood adversity, childhood illness, physical activity, body mass index,) for CFS were examined, taking psychopathological risk markers into account. Methods Data were from the 1958 British Birth cohort, which includes 98% of births in England, Scotland and Wales during one week in 1958 (n=18,558), followed up at 7y, 11y, 16y, 23y, 33y and 42y. The analyses are based on 11,419 who participated at 42y. CFS and age of onset was self-reported at 42y. Prospective measures of childhood adversity, physical activity, body mass index, childhood illnesses, and adulthood psychopathology were available. Multiple imputation addressed missing data and attrition. Logistic regression analyses examined associations between risk markers and CFS/ME at 42y. Results CFS/ME was reported by 1% of the participants. Significant risk markers for CFS/ME included experiencing 3 or more childhood adversities (OR=2.64 95%CI 1.26-5.53), infectious illnesses at 16y (OR=1.25 95%CI 1.02-1.53), gastrointestinal symptoms at 7y or 11y (OR=1.63 95%CI 1.03-2.60), and long-term absence from school at 11y (OR=5.54 95%CI 1.56-19.66). These associations remained significant after adjusting for psychopathology at 42y, with the exception of childhood adversity. Childhood BMI, adulthood BMI, childhood activity levels and other childhood illnesses, including glandular fever, were not risk markers for CFS/ME. Conclusions There is evidence that some specific childhood illnesses and symptoms are independent risk markers for CFS: such associations are not restricted to symptoms typical of CFS. The association between childhood adversity and CFS may be accounted for by adulthood psychopathology.
289) Abstract 1546

CLOTHESPIN-ALGOMETRY: A METHOD TO DISTINGUISH PAIN
Niklaus Egloff, MD, Nicole Klingler, MS, Marie-Louise Gander, MD, Roland von Känel, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland; Michele Currado, MD, Anesthesiology Division, Inselspital, University Hospital Bern, Bern, Switzerland; Elizabeth Marti, MD, Orthopedics Department, Rafael J. A. Cámara, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland

Background and Aims: Our aim was to define whether assessing pain sensitivity by Clothespin-Algometry would facilitate the distinction between somatoform and somatic pain disorders. Methods: We examined 120 adults referred to the Bern University Hospital for pain treatment. 47 had a known somatoform pain disorder, previously diagnosed following the ICD-10 and DSM-IV criteria. For eligibility patients had to be free of affections of the middle fingers. A physician blinded to diagnoses applied pressure on the right middle finger with a calibrated clothespin (12 N/5mm) for 10 seconds. The pain sensitivity was analyzed using a previously described 10 cm visual analogue scale. Due to limited power, a binary logistic regression model was performed including age, gender, pain duration, and VAS to estimate which of these variables was related to pain category (somatic vs. somatoform). We compared histograms of the related variables to elaborate diagnostic criteria to allow swift categorization of pain. Results: The odds ratios (95% CI) of somatoform versus somatic pain were 0.94 (0.91-0.98) with each additional year of age, 1.03 (1.01-1.05) month of pain duration, and 1.57 (1.21-2.04) with each additional VAS point (p-values <0.001). Gender did not add to the model. The resulting diagnostic criteria were age < 60 years, pain duration > 30 months, and VAS > 4 points. Fulfilling 3 respectively 2 of these criteria, pain was somatoform in 100% (95% CI 76.2-100) and 61% (95% CI 48-73) of the cases. Fulfilling no criterion was associated with somatic pain in 96% (95% CI 91-98) of the cases. Conclusions: Clothespin Algometry, a small low-cost tool, is a simple instrument to help to distinguish between somatoform and somatic pain in combination with age and pain duration.

290) Abstract 1471

EXERCISE MODERATES METABOLIC RISK IN ALZHEIMER'S CAREGIVERS
Roland von Känel, MD, General Internal Medicine, University Hospital Bern, Bern, Switzerland; Brent T. Mausbach, PhD, Anesthesiology, University of Michigan, Ann Arbor, MI; Elizabeth Marti, MD, Orthopedics Department, Rafael J. A. Cámara, MD, Psychosomatic Division, Inselspital, University Hospital of Bern, Bern, Switzerland

Contrary to what was observed in the healthy controls, in FM positive affective factors were associated with higher cortisol levels, while negative affective factors were not associated with low level of exercise. CG had a greater number of MetS risk factors than NCG (2.1 (95% CI 1.9-2.3) vs. 1.3 (95% CI 1.0-1.7), p<0.001), no group difference emerged in those with high levels of exercise (p=0.84). Men (p=0.008) and less educated subjects (p=0.002) had also more MetS factors. Age, smoking, alcohol intake, negative affect, and the number of health problems were not significantly associated with MetS factors. Conclusions: Factors of MetS, a significant and powerful risk factor for CVD, were particularly high in CG reporting less regular physical exercise. Interventions to increase physical activity in Alzheimer's CG might normalize metabolic disturbances to a level seen in NCG.

291) Abstract 1274

AFFECTION FACTORS AND THE CORTISOL AWAKENING RESPONSE IN FIBROMYALGIA
Afton L. Hassett, Psy.D., Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ; Angela Clow, Ph.D., Psychology, University of Westminster, London, England; David A. Williams, Ph.D., Daniel J. Clauw, MD, Anesthesiology, University of Michigan, Ann Arbor, MI; Jennifer Dimsdale, PhD, Paul J. Mills, PhD, Thomas L. Patterson, PhD, Sonia Ancoli-Israel, PhD, Psychiatry, Michael G. Ziegler, MD, Medicine, Susan K. Roepke, MS, Psychiatry, Matthew Allison, MD, Family and Preventive Medicine, Igor Grant, MD, Psychiatry, University of California San Diego, La Jolla

Emotional subscale (r=.49; p=0.02), and SF-36 Social Functioning (r=-.35; p=0.05) subscales. In contrast, higher morning cortisol levels in FM were related to positive affective variables SF-36 Mental Health (r=-.41; p=0.02) and inversely related to the positive affective variables depression (CES-D; r=.372; p=0.03) and anxiety (STPI; r=.41; p=0.02) and inversely related to the positive affective variables SF-36 Mental Health (r=−.41; p=0.02) and SF-36 Role Emotional (r=−.35; p=0.05) subscales. In contrast, higher morning cortisol levels in FM were not related to negative affective variables. Instead, higher morning cortisol in FM was related to positive affective variables including: SF-36 Mental Health (r=−.48; p=0.02), SF-36 Role Emotional subscale (r=−.49; p=0.02), and SF-36 Social Functioning (r=−.45; p=0.03). The relationships between cortisol and affective variables were most prominent at initial awakening; few of these relationships existed in cortisol scores evaluated later in the day. Conclusions: The assessment of affective variables in cortisol awakening response suggests a paradoxical relationship in FM. Cortisol levels to what was observed in healthy controls. Conclusions: In FM, positive affective factors were associated with higher morning cortisol levels, while negative affective factors were not at all associated with the cortisol awakening response. It is possible that because hypocortisolism is common in FM, the higher cortisol scores related to positive affective factors could be reflective of better HPA axis functioning.

292) Abstract 1141

CHILDHOOD SOCIAL OSTRACISM IN FIBROMYALGIA
Afton L. Hassett, Psy.D., Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ; Robert S. Katz, MD, Medicine, Susan Shott, Ph.D., Biostatistics, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL

Methods: 763 female respondents with self-described FM and 115 denying FM diagnosis (controls) completed an online survey in which questions related to childhood social interactions were queried. Only the responses from women were analyzed to eliminate confounding by gender. Respondents were allowed to endorse more than one option. The online questionnaire was developed by the volunteer organization Advocates for Fibromyalgia Funding, Treatment, Education and Research (AFFTER). The survey was conducted from March 2009 through June of 2009. Results: Participants were predominantly...
married (64.5%) or divorced (14.3%), with a mean age of 49.8 ± 11.4 years. When asked about their childhood, FM respondents were significantly more likely than controls to report having been a loner (31.6% vs. 12.2%; p < 0.001), having had no friends (7.1% vs. 0%, p = 0.003), having had difficulty making friends (34.7% vs. 17.4%, p < 0.001) and keeping friends (16.4% vs. 3.5%, p < 0.001). In contrast, 49.8% of FM respondents indicated that most of the children they knew liked them, which is not significantly different from the 47.8% rate for controls. Similarly, the difference between the 30.3% of FM respondents and 35.7% of controls who reported having had many friends was not significant. Conclusions: A subgroup of FM patients (approximately one third) likely experienced social ostracism during their childhood years. The lack of social support, loneliness and even bullying associated with having few or no friends can have long-term emotional and physiological consequences that could play a role in the manifestation of FM. Approximately one half recalled good social adjustment in childhood and could represent a more resilient subgroup of individuals with FM.

293) Abstract 1359
THE EFFECT OF ANXIETY SENSITIVITY ON POST-EXERCISE CARDIOVASCULAR RECOVERY IN MEN AND WOMEN
Jennifer L. Gordon, BSc, Psychology, McGill University, Montreal, Quebec, Canada, Kim L. Lavoie, PhD, Psychology, Université du Québec à Montréal, Montreal, Quebec, Canada, André Arnold, MD, Nuclear Medicine, Montreal Heart Institute, Montreal, Quebec, Canada, Blaine Ditto, PhD, Psychology, McGill University, Montreal, Quebec, Canada, Simon L. Bacon, PhD, Exercise Science, Concordia University, Montreal, Quebec, Canada
Purpose of study: Poor post-exercise cardiovascular (CV) recovery, indicative of dysfunctional autonomic control of the CV system, independently predicts CV morbidity. While anxiety sensitivity (AS), the fear of anxiety-related sensations, is thought to be associated with a dysregulation of the autonomic nervous system, this is the first study to look at the CV between AS and exercise. Furthermore, since men and women have been found to respond differently physiologically to anxiety, potential sex differences in the relation between AS and CV recovery were also explored. Subject sample and methods: 480 patients (mean age = 60) underwent a standard modified Bruce exercise stress test. Heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP) and rate-pressure product (RPP) were measured or calculated at rest, during and 5 minutes post-exercise. CV recovery was defined as the 5-minute post-exercise measure minus the resting baseline measure. AS was assessed using the Anxiety Sensitivity Index (ASI). General Linear Models were conducted for each CV measure (SBP, DBP, HR and RPP) and included CV reactivity (defined as the difference between the baseline and peak level) of the given variable, age, history of CV disease, exercise capacity (BP measured usage on the day, anxiolytic prescription, and anti-depressant prescription as covariates. Summary of results: There was a significant interaction effect of sex and AS on DBP recovery (F=4.42; p=0.036) such that AS was associated with poorer recovery in women but not men. There was a main effect of sex on HR (F=4.54; p=0.034) and RPP recovery (F=4.96; p=0.026) such that men had worse recovery than women. There were no other significant main effects or interactions. These results suggest that anxiety causes greater alterations in cardiovascular autonomic tone in women than men. Furthermore, since AS was associated with dysregulation of the autonomic nervous system, this is the first study to look at the CV between AS and exercise. Furthermore, since men and women have been found to respond differently physiologically to anxiety, potential sex differences in the relation between AS and CV recovery were also explored.

294) Abstract 1758
EXECUTIVE ATTENTION MODERATES THE ASSOCIATION BETWEEN TRAIT WORRY AND STRESS RECOVERY
Lindsay M. Vaux, BS, Paula G. Williams, PhD, Holly K. Rau, BS, Matthew Cribbet, BS, Heather Gunn, PhD, Psychology, University of Utah, Salt Lake City, Utah
Prior research suggests that cognitive functioning may moderate the effects of trait worry. Specifically, when accompanied by better cognitive functioning, propensity to worry may be associated with adaptive behavior and better self-regulation. The current study aimed to examine the interactive effects of trait worry and a component of cognitive functioning: executive attention (EA): in responses to stress. 104 healthy young adults (48% F and M age = 22.9) completed the Social Competence Interview, a well-validated laboratory stress task that involves discussion of a recent personal stressor. Systolic and diastolic blood pressure (SBP, DBP) were recorded throughout the session, as were affective responses to the stressor (Positive and Negative Affect Schedule). Participants completed the Penn State Worry Questionnaire, a well-validated self-report measure of propensity to worry. Additionally, EA was assessed using the Attentional Network Test (ANT), a computerized reaction time flanker task. Worry and EA were not significantly associated, r=.00, ns. Worry was not associated with either change in affect or stress-related BP reactivity or recovery. EA did not moderate worry associations with affective or BP reactivity; however there was a significant EA x Worry interaction on SBP recovery, B = .24, p < .05. Under conditions of better EA (1 SD above the mean in reaction time) trait worry was associated with better SBP recovery following the stressor, B = -.40, p < .05, but was unrelated to recovery when associated with poorer EA, B = .07, p = .55. These findings suggest that for individuals prone to worry, better executive functioning abilities may have a protective component that contributes to better stress regulation.

295) Abstract 1449
EFFECTS OF ACUTE STRESS ON ADRENOCORTICAL RESPONSE AND TASTE PERCEPTION
Stephanie A. Hooker, B.A.S., Mustafa d’Absi, Ph.D., Motohiro Nakajima, Ph.D., Tiffany Cragin, M.S., Rachel Krambeere, University of Minnesota Medical School, Duluth, MN
Purpose of study: The purpose of this study was to discern if there is an effect of stress on taste intensity and pleasantness ratings. METHOD: Participants [n = 38, 55.3% female, mean age = 20.1 (SD = 1.74)] were recruited through the campus and community to participate in two laboratory sessions: one stress and one rest session. Each laboratory session included a baseline (15 min), a period of stress or rest (30 min), a taste perception test (15 min), and a recovery period (50 min). On the stress day, participants completed a speech task, a mental arithmetic task, and a cold pressor task. During the taste perception, participants rated the intensity and pleasantness of sweet, salty, sour, and savory solutions at suprathreshold concentrations. Throughout the session, cardiovascular measures, hormonal stress response (salivary cortisol), and mood were assessed. RESULTS: Participants exhibited higher levels of cortisol (p < .05), greater cardiovascular reactivity (ps < .01) and lower positive affect (p < .001) on the stress day than on the rest day. Reported intensity of the sweet solution was significantly lower on the stress day than on the rest day (p < .01). However, other solutions did not differ in intensity between the stress day and the rest day. On the stress day, cortisol level was negatively associated with the intensity of salty (r = -.38, p < .05), sour (r = -.43, p < .01) and the pleasantness of the sweet solution (r = -.38, p < .05), suggesting that stress-related changes in adrenocortical activity were associated with desensitized taste intensity perception. These results were not found on the rest day. CONCLUSIONS: These results suggest that acute stress may be related to reduction in sweet taste perception. Additionally, there may be an individual difference factor in this effect, because individuals with greater cortisol output following stress experienced more reduced taste perception.

296) Abstract 1338
B-TYPE NATRIURETIC PEPTIDE REACTIVITY TO MENTAL STRESS AND EXERCISE
Sari D. Holmes, PhD, Kerry S. Whittaker, BA, Kristie M. Harris, BA, Medical and Clinical Psychology, Kim Forman, MD, Patricia A. Deuster, PhD, Military and Emergency Medicine, David S. Krantz, PhD, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
Background: Psychosocial factors, including stress, are related to poor clinical outcomes and reduced cardiac function in heart failure. It is therefore important to determine factors that may influence the development and progression of heart failure. B-type natriuretic peptide (BNP) is an indicator of left ventricular wall stress and an important
prognostic marker of survival in heart failure. It is unknown whether BNP is responsive to stress. Objective: To assess hemodynamic and BNP responses to mental stress (MS) and exercise in young, healthy, disease-free individuals. Methods: 33 participants (ages 18-40) underwent testing with math/speech combined and mirror trace stressors. Cardiac output (CO) and total peripheral resistance (TPR) were measured using impedance cardiography. Heart rate (HR), blood pressure (BP), and plasma BNP reactivity were also measured. In addition, 8 of 33 participants performed maximal treadmill exercise. Because of strong positive skew, BNP data were log transformed. Results: HR and BP increased in response to the MS tasks (p<0.001). The math/speech tasks increased CO (t=4.87, p<0.001), whereas the mirror trace task decreased CO (t=5.44, p<0.001) and increased TPR (t=6.19, p<0.001). BNP increased significantly with MS (F=9.14, p=0.006), although BNP reactivity did not differ between the MS types. Exercise increased BNP (t=15.52, p<0.001) and markedly more than with the MS tasks (F=155.66, p<0.001). Conclusions: Acute MS significantly increased BNP in healthy individuals, although to a lesser extent than exercise. Further studies are needed to determine the effects of MS on BNP in heart failure patients and whether BNP responses to stress may be useful in risk stratification for heart failure.

297) Abstract 1600
ARE CHANGES IN CORTISOL ASSOCIATED WITH B LYMPHOCYTE DECREMENTS AMONG STRESSED STUDENTS?
Bonnie A. McGregor, PhD, Samuel T. Medick, BS, Jessica R. Holliday, BS, Denise Albanow, MPH, Rachel M. Ceballos, PhD, Cancer Prevention Program, Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA
We have previously reported that high self-reported perceived stress among graduate students was associated with extremely low levels of C19+ B lymphocytes. Animal and human in vitro models suggest that stress-related Cd19 lymphocyte decrements are due to high levels of cortisol which cause apoptosis of pre-B-cells as they emerge from the bone marrow. The present longitudinal study measured changes in perceived stress, Cd19+ lymphocytes, and salivary cortisol among graduate students (n=22) over the course of their first year in graduate, from the start of classes in the fall to the week immediately before their preliminary exams. A matched community control sample (n=30) was followed over the same time period. Psychological distress was measured with the PSS, POMS, and CESD. Lymphocyte phenotype was assessed using 3 color flow cytometry. Compared to controls, students reported greater levels of distress on all measures at each time point (p from .005 to .025) except T1 PSS (p=.11). However, there was no significant effect of time or student status on change in distress over time. In contrast, student status was associated with a decrease in Cd19+ lymphocyte percentage (p<0.05) and flattened morning cortisol rise (p<.05). Decrease in morning cortisol rise was associated with the decrease in Cd19+ lymphocytes (p<.01). However, the decrease in morning cortisol rise did not mediate the relationship between student status and the decrease in CD19+ lymphocytes. In summary, while the students' self-reports of distress did not change over the course of their first year of graduate school, we did see a flattening of the waking cortisol rise that would indicate increased distress and related decrements in CD19 lymphocytes. However, this change in cortisol did not mediate the effect of student status on CD19+ B lymphocyte percentage.

298) Abstract 1720
PARENTAL DEPRESSION ASSOCIATED WITH CHILDREN'S DIURNAL CORTISOL
Leah L. Dickenson, M.A., Psychology, University of California, Irvine, Los Angeles, CA, Rena L. Repetti, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA
Stressful home environments have been associated with abnormal HPA-axis activity. However, both elevated and lowered activity have been connected to stressful early environments(Gunnar & Donzella, 2000) and much prior research has been limited by retrospective self-report or a focus on severe conditions rather than more common family stress - and/or has considered cortisol reactivity but not diurnal cortisol production. (e.g. Luecken et al., 1998; Taylor et al., 2004). The present study addressed limitations in the extant literature by sampling children's diurnal cortisol over 3 days and examining how 4 aspects of the home environment - parental depression, anxiety and marital satisfaction, and children's perceptions of parental support - are related to children's diurnal cortisol. Data was collected by the Center on Everyday Lives of Families at UCLA. 22 children from ethnically diverse families provided salivary cortisol 4 times per day over 3 days. Parents and children also completed self-report questionnaires. Children's average waking cortisol and diurnal slope over the study week were used in analyses. Higher parental depression was associated with a "healthier" diurnal cortisol rhythm: higher waking levels (r=.59, p<.01) and a steeper slope (r=-.65, p<.01). These associations are at odds with the adult literature linking chronic stress to basal cortisol and may reflect children's adaptive reactivity to environmental stressors; adaptations that, according to the Allostastic load hypothesis (McEwan, 1998), may accumulate over time and ultimately lead to adverse health outcomes. Alternatively, children's patterns of responding to chronic stress observed in this study may reflect a developmental and/or genetic influence.

299) Abstract 1707
DISASSOCIATING THE CORRELATION BETWEEN ALEXITHYMIA AND ANXIETY
Glenda C. Prkachin, Ph.D., Julie A. Orlando, M.Sc., Kenneth M. Prkachin, Ph.D., Psychology, University Of Northern British Columbia, Prince George, British Columbia, Canada
Stress-related emotional traits such as anxiety and alexithymia, though conceptually different, can be empirically related. The empirical relation is often taken as evidence that the concepts overlap; however, studies of their impact on perception of stress related emotional states could prove useful to differentiate them. Undergraduate psychology students completed the 20-item Toronto Alexithymia Scale (TAS-20) and the Trait scale of the State Trait Anxiety Inventory (STAI) . For the 980 total students (332 Males and 648 females) who completed the survey a Pearson correlation of r= .543 p<.000 was found, indicating that high scores on the alexithymia scale were associated with high scores on the anxiety scale. Repeated assessment over three years showed that this relationship remained stable and strong, with males' correlations typically being higher than females'. Although this might suggest a commonality of the traits, other evidence supports their dissociation. In studies of the perception of facial expressions of emotion we have found that higher anxiety was associated with increased sensitivity to facial expressions of anger, suggesting that anxiety produces hyper-vigilance to this threatening expression. By contrast, in the same population, alexithymia, as assessed by the TAS-20 was associated with diminished sensitivity to facial expressions of fear and anger. It would appear that the alexithymia produces hypo-vigilance to negative emotions. Thus, although characterized as opposing traits, were associated with opposite outcomes. The role of perceptions of adaptively-important stimuli, such as facial expressions, may help clarify the distinctions underlying traits that otherwise appear to be overlapping.

300) Abstract 1412
THE PROLONGED CARDIAC EFFECTS OF PUBLIC SPEAKING: THE ROLE OF ANTICIPATORY WORRY
Bart Verkuil, PhD, Department of Clinical Psychology, Jos F. Brosschot, PhD, Department of Health Psychology, Leiden University, Leiden, the Netherlands, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, Ohio
Purpose: Perseverative cognition, such as worry and rumination, is a common reaction to stressful events in everyday life. According to the perseverative cognition hypothesis, prolonged cognitive representations of stressful events will increase the total amount of time that these events have a 'wear and tear' effect on the human body. In this study we tested the perseverative cognition hypothesis by examining whether state worry affects cardiac activity of participants that were anticipating a socially distressing event: public speaking. Method: Fifty-eight students were randomly assigned to either perform a public speaking task or to a control condition in which they performed a simple
cognitive task. Participants in the public speaking task were told that they had to prepare a speech in five minutes and were left alone to prepare the speech. Heart rate and heart rate variability were continuously measured during the three phases of the experiment (baseline, speech anticipation and speech delivery). Results: Compared to baseline and to heart rate levels of participants in the control group, heart rate was significantly enhanced during the speech anticipation phase. In addition, speech anticipation significantly induced state worry. Importantly, enhanced heart rate was correlated with state worry (r(56) = .42, p < .05). No associations were found between worry and heart rate variability. Conclusion: Worry during speech anticipation is associated with increased heart rate, but not with lowered heart rate variability. The results from this study thereby partially confirm the perseverative cognition hypothesis.

301) Abstract 1629
REPRESSOR SUBTYPE AND PERCEPTUAL DEFENCE
Nick Medford, MD, Psychiatry, Brighton and Sussex Medical School, Brighton, East Sussex, UK, Mauricio Sierra, PhD, Anna Logan, MD, Anthony S. David, MD, Psychological Medicine, Institute of Psychiatry, London, UK
Purpose of Study To examine the relationship between repressor subtype and the ability to correctly identify briefly presented visual images of three emotional categories: pleasant, unpleasant, and neutral. Subject sample and methods 28 healthy participants (14 male, 14 female, mean age 28.8 years) viewed a playlist of images presented in pseudo-random order. Each image was on screen for 30ms, immediately followed by a mask (an abstract neutral image) which was on screen for 300ms. A total of 45 masked images (14 pleasant, 17 unpleasant, 14 neutral) were presented. Different playlist orderings were used to control for order effects. Following each image/mask pair, participants were asked to identify the masked image from a list of four options, and then to rate their degree of confidence in their answer. Each participant also completed the Taylor Manifest Anxiety Scale (TMAS) and the Marlow-Crowne Social Desirability Scale (MCSDS), with participants scoring low on the TMAS and high on the MCSDS being designated as repressors, in line with previous operational definitions of repressor subtype. Summary of results Across the whole group and all degrees of confidence, participants correctly identified a mean of 38.2% of the images (range 20.0%-55.6%, SD 10.4). More neutral than emotional (pleasant and unpleasant) images were correctly identified (p=0.018). Subgroup analyses revealed that this difference was largely due to the pattern of responses in the 8 participants (84.8 % women) who were also significant (F = 11.60 and F = 11.39, both p < 0.01). The emotional balance indicator was negatively correlated with the psychological demands variable (r = -0.18, p < 0.01) and it was positively correlated with the decision latitude variable (r = -0.37, p<0.01). Anovas between the decision latitude score, psychological well-being and physical health were significant (F = 21.13 and F = 21.47, both p < 0.01 respectively). The Anovas between psychological demands and the same variables were also significant (F = 11.60 and F = 11.39, both p > 0.01). The emotional balance explained .366 of the psychological well-being variance (adjusted R-square, r = .605).

303) Abstract 1598
THE EFFECTS OF SOCIAL EVALUATION ON IMMUNE RESPONSES: EVIDENCE FROM ANIMAL MODELS AND HUMAN EXPERIMENTS
Suman Lam, M.A., Sally S. Dickerson, Ph.D., Psychology and Social Behavior, University of California, Irvine, Irvine, CA
Abstract: Current theories posit that stressors lead to negative emotions and appraisals, which in turn produce physiological responses. As such, negative emotions and appraisals are considered central mediators of the stress-physiology relationship. However, negative emotional responses have often not been associated, or only weakly associated, with physiological responses (e.g., Feldman et al., 1999). The vast majority of this research has focused on explicit emotions, and far less attention has been paid to implicit emotions. The current investigation examined whether an implicit measure of anxiety would predict cardiovascular responses to a speech task. Further, we tested whether the social context, as manipulated by the presence or absence of social evaluative threat, would moderate these effects.
102 healthy undergraduates completed a 20-minute baseline period, and then were randomly assigned to give a 5-minute speech alone in a room (non social-evaluative threat; non-SET) or in front of two evaluators (social-evaluative threat; SET). Participants received instructions, prepared their speech, completed the anxiety implicit association task (AIAT) on the computer and gave their speech. Heart rate (HR), systolic (SBP) and diastolic (DBP) blood pressure, and mean arterial pressures (MAP) were collected throughout the session.
As hypothesized, condition predicted AIAT scores, with the SET condition reporting greater AIAT scores than the non-SET condition [F(1,78)= 4.33, p = .04]. Consistent with past findings, the SET condition was associated with greater SBP [F(1,503)= 23.4, p < .01], DBP [F(1, 503)= 29.6, p < .01], and HR [F(1,491)= 17.7, p < .01] responses than the non-SET condition. However, contrary to hypotheses, implicit anxiety scores did not predict any of the cardiovascular indices (all ps < .1). The results suggest that the social context may have an effect on implicit emotion, namely anxiety. However, implicit anxiety may not be related to cardiovascular responses. Future research should examine the relationship between implicit emotion and other peripheral systems.

302) Abstract 1782
KARASEK'S DEMAND / CONTROL MODEL, EMOTIONS AND HEALTH
Branka Zei-Pollermann, PHD, Vox Institute-Geneva, Geneva, Switzerland, Pierre Jacot, MA, Centre d'education permanente, Mont-sur-Lausanne, Switzerland
Purpose: to measure the relation between Karasek's demand/control model, the frequency of emotional experiences at work, self-reported psychological well-being and health. Subjects: 1204 civil servants of the Swiss canton Vaud (48.9 % women). Method: The subjects answered Karasek's demand/control questionnaire, 12 questions regarding the frequency of emotional experiences at work (6 positively valenced and 6 negatively valenced emotions). Respondents rated the frequency of each emotion on a 4-point scale. Internal consistency measured by Cronbach's alpha was 0.82 for positive states and was 0.76 for negative states. A new variable was created by subtracting the sum-score of negatively valenced emotional states from the sum-score of positively valenced emotional states. The resulting distribution ranged from -18 to 18. This variable, called "emotional balance", was normally distributed (Skew = -0.217, Kurt. = 1.22, Mean = 1.02, SD = 5.05). Participants estimated their psychological well-being at work and their general health on a 5-point scale. Gender, and education level were not related to psychological well-being and physical health. Age had no effect on the psychological well-being but a small negative correlation was found between this variable and health (Spearman's rho = -0.075, p < 0.01). Every emotion was significantly correlated with both psychological well-being and physical health. The psychological well-being showed the strongest link with the "emotional balance" (F = 179.3, p < 0.01). Physical health was also significantly correlated with "emotional-balance" (F= 53.97, p < 0.01). The emotional balance indicator was negatively correlated with the psychological demands variable (r = -0.18, p < 0.01) and it was positively correlated with the decision latitude variable (r = -0.37, p<0.01). Anovas between the decision latitude score, psychological well-being and physical health were significant (F = 21.13 and F = 21.47, both p < 0.01 respectively). The Anovas between psychological demands and the same variables were also significant (F = 11.60 and F = 11.39, both p > 0.01). The emotional balance explained .366 of the psychological well-being variance (adjusted R-square, r = .605).

304) Abstract 1547
SOCIAL SUBORDINATION PREDICTS MALADAPTION IN RATS AND KINDERGARTENERS: EFFECTS OF SOCIAL STATUS ON COGNITIVE PERFORMANCE AND STRESS HORMONE LEVELS
Katherine B. Saxton, MPH, School of Public Health, Matthew Reid, B.A., Psychology, University of California, Berkeley, Berkeley, CA, Jelena Obradovic, Ph.D., School of Education, Stanford University,
Stanford, CA, W. Thomas Boyce, MD. Human Early Learning Partnership, University of British Columbia, Vancouver, BC, Canada, Darlene D. Francis, Ph.D., Public Health, Psychology, Neuroscience, University of California, Berkeley, Berkeley, CA

Increasing evidence suggests that social experiences can become biologically embedded to affect health in later life, with childhood as an important window for such plasticity. However, human studies struggle to confirm causality and often assess early life measures retrospectively. Our goal was to determine if a laboratory animal model could be used to address questions of the biological correlates of human social experience by comparing measures of hypothalamic-pituitary-adrenal (HPA) axis reactivity, cognitive ability, and social status in laboratory rats and kindergartners. We assessed status using social competition tasks: access to a chocolate reward in the rats (groups of 3-4) or to a movie-viewing reward in kindergartners (groups of 3-5). Status was scored as the proportion of time the individual had access to the reward. In the rats we measured cognitive ability using a puzzle-solving task and stress-reactivity using plasma corticosterone (integrated over time) during and following exposure to an acute stressor. Stress reactivity in kindergartners was measured by cortisol change in response to a stressor. Children's cognitive performance was assessed using teacher's rating of academic competence. Statistical analysis included robust linear and logistic regression. Both rats and kindergartners formed social hierarchies. Social status in rats correlated with glucocorticoid reactivity in both rats and kindergartners. In rats, higher social status was associated with higher integrated corticosterone following acute stress (B=566.9, p=.004, R2=.16). In kindergartners, higher social status was associated with an increased change in cortisol in response to a challenge (B=1.861, p=.007, R2=.035). In both rats (OR=6.02, p=.02, R2=.12) and children (B=0.02, p=.01, R2=.038), higher social status was associated with improved cognitive performance. The two studies indicate that both kindergartners and laboratory rats form social hierarchies and that social gradients emerge in stress reactivity and cognitive performance. Such parallel results suggest that laboratory rats can be used as a model of social experience in children.

305) Abstract 1733

THE EFFICACY OF GINGER FOR THE PREVENTION OF MOTION-INDUCED NAUSEA AND GASTRIC DYSRHYTHMIA
Max E. Levine, Ph.D., Danielle M. DeRusso, B.A., Jessica M. Tahan, B.S., Alicia L. Shafer, B.A., Psychology, Siena College, Loudonville, NY

Background: Nausea is an unpleasant experience that is not managed well by standard medical interventions. The administration of ginger represents an alternative approach to the management of nausea, and has been demonstrated to have some potential as an anti-nausea treatment. However, ginger has not been thoroughly tested in controlled studies. Here we report a physiological mechanism by which it provides any benefit been clearly defined. The purpose of the present study was to examine the effect of ginger on nausea and other symptoms of motion sickness experienced by healthy individuals experiencing the illusion of self-motion. Method: A double-blind, placebo-controlled, independent-groups design was employed in which 50 healthy volunteers (23 males; mean age = 18.8 yrs) received either one gram of encapsulated dried ginger root powder or placebo 30 min prior to exposure to a rotating optical drum. Symptoms of nausea and motion sickness were monitored before and during exposure to the drum, while physiological measures including gastric myoelectrical activity, heart rate variability, and skin conductance were continuously recorded. Based on previous research, it was hypothesized that ginger would reduce the symptoms of nausea and motion sickness and inhibit the development of the gastric dysrhythmia that typically accompanies reports of nausea. Results: Ratings of nausea were significantly lower among participants who received ginger than those who received placebo, t(48)=2.90, p=.006. Similarly, symptoms of motion sickness in general were significantly less severe among those who received ginger, t(48)=1.88, p=.03. Analysis of the physiological data is ongoing, and may contribute to the elucidation of the physiological mechanism responsible for ginger's beneficial effect. Conclusion: Ginger significantly reduced nausea in this sample of healthy individuals exposed to provocative motion. These results could have implications for the effective nonpharmacological treatment of nausea in a variety of evocative contexts.

306) Abstract 1123

PSYCHOTHERAPY FOR PSYCHOSOMATIC DISORDERS IS EQUALLY EFFECTIVE FOR PATIENTS IN A DAY CLINIC AS FOR IN-PATIENTS
Marco E. Sabbioni, MD, Anne-Lise Jordi, MD, Elfriede Heide, MD, Markus Signer, MD, Michael Sonntag, MD, Marcel Führer, MD, Rudolf A. Gerber, MD, Psychosomatic and Psychotherapeutic Medicine, Lindenhofspital, Bern, Switzerland

Patients with severe psychosomatic disorders affecting their ability to work or to manage their everyday life are offered in-patient psychotherapeutic treatment. However, the length of the treatment and the related costs limit the availability of this effective treatment option. A day clinic was opened in 2006 offering the same multidisciplinary and multimodal treatment as in the in-patient unit. We compared the outcome of the two treatments. From 6/2006 until 12/2008 146 patients were treated as in-patients in the 16-bed-unit and 62 in the day clinic for 8 patients of the Department of Psychosomatic and Psychotherapeutic Medicine of a non-profit private hospital of the Swiss Red Cross. Social hierarchies among patients with a psychosomatic disorder such as a complex somatiform disorder, eating disorder, affective and/or anxiety disorder. Patients were assessed at the beginning and at the end of the treatment with the SCL-90-R, HADS and SF-36. There was no difference of age, gender and marital status between in-patients and day clinic patients. The Global Severity Index (GSI) of the SCL-90-R (t[1,187]=10.571, p<.0001)), the anxiety subscale (t[1,127]=9.214; p<.0001) and the depression subscale of the HADS (t[1,127]=10.967; p<.0001)), the physical component summary (t[1,124]=3.87; p<.0001)) and the mental component summary (t[1,124]=7.841; p<.0001)) of the Health Survey SF-36 showed a significant improvement as a result of the treatment. There was no difference in the change scores of these scales between the in-patient and day clinic treatment. The multidisciplinary, multimodal psychotherapeutic treatment of psychosomatic disorders achieves a significant improvement as regards distress, anxiety, depressive symptoms and quality of life in in-patients as well as in patients treated in a day clinic.

307) Abstract 1009

QUALITY IMPROVEMENT IN THE PSYCHIATRIC CONSULTATION-LIAISON SERVICE
Sibyl K. Simon, MD, Marie Tobin, MD, Daniel Yohanna, MD, Psychiatry, Anna Bower, APN, Department of Psychiatry, University of Chicago, Chicago, IL

Background: Consultation-Liaison Services provide valuable assistance in the management of complex patients. The complexity of patients has arisen given the economic & political pressures, especially to inner-city academic institutions. The current system of CL services can create routine deficiencies in assisting the primary team with patient care. Thus, quality improvement methods can be used to identify and address these areas of weakness. Methods: Surveys were sent to an email database of mixed discipline providers querying core aspects of the Consultation process for the Psychiatry CL Team in a 9 point questionnaire and comment section. Results: 41 responses were obtained of 220 surveyed in the Department of Medicine (19%). The consultation process was noted with key areas of weakness identified, i.e. unclear reason for consultation among primary team members, indistinguishable recommendations made, lag time in recommendations, etc. Conclusions: Overall, this survey revealed deficits, particularly in the arena of information dissemination within the Consultation process. Quality improvement of Consultation Services were great tool in examining the services provided by these teams, as well as a methodology to examine outcome measures in patient safety. In this poster, we have presented the first part of the project, the identification of the process of consulting and distinguishing areas of weakness. Based on the data, action plans for improvement were developed and are being evaluated for process control, which will comprise Part II of this study.
308) Abstract 1789

FATHER & DAUGHTER: A PHENOMENOLOGICAL STUDY OF ADOLESCENT STRESS IN TWO GENERATIONS
Monika Torres, BS, Psychology, Antioch University Seattle, Seattle, WA

A phenomenological case-study was undertaken in order to understand the experience of adolescent stress as reported by a father and daughter. The purpose of this study was threefold, a) to investigate potential phenomena regarding adolescent stress, b) to understand the unique experiences of stress related to one teenager as reported by two generations within the same family, and c) to identify questioning methods which were most useful for getting a clear picture of phenomena as experienced by the two different generations. Results indicated that father and daughter experienced adolescent stress within their home environment as well as experiencing this stress in relation to other individual environments and relationships, though in different forms. In addition, though they both communicated the phenomena of stress, they did so differently. For example, they each used similar words though these words held different meanings for each; therefore, it led to difficulty in communicating with one another. Another finding indicated that a temporal component existed for each generation; one based on the present and one based on the future. The importance of this study is that it continued to repack throughout the interviews in different contexts. The discussion includes the use of phenomenological findings in clinical applications of psychotherapeutic techniques for families and adolescents experiencing stress.

309) Abstract 1189

EMOTIONAL SUPPORT AMONG HISPANICS VARY BY NATIONAL ORIGIN - EVIDENCE FROM A US NATIONAL SAMPLE
Kalli R. Patterson, BA Psychology, Steven D. Barger, PhD, Psychology, Northern Arizona University, Flagstaff, AZ

Social ties are associated with better physical and mental health. One component of the social environment, emotional support, is theorized to explain the apparent paradox of better health status observed among groups with fewer socioeconomic resources, e.g., Hispanics. Despite these claims little evidence exists regarding a) relative levels of emotional support among Hispanic versus non-Hispanic groups; and b) whether emotional support prevalence is consistent across Hispanic national origin subpopulations. We used the 2001 National Health Interview Survey to assess levels of low perceived emotional support among a representative sample of U.S. Hispanics (N = 4,466). We further compared low emotional support prevalence across five disaggregated Hispanic national origin groups: Puerto Rican (n = 567), Mexican (n = 1,999), Mexican-American (n = 1,412), Cuban-American (n = 325) and Dominican (n = 163). Perceived emotional support was assessed with the question “How often do you get the emotional support you need? Never, rarely, sometimes, usually, or always.” Reporting receiving emotional support never or rarely was higher for the aggregated Hispanic group (7.5% [95% CI 6.4-8.5]) than for non-Hispanic Whites (4.8% [95% CI 4.5-5.2]). However, low levels of perceived emotional support differed substantially across self-identified national origin groups. Dominicans (9.2% [95% CI 3.8-14.6]) and Mexicans (9.1% [95% CI 7.4-10.8]) were the most likely to report low levels of perceived emotional support whereas Puerto Rican (6.1% [95% CI 4.6-7.7]), Mexican-American groups were intermediate (6.2% [95% CI 4.7-7.7]). Fewer Cuban-Americans reported low emotional support (3.5% [95% CI 1.7-5.2]). Rather than being unitary, Hispanic emotional support varies across national origin groups. Research and theory regarding the health consequences of perceived emotional support can be improved by more precise identification of the Hispanic population.

310) Abstract 1751

BACKGROUND STRESS AS A CORRELATE OF PSYCHOPHYSIOLOGICAL AROUSAL IN WOMEN: AN OVERLOOKED SOURCE OF STRESS
Alexandra L. Terrill, MS, John P. Garofalo, Ph.D., Heather Reppeto, Psychology, Washington State University, Vancouver, WA

The role of psychosocial risk factors for coronary heart disease (CHD) in women is not yet well understood. Stress has long been implicated as a risk factor for CHD. Conceptually, women may experience an increase in total stress burden due to a more diffuse distribution of responsibilities such as job, childcare, and housework as compared to men (Gjerdingen et al., 2000). Research has shown that background stress, a chronic stress burden involving ambient stressors and minor daily hassles, affects the extent and duration of stress-related arousal in response to acute stressors (Gump & Matthews, 1999), which is a potential psychophysiological mechanism for CHD development. This source of stress has been typically understudied, mainly due to difficulties in quantifying its presence and influence. We know of no studies that have attempted to evaluate its potential role as a correlate of psychophysiological arousal. Methods: The Background Stress Inventory (BSI), a 50-item measure comprised of five domains: financial, occupational, environmental, health, and social, was completed by 109 undergraduate women. Basal blood pressure was recorded prior to survey completion. Results: Regression analyses show that higher levels of background stress are significantly associated with increased diastolic blood pressure (DBP), t = 2.14, p < .05, and marginally associated with increased systolic blood pressure (SBP), t = 1.64, p = .10. Among the BSI subscales, environmental stress was significantly predictive of increased SBP, t = 2.96, p < .01, and social stress was marginally predictive of increased DBP, t = 1.67, p = .09.

Conclusion: Despite the preliminary nature of the data, results suggest that background stress may be an important psychosocial risk factor for CHD in women. Future research may expand to include a more representative sample population, as well as a more ecologically valid measure of blood pressure to explore the relationship of background stress to CHD.

Keywords: Psychosocial risk factors, stress, coronary heart disease, women's health

311) Abstract 1698

THE WORLD IS NOT JUST BLACK AND WHITE: HISPANIC UNDERREPRESENTATION IN MEDICAL RESEARCH
John M. Ruiz, Ph.D., Erin E. Kaufman, BA, Courtney C. Prather, BA, Lauren M. Smith, MA, Psychology, University of North Texas, Denton, Texas

Hispanics account for over 15.0 percent of the U.S. population making them the largest minority group in the nation. Despite a risk profile similar to African American/Blacks, Hispanics have significantly different disease incidence, burden, and mortality outcomes. These variations challenge an all minorities as one perspective and support the need for Hispanic-specific comparative research to document areas of disparity and direct interventions. The current aim was to examine Hispanic representation in comparative health research. A series of PubMed searches were conducted to examine representation differences among Blacks, Whites, and Hispanics in the general medical literature. Search terms were: White or Caucasian and Black or African American and Hispanic or Latino or Mexican or Chicano or Chicana. Searches were limited to the last 5 years to reduce the effect of historical trends. An initial search of general representation yielded 111,622 hits predominantly reflecting Whites (60.8%) followed by Blacks (30.10%) and Hispanics (9.10%). Similar underrepresentation emerged when examining comparative research. Searches yielded 2 times as many hits for Black-White comparisons relative to Hispanic-White studies (357 hits vs. 110 hits). Published research may reflect a lag in current sampling trends. Therefore, abstracts from the NIH Summit: The Science of Eliminating Health Disparities (December, 2008) and a non-disparities focused psychosocial conference (American Psychosomatic Society Meeting, 2009) were reviewed. Of the 224 NIH poster abstracts, 37 were Black/other vs. 38 Hispanic/other. In contrast, APS studies clearly involving Blacks were significantly more likely to be comparative than studies involving Hispanics, 61% vs. 26.7% respectively. These data suggest that Hispanics continue to be underrepresented in medical research with specific disparities in the relative size of the comparative literature. Implications as well as issues of sampling inadequacy, lack of subgroup research, ethnocentrism in assessment, and the need for culturally tailored interventions will be discussed.
SLEEP COMPLAINTS LONGITUDINALLY INCREASE THE ODDS OF POOR SELF-RATED HEALTH: RESULTS FROM THE MIDUS STUDY

Elliot Friedman, PhD, Carol Ryff, PhD, Institute on Aging, University of Wisconsin, Madison, WI

Self-rated health is a robust predictor of later mortality, even after adjustments for more tangible indicators of health status, but the factors that underlie individuals' subjective assessments of their overall health are not clear. This study tested the hypothesis that sleep complaints would predict worse self-rated health both cross-sectionally and prospectively. Data are from the Survey of MidLife in the United States (MIDUS), a national probability sample of adults 25-74 years old at study inception (MIDUS 1) and 35-84 at follow-up (MIDUS 2). Telephone interviews and self-administered questionnaires were used to collect all data (N=2,606). Self-rated health was determined using a 5-point scale (Poor, Fair, Good, Very Good, Excellent); ratings of Poor/Fair and Very Good/Excellent were combined for analyses. Respondents were also asked whether they experienced chronic sleep problems during the prior 12 months (Yes/No). Information about age, sex, race, education, chronic health conditions, body mass index, and depression were also collected and treated as covariates. Cross-sectional analyses showed that sleep complaints were associated with increased odds of Poor/Fair self-rated health at MIDUS 1 (unadjusted: OR = 3.21; 95% CI: 2.45,4.21; adjusted: OR = 1.93; 95% CI: 1.44,2.60) and MIDUS 2 (unadjusted: OR = 3.46; 95% CI: 2.71,4.40; adjusted: OR = 1.33; 95% CI: 0.99,1.78). Prospective analyses showed that sleep complaints at MIDUS 1 predicted increased odds of Poor/Fair self-rated health at MIDUS 2 (unadjusted: OR = 3.19; 95% CI: 2.49,4.08; adjusted: OR = 1.75; 95% CI: 1.30,2.34). The reverse (health predicting later sleep complaints) was true in unadjusted analyses (OR = 3.25; 95% CI: 2.49,4.25), but not after adjustments for covariates (OR = 1.06; 95% CI: 0.74,1.50). These results show that sleep complaints are linked to subsequent health ratings. Poor sleep may thus contribute to individuals' perceptions of their health and potentially to adverse health outcomes related to self-rated health.

CORRELATION IN PSYCHOSOMATIC RESEARCH: DO WE REGULARLY UNDERESTIMATE THE TRUE EFFECTS?

Andreas Cordes, Dipl. -Psych., Psychosomatics, Göttingen University, Göttingen, Germany

Objective: Psychosomatic research is frequently concerned with correlations(r) between latent psychological variables(p) and somatic variables. p are often measured by clinical instruments. Distributions of these are usually skewed in populations with somatic types of illness. Many clinical measures are constructed to differentiate clinical from nonclinical conditions thus measuring only the clinically relevant portion of the underlying p variable and censoring the remaining part. Contrary to usual censoring, subjects with values outside the measuring range of such instruments may not have minimum (or maximum) values. Instead they may have some nonextreme value due to their individual interpretation of the measurement items. Under such conditions skewed distributions of the p are found and r estimation may be biased. The severity of this bias will be analysed. Methods: Relations between true r and r under censoring conditions were estimated by monte carlo simulations for different proportions of censored(r.p.cens). Values in the censored region were modeled as estimated by monte carlo simulations for different proportions of censoring(r.p.cens). Results: Based on 5000 monte carlo simulation runs for each data point the following results were obtained: Under all studied conditions r values were systematically underestimated. The quartiles of the distribution of bias factors(quotient of true r/empirical r) were: min: 1.15; 25%: 1.38; median:1.59; 75%: 2.12; max: 5.25. Average bias factors for different proportions of censored values and binomial parameters are presented in table 1. Conclusion: Under conditions of plausible models substantial to severe bias can be found. If the model is appropriate, it can be concluded that correlation estimates in psychosocial research may systematically underestimate the true effects.

SURVEY OF KNOWLEDGE, ACT AND BEHAVIOUR ABOUT HO MOSEXUAL BEHAVIOUR

Andri Andri, MD, Mental Health, Krida Wacana Faculty of Medicine, Jakarta Barat, DKI Jakarta, Indonesia

Objective: To know about knowledge, act and behaviour of homosexual seminar audience about homosexual behavior. Method: This was a cross sectional survey. Participants were chosen by purposive sampling method. Survey was conducted using list of questionere which was made according to references used in the seminar presentation. List of questionere were filled after the seminar was given to audience. Result: One hundred and sixty five participants conformed the survey. There were 77 males and eighty eight females (53.3%). The mean of age of the participants was 21.22 (SD 3.7). Most of the participants were college students (147 students, 89.1%) and never married before (96.4%). Sixty six participants (40%) said that homosexual behaviour was induced by environmental situation, fifty eight participants (35.2%) said that it was a biological factor and rest of them did not answer the question. One hundred and four (63%) participants said that homosexual behavior could be cured, twenty four of participants (16.4%) said it could not be cured and the rest of them said did not have any idea. More than half of participants (87 participants, 52.7%)said that homosexual behavior was a mental disorder and most of the participants (87 participants,79.4%) said that homosexual behaviour need to be cured. Most of the participants said that they felt fine if they meet and talked with homosexual man or woman, nineteen participants felt afraid, ten participants felt disgust and twenty five participants felt pity on them. Conclusion: Most of the participants considered homosexual behaviour as mental disorder and need to be cured.

THE PREDICTIVE UTILITY OF ECOLOGICAL MOMENTARY ASSESSMENT MEASURES VERSUS RETROSPECTIVE SELF-REPORT MEASURES: A QUALITATIVE LITERATURE REVIEW

Desiree J. Zieke, M.S., Jesse C. Stewart, Ph.D., Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN

Proponents of ecological momentary assessment (EMA), in which repeated measures of variables are obtained in real-time from individuals in their environment, have asserted that the reliability and validity of self-reports obtained by this method are superior to those obtained by traditional retrospective assessments. Because this claim has not been adequately evaluated, we conducted a qualitative literature review to address the following question related to this assertion: Is the predictive utility of EMA self-reports superior to that of retrospective self-reports? We searched Medline and PsycInfo for studies that obtained both electronic EMA measures and retrospective measures of the same construct. Next, these studies were classified into direct evidence (n=7) and indirect evidence (n=15) categories. Direct evidence studies examined the ability of EMA and retrospective measures to predict the same outcome. Although an outcome was not predicted in the indirect evidence studies, they are in content areas where there is a rationale indicating that the construct under study tends to be overreported (e.g., pain and affect). The direct evidence studies revealed that EMA measures were stronger predictors of the outcome than retrospective measures in 4 (57%) studies. In 2 (29%) studies, retrospective measures outperformed EMA measures. Results of 1 study were equivocal. In the majority of the indirect evidence studies, the mean level of EMA measures, as compared to retrospective measures, was lower. Because these results suggest that EMA measures have less systematic error than retrospective measures, they should.
ARE THE AFFECTIVE AND CARDIOVASCULAR EFFECTS OF TALKING ABOUT RACISM MODERATED BY THE LEVEL OF PAST EXPOSURE TO RACISM?

Nisha A. ver Halen, MA, Psychology, St. John's University, Jamaica, New York, Elizabeth Bronoldo, Ph.D., Psychology, St. John's University, Jamaica, New York

Social support, a coping response with well documented benefits for responding to many types of stressors, does not reliably attenuate the effect of racism on depressive symptoms. Social support may not be effective in some cases, because talking about racism may evoke affective or physiological responses that are sufficiently disturbing to offset potential benefits. Background stressors, including high levels of lifetime exposure to racism, may intensify distress when talking about racism. To test this hypothesis, 40 (25 men) Black adults (mean age = 20 years) completed a laboratory protocol in which they were randomly assigned to talk for 5 minutes about either an episode of race-based maltreatment (RACETALK) or to a control condition (i.e., defending their favorite TV show from possible cancellation (TVTALK)) following a rest period and other tasks. Measures of state anxiety were obtained with the STAI. Stress reactivity to a food challenge task (Color Stroop task) was assessed as systolic and diastolic blood pressure elevation. Mean blood pressure at baseline was 79.4 mm Hg. Mean blood pressure elevation induced by Color Stroop task was 10.9 mm Hg for SBP and 7.3 mm Hg for DBP, indicating an adequate stress response. Summary of results: Naïve neutrophil activation displayed a linear correlation to the Pittsburgh Sleep Quality Index (Pearson's Correlation; p=0.011, r=0.508). Participants in the low lifetime exposure to racism group showed higher activation of naïve cells. No association between stress reactivity to the Color Stroop task and lifetime exposure to racism was found. The benefits of coping strategies may vary depending on background stressors.

RELIGION AS A MODERATOR OF CARDIOVASCULAR REACTIVITY IN PATIENTS WITH DEPRESSION

Hefti René, M.D., Psychosomatic Medicine, Clinic SGM, Langenthal, Switzerland

Purpose of the study: To determine whether religiosity would moderate stress reactivity. Subject sample and assessment of methods: We investigated 37 inpatients with moderate to severe depression by assessing religiosity (S-R-T, Structure of Religiousness and Beliefs) on the basis of a questionnaire. Blood pressure at baseline was not significantly associated with religiosity (r = .044 for SBP and r = -.033 for DBP). In contrast, blood pressure elevation during Color Stroop task was significantly associated with religiosity (r = -.460**, p < .002 for SBP and r = -.369*, p < .012 for DBP) measured by S-R-T centrality scale.

A linear regression model (entering age, gender, BDI and religiosity) confirmed these findings (beta coefficient for religiosity - .428). Results are in line with psychophysiological research showing that reactivity measures are more sensitive to psychosocial factors. Results also support the concept of stress buffering identifying religion as a moderator of physiological stress response (in depressive inpatients). Keywords: religiosity, cardiovascular reactivity, depression

SLEEP QUALITY IS ASSOCIATED WITH DEGREE OF ACTIVATION IN PLASMA STIMULATED NAÏVE NEUTROPHILS

Bassem M. Shoucri, B.S., Bioengineering, Kate M. Edwards, Ph.D., Psychiatry, Geert W. Schmid-Schonbein, Ph.D., Bioengineering, Paul J. Mills, Ph.D., Psychiatry, University of California. San Diego, La Jolla, CA

Purpose of the study: Inflammation, including leukocyte activation has been implicated in many diseases. Psychological stress and sleep disruption have often been associated with the development of inflammation. Assessment of physical leukocyte activation provides an interesting tool in indexing inflammation given that it encompasses the many signaling pathways that induce activation. Pseudopods are temporary projections formed through F-actin polymerization used in phagocytosis, spreading and migration. Here we assessed association between naïve neutrophil activation and state and trait measures of psychological stress and sleep disruption. Subjects and Methods: Thirty three otherwise healthy subjects completed questionnaires to evaluate depression (CES-D), fatigue (MFSI) anxiety (STAI), quality of life (5.13) Abstract 1584

Keywords: religiosity, cardiovascular reactivity, depression

EFFECTS OF AEROBIC FITNESS, BMI AND ABDOMINAL ADIPOSI ON INFLAMMATORY BIOMARKERS IN INDIVIDUALS WITH ELEVATED BLOOD PRESSURE

Kathleen L. Wilson, MS, Julie Sadja, MS, Kate Edwards, PhD, Laura Redwine, PhD, Suzi Hong, PhD, Joel E. Dimsdale, MD, Paul J. Mills, PhD, Psychiatry, UCDSD, La Jolla, CA

Purpose of the study: Elevated blood pressure(BP)is associated with increased inflammation which may increase risk for atherosclerosis. Studies indicate that higher levels of adiposity, in particular abdominal adiposity, as well as lower aerobic fitness, are associated with inflammation which may put high BP individuals at even greater risk for cardiovascular disease. This study examined relationships among body mass index (BMI), percent body fat, abdominal adiposity, and aerobic fitness and inflammation in pre-hypertensive (> 130/80mmHg and <140/90mmHg) and hypertensive subjects (≥140/90mmHg). Subjects and Methods: Dual Energy X-Ray Absorptiometry was used to determine total and regional adiposity in 40 otherwise healthy women and men(meanSD)45(10years). Aerobic fitness was determined by peak oxygen consumption (VO2peak) during a maximum treadmill test. Blood levels of CRP, TNF-alpha, IL-6, D-dimer, Wf1, sICAM-1 and sVCAM-1 were assessed as biomarkers of different pathways of inflammation. A series of multiple regression
analyses controlling for subjects age and gender were preformed to determine the best predictors of each inflammatory biomarker. Results: CRP was predicted by gender(higher in females) and increasing BMI (beta=0.37; p=0.011); sICAM-1 was predicted by increasing percent trunk fat (beta=-.36; p=0.021); sVCAM-1 was predicted by increasing BMI (beta= .38; p=0.009) and greater total percent body fat (beta= .37; p=0.011); D-dimer (beta=-.35; p=0.025) and IL-6 (beta=-.41; p=0.010) were predicted by reduced VO2 peak, even after controlling for adiposity. Conclusion: Inflammatory marker levels were not uniformly predicted by any single measure of adiposity. Indeed, D-dimer and IL-6 were predicted by VO2peak rather than adiposity. These results emphasize that physical fitness remains an important predictor of inflammatory markers in addition to measures of adiposity, and thus increased fitness as well as reduced body fat are likely to be important goals for reducing inflammation in individuals prone to greater risk for atherosclerotic disease.

320) Abstract 1190
ACUTE EFFECTS OF SATURATED AND UNSATURATED FATTY ACIDS ON CARDIOVASCULAR AND INFLAMMATORY RESPONSES
Katherine A. Sayen, BA, Ellyn R. Johnston, BS, Biobehavioral Health, Pennsylvania State University, University Park, PA, Tavis S. Campbell, PhD, Psychology, University of Calgary, Calgary, AB, Canada. Ann C. Skulas-Ray, BS, Nutrition, Lisa F. Groves, BS, Sheila G. West, PhD, Biobehavioral Health, Pennsylvania State University, University Park, PA
Cardiovascular disease (CVD) is the leading cause of death worldwide, and a diet rich in saturated fats reduces that risk. Our previous work suggests that improvements in cardiovascular response to stress are an important mechanism for the beneficial effects of "good fats." We recently showed that vascular reactivity to a battery of stressors was exaggerated after a fast food breakfast meal vs. a low fat control meal. In the present study, we measured the acute, systemic effects of carefully formulated low and high fat meals on hemodynamic responses to stress. We enrolled 20 healthy, young adults in a randomized, repeated measures, crossover study (each participant was their own control). At the beginning of each test, blood samples and resting hemodynamic measurements were taken after a 12-hour fast. Participants then consumed one of three meals (a high saturated fat meal [HIGH], a low fat meal [LOW], and a high unsaturated fat meal [FLAX]). Two hours later, we measured post-meal changes in insulin, glucose, triglycerides, inflammatory cytokines, and resting hemodynamic measurements. Two stress tasks (simulated public speech and cold pressor test) were administered. Regardless of meal content, there was a significant reduction in DBP, total peripheral resistance (TPR), pre-ejection period, and left ventricular ejection time (LVET) (p<0.004) and a significant increase in cardiac output (CO), stroke volume (SV), and HR (p<0.0001) two hours after eating. As expected, the FX and HIGH meals were associated with significantly greater increases in triglycerides than the LOW meal, while the LOW meal was associated with significantly greater increases in insulin than the FLAX and HIGH meals. Contrary to our hypotheses, meal content had NO impact on BP, HR, TPR or CO responses to stress. All three meals reduced IL-6, a proinflammatory cytokine. Researchers interested in CV reactivity should take into account the time course of postprandial change in BP and TPR when scheduling testing sessions. These data contradict studies that observed no effect of meal content on resting hemodynamics.

321) Abstract 1122
EFFECTS OF ALZHEIMER CAREGIVING ON ALLOSTATIC LOAD
Susan K. Roepeke, M.S., Clinical Psychology, SDSU/UCSD Joint Doctoral Program, La Jolla, CA, Brent T. Maushack, Ph.D., Thomas L. Patterson, Ph.D., Psychiatry, University of California, San Diego, La Jolla, CA, Roland von Kanel, M.D., General Internal Medicine, Inselspital, Bern University Hospital and University, La Jolla, CA, Sonia Ancoli-Israel, Ph.D., Alexandreia L. Harmell, B.A., Joel E. Dimasola, M.D., Psychiatry, University of California, San Diego, La Jolla, CA, Kirsten Aschbacher, Ph.D., Psychiatry, University of California, San Francisco, La Jolla, CA, Paul J. Miller, Ph.D., Psychiatry, Michael G. Ziegler, M.D., General Medicine, Matthew Aoki, M.D., Family and Preventive Medicine, Igor Grant, M.D., Psychiatry, University of California, San Diego, La Jolla, CA
Background and Purpose: Chronically-stressed Alzheimer's disease caregivers exhibit increased morbidity and mortality, which may be explained by allostatic load. Previous research suggests that mastery, depressed mood, and caregiver burden may moderate the relationship between caregiving stress and physical health outcomes. The purpose of this study was to determine if stressed Alzheimer caregivers (CG) who have increased allostatic load compared to demographically similar non-caring married adults (NC), and if measures of mastery, depressed mood, and caregiver burden moderate the relationship between caregiving status (i.e. CG vs. NC) and allostatic load. Methods: Eighty-seven CG and 43 NC underwent in-home assessment of allostatic load (comprising biological indicators of blood pressure, body mass index, cholesterol, and plasma catecholamines) as well as self-report measures of mastery (Personal Mastery Scale), depression (short form of the Center for Epidemiologic Studies Depression Scale (CESD-10)), and burden (Role Overload Scale). Results and Conclusions: CG and NC had a mean age of 74 ± 7.8 and 75 ± 6.8 years, respectively. The CG group was 71% women and the NC group was 61% women. Multiple regression analysis indicated that CG had significantly higher allostatic load compared to NC, beyond the effects of age, sex, years of smoking, use of antihypertensives, and use of cholesterol-lowering medications (B = 0.5; p < .05). Secondary analyses indicated that mastery, depressed mood, and burden did not explain this relationship. Our results indicate that allostatic load may represent a plausible link explaining how caregiving stress translates to downstream pathology. However, more work needs to be conducted in order to understand what psychological factors may protect against or exacerbate the relationship between caregiving stress, allostatic load, and health outcomes.

322) Abstract 1327
PERCEIVED STRESS IS ASSOCIATED WITH SUBCLINICAL CEREBROVASCULAR DISEASE IN OLDER ADULTS
Neelum T. Aggarwal, MD, Neurological Sciences, Rush University Medical Center, Chicago, IL, Cari J. Clark, ScD, Medicine, University of Minnesota, Minneapolis, MN, Todd Beck, MS, Denis A. Evans, MD, Carlos F. Mendes de Leon, PhD, Rush Institute for Healthy Aging, Rush University Medical Center, Chicago, IL, Charles DeCarli, MD, Neurology, University of California at Davis, Sacramento, CA, Susan A. Everson-Rose, PhD, Medicine, University of Minnesota, Minneapolis, MN
Stress has been associated with clinical cardiovascular outcomes, including stroke, but its relation to subclinical cerebrovascular disease is unknown. We examined the association between stress and multiple MRI indicators of subclinical cerebrovascular disease in a population-based study of older black and white adults. We examined 71 participants (57% female; 58% black; mean (SD) age, 79.8 (5.9) years) who completed a clinical exam and an MRI collected as part of the Chicago Health and Aging Project, an ongoing longitudinal study of risk of Alzheimer's Disease and other diseases affecting the elderly. MRI measures included white matter hyperintensity volume (WMHV), total brain volume (TBV), and cerebral infaracts. WMHV was calculated as a proportion of total cranial volume and log-transformed to achieve a normal distribution. TBV was computed as the ratio of total brain parenchymal volume to total cranial volume and had an approximately normal distribution. Presence/absence of cerebral infarcts was based on lesion size, location, and imaging characteristics. Lesions >3 mm were considered infarcts and modeled as >1 versus none; 153 (26.8%) participants had at least 1 infarct. Stress was measured with the 6-item Perceived Stress Scale; response categories ranged from never (0) to often (3) and items were summed to create an overall stress score with higher scores indicating greater stress (mean (SD), 6.71 (3.37), range=0-18). Linear and logistic regression models adjusted for age, sex, race and education showed that each one-point higher perceived stress score was associated with significantly decreased TBV (estimate (SE)= -0.12 (.05), p=0.01) and 6% greater odds of infarcts (odds ratio=1.06, 95% CI=1.01,11.3, p=0.05) but unrelated to WMHV. Results were unchanged in models further adjusted for smoking, history of stroke, heart disease, diabetes, and use of anti-hypertensive
medications. This is among the first epidemiologic studies to show that greater stress burden is significantly and independently associated with subclinical cerebrovascular disease in the elderly. (Supported by NIH/DHHS grants HL084209, ES10902, & AG11101.)

323) Abstract 1590

RELATIONSHIP BETWEEN SPIRITUALITY, PSYCHOLOGICAL STRESS AND QUALITY OF LIFE IN AFRICAN-AMERICAN BREAST CANCER SURVIVORS

Erica H. Williams, MHS, Basic and Biobehavioral Research Branch, National Cancer Institute, Bethesda, Maryland, Isaac M. Mwase, PhD, MPH, Office of the Director, National Cancer Institute, Rockville, Maryland, Richard Moser, PhD, Behavioral Research Branch, National Cancer Institute, Bethesda, Maryland, Pamela L. Carter-Nolan, PhD, MPH, Community and Family Medicine, Howard University College of Medicine, Washington, DC, Paige G. McDonald, Ph.D, MPH, Basic and Biobehavioral Research Branch, National Cancer Institute, Bethesda, Maryland

Breast cancer is the most common cancer among African-American (AA) women. When compared to Caucasian women at a survival rate of 88%, only 74% of AA women with breast cancer will survive five years after diagnosis. Upon diagnosis and during treatment and the survivorship continuum, transient and chronic episodes of psychosocial and existential stress are experienced. Clinical and epidemiological studies suggest that AA women might draw upon spirituality to cope with stressors and to enhance the quality of their survivorship experience. This cross-sectional analysis explored associations between spirituality, psychological stress, and quality of life among AA breast cancer survivors (N = 76, mean age = 56) accrued to a hospital based feasibility study of cancer survivorship. The 30-item short form of the Profile of Mood States was used to assess transient affective states. Emotional well being and other aspects of quality of life were assessed by the Functional Assessment of Cancer Therapy-Breast. Multiple dimensions of spirituality and religiousness were measured by the Brief Multidimensional Measure of Religiousness/Spirituality: 1999. Ninety percent considered themselves to be either moderately, highly, and 49% felt inner deep peace and harmony many times a day. Overwhelmingly non-significant associations were noted for mood, emotional well being, and dimensions of spirituality and religiousness. However, there was a significant effect of feeling deep inner peace or harmony on depressed mood, F (4, 5.7) = 59.96, p <0.01. The assumption of homogeneity of variance was violated; therefore the Welsh F-ratio is reported. Several methodological limitations likely contribute to the lack of association between aspects of religiousness/spirituality, stress, and quality of life in this sample of AA breast cancer survivors. Implications for future research will be presented.

324) Abstract 1458

EFFECTS OF STRESS ON CANCER TREATMENT EFFECTIVENESS: A LITERATURE REVIEW OF ANIMAL MODELS

Shadia Kawa, MS, Jeffrey D. White, MD, OCCAM, National Cancer Institute, National Institutes of Health, Rockville, Maryland

While a large body of research has examined the links between psychological stressors, results have often been inconclusive and putative underlying mechanisms remain poorly understood. Surprisingly few of these studies have assessed the effects of stress on the efficacy of cancer treatments despite the question's clinical relevance. Animal models may offer promising insights since they may allow for careful control of experimental variables. We thus set out to comprehensively review the literature on the influence of psychological stress on treatment efficacy in preclinical models. Our goal was to assess the consistency of the effect and determine how existing data might contribute to the design of prospective studies. Our two key research questions: 1)Does stress have a significant and reproducible impact on the efficacy of cancer treatments?; 2)What is known about the underlying biological mechanisms of such an effect? Systematic queries of PubMed, Embase, and Google Scholar yielded a total of 13 articles (919 individual protocols) on animal studies directly assessing the effects of experimentally induced, chronic psychological stress on the efficacy of cancer therapies. Six of the studies were conducted on the weakly immunogenic Lewis Lung carcinoma and involved rotational or restraint stress protocols, four were conducted on the immunogenic, stress hormone-responsive Shionogi mouse mammary carcinoma and involved social isolation stress protocols, and the remaining studies employed various tumor-animal systems. All studies were conducted on mice, and all involved chemotherapy regimens though one study employed a chemo-immunotherapy. In all studies, chronic psychological stress appeared to significantly and reproducibly decrease cancer treatment efficacy: primary tumor growth, metastasis, and survival outcomes were consistently worse in tumor-bearing, drug-treated mice subjected to stress relative to their unstressed counterparts. Conversely, only six studies assayed immune and neuroendocrine markers assumed to mediate stress effects on treatment efficacy, and only one study yielded significant results. Methodological challenges are detailed and recommendations are made for future translational research. A more thorough investigation of biological parameters is needed, and the role of biobehavioral factors such as coping strategies should not be overlooked.

325) Abstract 1431

FORGIVENESS AND STIGMA AS PREDICTORS OF HEALTH DISTRESS IN MEDICATION ADHERENT & NON-ADHERENT HIV-INDIVIDUALS

Thomas M. DeSena, MA, Mark Vosvick, PhD, Clinical Health Psychology, University of North Texas, Denton, Texas

Forgiveness and Stigma as predictors of Health Distress in Medication Adherent & Non-Adherent HIV-Individuals DeSena, T. & Vosvick, M. Forging a Corresponding Author: Dr. Mark Vosvick University of North Texas, Psychology Department, 1155 Union Circle #311280, Denton, Texas 76203-5017 Medication adherence is a current focus of HIV research. Recent literature examines how mental health constructs such as stigma, depression and self-efficacy impact medication adherence behavior (Diliorio et al. al, 2009 & Lynam et al. 2009). Health distress may be one of many components associated with medication adherence (Mays, M. & Orlung, M. 2002). Using the Lazarus Folkman Model (1984), this study examined the association of forgiveness, perceived stigma and health distress in adherent and non-adherent (adherence < 100%) groups. We used a cross-sectional correlational design to examine the relationships between forgiveness and stigma on health distress between 162 gender balanced medication adherent HIV+ participants (49% African-American) with a mean age of 42, SD=7.9, and 41 gender balanced non-adherent participants (48% African-American) with a mean age of 51.85, SD=7.37. Forgiveness of Self (Heartland Forgiveness Scale), Perceived Stigma (Stigma of HIV/AIDS survey), and Health Distress (MOS-HIV survey) were assessed in both groups. Two separate linear regression analyses were used. A linear regression analysis of the non-adherent group found individuals with higher levels of self-forgiveness (r=.45, F=3.08, p<.01) also reported lower levels of health distress (adj. r²=.22, F= (3, 36), p<.01). An independent samples t-test showed no differences between groups on health distress. Despite this similarity between groups, a multiple regression analysis resulted in no significant results in the adherent group. Results indicate that even though both groups have comparable levels of health distress, higher levels of forgiveness predicts lower levels of health distress in non-adherent individuals. Forgiveness could be an important mediator in helping individuals become more adherent to medication. Further research should be done to assess the impact of forgiveness interventions on medication adherence in HIV+ individuals.

326) Abstract 1171

CHILD ABUSE, TRAUMATIC STRESS, IMMUNE FUNCTION AND HIV SYMPTOM SEVERITY IN HIV-POSITIVE MEN

Susanne Lee, MPH, Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA, Themis Tsiatas, MA, Clinical Psychology, PGSP-Stanford Psy.D. Consortium, Palo Alto, CA, Cheryl Koopman, PhD, Cheryl Gore-Felton, PhD, Psychiatry & Behavioral Sciences, Stanford University School of Medicine, Stanford, CA

Child Abuse, Traumatic Stress, Immune Function & HIV Symptom Severity in HIV-Positive Men Background Far more than the general
population, people living with HIV/AIDS tend to report experiencing traumatic life events. The impact of trauma experiences on psychological and behavioral factors is well documented however less is known about their effects on immune function and HIV symptoms. Methods: This study examines the relationship between child abuse, traumatic stress, immune function and HIV symptom severity among 167 men recruited at Bay Area HIV Clinics. Participants completed demographic, medical, trauma history and symptom questionnaires. The sample was M=45 years (SD=8), Caucasian (38.3%), African-American (29.9%), Hispanic (22.8%) and other (9%). Results: Nineteen percent of the sample reported experiencing at least one traumatic event in childhood and 56% exceeded the cutoff score on the Impact of Events Scale-Revised for predicting a current PTSD diagnosis (M=35; SD=19). Those who experienced a greater number of childhood events were more likely to report greater HIV symptom severity (r=.19, p < .05). Current traumatic stress symptom severity was associated with HIV symptomology (r=.43, p < .05). Most recent CD4+ cell count was not correlated with traumatic stress symptom severity, child abuse severity, age or ethnicity. Greater HIV medication adherence was significantly correlated with lower severity of HIV symptomology (r = - .25, p<.05), greater CD4+ cell count (r = .26, p < .05) and greater trauma symptoms (r=.28, p<.05). Having greater severity of childhood abuse was negatively correlated with adherence (r=.16, p<.05). A multiple linear regression analysis found after controlling for age, ethnic background and HIV medication adherence, greater traumatic stress symptom severity was significantly associated with greater HIV symptomology in the past 3 months (R-Square=.24, p < .05). Child abuse severity was initially significant in the model, but became nonsignificant after entering trauma symptom severity. Conclusions: Our findings suggest a significant proportion of adult men have experienced childhood trauma. Moreover, greater trauma symptom severity is associated with HIV symptom severity independent of medication adherence. Future research is needed to understand the impact of traumatic life events on HIV disease progression.

327) Abstract 1467

ENGLISH HOSPITAL ADMISSIONS FOR NONSPECIFIC CHEST PAIN INCREASED FOLLOWING A BRITISH HEART FOUNDATION POSTER CAMPAIGN WHILE ADMISSIONS FOR CARDIOVASCULAR EVENTS FELL BEFORE THE END OF THE FINANCIAL YEAR
Stuart W. Derbyshire, Ph.D., Nicola L. Dennis, B.Sc., Andrew E. Welchman, Ph.D., School of Psychology, University of Birmingham, Edgbaston, West Midlands, UK
Purpose: Priming participants with unpleasant images of noxious events causes increased sensitivity to heat during a standard signal detection task. Here we investigated whether a public health campaign involving a graphic display of chest pain caused an increase in hospital admissions due to nonspecific chest pain. Opportunistically, we also investigated how admission events may change in hospital admission events. Subject sample and statement of methods: Monthly (April 2002-March 2007) hospital admission statistics for England and the Republic of Ireland (RoI) were obtained for nonspecific chest pain, myocardial infarction (MCI) and stroke. The British Heart Foundation (BHF) posted images depicting a middle-aged male with a tight strap around his chest and a stark warning to call emergency services if suffering chest pain from Nov 2006-Feb 2007 across England. English hospital admissions were contrasted for the postcard period with the same period from the year before. In the course of this analysis, large reductions in hospital admissions for cardiovascular events were noted in March. This pattern of admissions was compared between England and the RoI. Summary of results: English hospital admissions for nonspecific chest pain increased significantly in December 2006 compared with December 2005 while admissions for MCI or stroke did not change. These results imply that the BHF poster campaign created an increased report of chest pain without a beneficial detection of MCI. Unexpected large reductions in cardiovascular (stroke and MCI) admissions were noted in March for all years (2002-2007). In the RoI large reductions in cardiovascular admissions were noted in December. Given that England and the RoI have similar seasonal weather patterns and cultural practices, admission data for these two countries should be similar. The lack of similarity implies an influence of parochial political or managerial influence such as the beginning of the financial year being April in England and January in the RoI.

328) Abstract 1324

HYPOALGESIA AND STRESS-INDUCED ANALGESIA IN PREHYPERTENSIVE MEN AND WOMEN
Karen L. Peterson, PhD, Psychology, College of St. Scholastica, Duluth, MN, Mustafa al’Abbi, PhD, Physiology, Behavioral Sciences, and Family Medicine, University of Minnesota School of Medicine, Duluth, MN
Objective: Research shows that hypertensives or individuals at high risk for hypertension experience attenuated pain sensitivity (i.e. hypoaalgia). Furthermore, exposure to an acute stressor has been shown to attenuate pain perception, and it is thought that elevated blood pressure might mediate this effect. The present study sought to extend previous research by utilizing a repeated measures design (i.e. stress and no stress) as well as multiple pain stimuli (i.e. cold pressor and thermal) to assess the hypothesis that hypertensive risk moderates the response to painful stimuli under stressful conditions. Methods: Participants included 82 young, healthy subjects (f=35; m=47; Mdn age=20, SD=2.9) from a larger study examining endogenous mechanisms of pain and hypertension. Nearly one-third of these subjects (n=26) were considered to be at high risk of hypertension based on resting SBP (>120 mmHg; M=127.1, SD=5.0 mmHg vs. low risk M=107.0, SD=6.6 mmHg). Subjects participated in a single, counterbalanced laboratory session during which they were exposed to either an acute stressor or rest, followed by a pain assessment period (i.e. cold pressor and thermal pain), then the complimentary stress/rest condition and a final pain assessment period. The McGill Pain Questionnaire (MPQ), an index of sensory and affective components of pain, was administered after each pain assessment period. Results: Prehypertensives displayed consistent hypoaalgia as evidenced by higher cold pressor tolerance (p < .05), higher thermal threshold (p < .05) and tolerance (p<.01), and lower MPQ total scores with regard to both the cold pressor and thermal stimuli (p < .05). Stress-induced analgesia did not attenuate the cold pressor or thermal stimulus documented in individuals regardless of their hypertensive risk (p<.01), and there was a trend toward attenuated pain perception during the stress condition of the thermal threshold task (p=.057). Conclusions: Healthy young individuals at high risk for hypertension demonstrated a consistent pattern of attenuated pain perception across all five pain measures in this study. Stress-induced analgesia was present during the cold pressor, but this effect was not moderated by hypertensive risk status.

329) Abstract 1031

WHAT KINDS OF EXPERIENCES DO CHILDREN REPORT WHEN ASKED ABOUT “PAIN”?
Soomaalee Fuss, BA, Gabby Pape, MA, Psychology, York University, Toronto, Ontario, Canada, Andrea Martin, MA, Psychology, York University, Toronto, Ontario, Canada, Sarah Rivto, BA, Suzy Malakhi, BSW, Joel Katz, Ph D., Psychology, York University, Toronto, Ontario, Canada
Methods: Self-report questionnaires rely on a certain level of agreement regarding the meaning of particular constructs of interest. When using self-report instruments to assess psychological components of pain, such as pain anxiety and pain catastrophizing, there is an underlying assumption that items will be answered according to an individual’s experience with physical pain. The purpose of this study was to uncover how children and adolescents conceptualize the term “painful” and to elucidate how such an understanding might influence responses to a number of commonly used self-report measures. Method: English-speaking individuals between the ages of 8-18 were recruited to participate in this study which took place at the Ontario Science Centre (Canada). A pain history questionnaire as well as the Multidimensional Anxiety Scale for Children-10 (MASC-10), Pain Catastrophizing Scale-Children (PCSC), Child Anxiety Sensitivity Index (CAS), and Children Pain Anxiety Symptoms Scale (CPASS) were administered to participants. Answers to the question: “What was your most painful experience?” were used to classify individuals into three groups based on the type of pain described (physical, emotional and unspecified). Results: Of 1006 participants, 77%
responded to the question by describing a physically painful experience, 13.5% described an emotionally painful experience and the remainder (9.2%) classified as mixed. The emotional pain group's scores were significantly higher than the physical pain group's on a number of the self-report measures including the CASI (p = .003), PCSC (p = .002), and CPASS (p = .010). Gender differed significantly between the groups, with girls more likely to report an emotionally painful experience (p = .002). Conclusions: A substantial proportion of our sample of children described pain in terms of an emotional, rather than physical, experience when asked to report the one they considered their most painful. These data support the practice of specifying clearly to children the nature of the pain experience (emotional vs. physical) they are being asked to describe when using self-report measures.

330) Abstract 1090

THE EMBODIED EXPERIENCE OF FIBROMYALGIA
Nicola L. Dennis, MSc, Stuart W. Derbyshire, PhD, Michael Larkin, PhD, Psychology, University of Birmingham, Birmingham, England

Purpose of study Fibromyalgia is typically diagnosed based on patient report of widespread body pain not associated with obvious disease or observable structural abnormalities. Patients receive multiple treatments, used individually or in combination, to achieve symptom remission, but this strategy often results in failure. Consequently, there is considerable ongoing controversy regarding the diagnosis and status of fibromyalgia and the role of secondary factors, such as stress, in the etiology of the disorder. Here we interview patients with fibromyalgia to investigate patients experiences of the illness and how they understand their history and diagnosis. Subject sample and statement of methods Eight female patients (aged 18-54) were interviewed via email. Participants were first sent a standard series of questions regarding a range of topics including their pain history and experience of seeking treatment and diagnosis. All patients were able to answer the questions in their own time and provide as much information as they wished. Where necessary, follow up questions were sent to clarify any unclear points or to extend the discussion. The email exchanges continued until each topic had been fully explored. All answers were analysed using an interpretive phenomenological method, a technique designed to draw out important themes within a text and which is particularly useful for understanding embodied experience. Summary of results Analysis revealed several major themes relating to symptom experience (pervasive pain, ‘killer’ fatigue, ‘confused and kind of dazed’ fog, hypersensitivity and flu-like flares, a ‘giant mess’ of other symptoms), understanding of their history (gradual course, complex and multiple causes, complex and multiple triggers), diagnosis (a mixed blessing) and coping strategies (strict routines for coping and mixed attitudes to medication). Two overarching threads ran through the data: first that there is not one overall symptom (certainly not pain) driving the unpleasantness of fibromyalgia and second that patients spend excessive time and energy trying to manage forces outside their control.

EMOTIONAL DISTRESS, PAIN AND GOAL CONFLICT IN WOMEN WITH FIBROMYALGIA
Jaime Hardy, M.S., Psychology, Leslie Crofford, MD, Internal Medicine - Rheumatology, Suzanne Segerstrom, PhD, Psychology, University of Kentucky, Lexington, KY

Fibromyalgia is a multi-symptom disorder characterized by widespread chronic pain, cognitive difficulties and emotional distress, which can interfere with daily activities and goals. In particular, limited resources for goal pursuit associated with fibromyalgia can create fewer resources and conflict among goals, which compete for those resources. Effective management of this conflict can maximize well-being associated with goal pursuit and minimize negative consequences of overexertion. The purpose of this study was to determine if goal conflict increases distress and/or pain in women with fibromyalgia or whether distress and/or pain lead to perceptions of goal conflict. Women with fibromyalgia (n = 27) completed a five-day daily diary study, reporting their levels of pain and emotional distress each morning and evening. Each evening they listed that day’s goals, rating goals on their level of conflict. Multilevel modeling indicated that on days when there was an increase in the level of total daily goal conflict, controlling for morning pain, there was an increase in pain that evening (g = 1.71, 95% CI (0.32-3.09), p < .05). On days with an increase in morning emotional distress there was an increase in overestimation of goal conflict (g = 0.075, 95% CI (0.032-.116), p < .05). Therefore, physical pain is affected by an increase in the level of total daily goal conflict. There was no significant effect of total daily goal conflict on emotional distress measured in the evening. Overexertion in goal pursuit may lead to increased pain, even when the goals pursued are important and rewarding. Assisting those with fibromyalgia to more accurately assess their levels of goal conflict to prevent overexertion may help in moderating their daily pain. Conversely, emotional distress measured in the morning leads to misperceptions about goal conflict, which resulted in reduced goal pursuit on those days. Understanding that goal conflict assessments may be inaccurate when distressed may lead to more effective coping strategies on those days.

332) Abstract 1684

WRITTEN EMOTIONAL DISCLOSURE: WHY ARE THERE GREATER BENEFITS FOR PATIENTS WITH FIBROMYALGIA THAN RHEUMATOID ARTHRITIS?
Alaa M. Hijazi, M.A., Mark A. Lamley, Ph.D, Psychology, Wayne State University, Detroit, MI; Mary E. Gillis, Ph.D, Psychology, Wayne State University, Detroit, MI, U.S.A. Angelia Mosley-Williams, M.D., Internal Medicine, John Dingell VA Medical Center, Detroit, MO, James C. Leisen, M.D., Medicine, Henry Ford Health System, Detroit, MI

Studies indicate that written emotional disclosure (WED) about stress is more beneficial for patients with fibromyalgia (FM) than rheumatoid arthritis (RA). Research also shows that certain psychological features (e.g., higher emotional approach coping, ambivalence about emotional expression, and introspection) and writing content (e.g., more emotionality and insight) predict better outcomes of WED. Previously, we conducted trials of WED in both populations and found substantial benefits for FM, but not for RA. Thus, we tested whether FM patients have more positive predictive psychological features and writing characteristics than RA patients. First, we gathered 15 pairs of patients with RA and 86 patients with FM who were recruited from clinics and the community for two studies of WED. Second, we transcribed, analyzed (using trained judges’ ratings and Linguistic Inquiry and Word Count 2007), and compared the 4 days of disclosure writing from the 38 RA and 37 FM patients randomized to WED in each study. ANCOVAS (controlling for demographics and baseline pain) compared the two groups. On baseline psychological variables, compared to RA patients, FM patients reported higher ambivalence over expressing anger, (Cohen’s d = 0.40, p < .05), emotional approach processing (d = 0.40, p < .01), and negative affect (d = 0.86, p < .001); and lower externally oriented thinking (d = 0.47, p < .01), and positive affect (d = 0.80, p < .001). Compared with RA patients’ writings, the writings of FM patients were judged by raters as containing more severe stressors (d = 0.92, p < .001), more personal information (d = 1.27, p < .001), and negative emotion (d = 0.61, p = .06). On the LIWC, the FM patients’ writings had marginally more negative emotion words (d = 0.45, p = .10), and significantly more anger words (d = 0.77, p < .01). These data suggest that patients with FM benefit more than patients with RA from WED because the former have psychological characteristics that more appropriately fit WED and write in a manner suggestive of more emotional processing of unresolved stress.

333) Abstract 1118

COPING PROCESSES AND THEIR ASSOCIATIONS WITH PSYCHOLOGICAL FUNCTIONING IN PATIENTS WITH ARTHRITIS
Amy Lowery, Ph.D., Memorial Sloan-Kettering Cancer Center, New York, NY, Diane C. Radavanski, MA, Shantai Y. Savage, BA, Naomi Schlesinger, MD, Afton L. Hassett, Psy.D., Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ

Methods: In this ongoing study, 33 patients undergoing standard medical evaluations in our rheumatology clinic completed self-report questionnaires including the Ways of Coping Questionnaire, Hospital Anxiety and Depression Scale, Positive and Negative Affect Scale, Satisfaction with Life Scale, and Health Assessment Questionnaire.

A-116
Results: Active coping processes, were negatively correlated with NA (planful problem solving: $r=-.49$, $p<.05$), anxiety (self-controlling: $r=-.40$, $p<.05$), depression (planful problem solving: $r=-.40$, $p<.05$), and total mood disturbance (planful problem solving: $r=-.39$ and self-controlling: $r=-.46$, $p<.05$). Passive coping processes were positively correlated with NA (escape-avoidance: $r=.64$, $p<.01$) and mood disturbance (distancing: $r=.43$ and escape-avoidance: $r=-.60$, $p<.05$), and negatively correlated with life satisfaction (distancing: $r=-.42$ and escape-avoidance: $r=-.45$, $p<.05$). Utilization of a primarily accepting responsibility-coping style was positively related to NA ($r=.41$, $p<.05$) and the escape-avoidance-coping style ($r=.36$, $p<.05$), and negatively correlated with more active coping styles, such as planful problem solving ($r=-.41$, $p<.05$) and seeking social support ($r=-.42$, $p<.05$). None of the coping processes were significantly related to PA. The only coping style significantly correlated with pain was escape-avoidance ($r=.48$, $p<.01$). Age, however, appeared to play a role in coping, with patients utilizing healthier coping styles with increased age. Conclusions: In general, positive coping processes were associated with decreased NA, and negative or neutral coping processes were associated with increased NA. However, accepting responsibility, a means of coping that may be considered positive, yet passive, was associated with increased NA and other passive coping styles. It appears active, not just positive, coping styles may be most effective in managing negative mood and affect, regardless of disease severity.

334) Abstract 1138
THE RELATIONSHIP BETWEEN POSITIVE AND NEGATIVE AFFECT AND DISEASE VARIABLES IN ARTHRITIS
Amy Lowery, Ph.D., Memorial Sloan-Kettering Cancer Center, New York, NY, Diane C. Radavanski, MA, Shantal V. Savage, BA, Naomi Schlesinger, MD, Afton L. Hassett, Psy.D., Medicine, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ
Method: In this pilot study, 33 patients with arthritis undergoing standard medical evaluations in our rheumatology clinic completed self-report questionnaires including the Hospital Anxiety and Depression Scale (HAD), Positive and Negative Affect Scale, Satisfaction with Life Scale, and Health Assessment Questionnaire. Disease activity markers C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were obtained from medical charts. Results: A significant inverse relationship was found between positive affect (PA) and pain ($r=-.43$, $p<.05$) and disability ($r=-.36$, $p<.05$). A similar pattern of significance was found between life satisfaction and pain ($r=-.45$, $p<.01$) and disability ($r=-.57$, $p<.01$). Pain was found to be significantly positively correlated with negative affect (NA) ($r=.44$, $p<.01$), depression ($r=.56$, $p<.01$), and total mood disturbance ($r=.46$, $p<.01$). However, NA was not significantly related to disability. Although ESR was not found to be significantly related to patient-reported pain and severity of disability, it was significantly related to reported mood disturbance ($r=-.42$, $p<.05$) and NA ($r=.49$, $p<.05$). CRP was not related to any of the psychosocial or disease variables. Positive affect may be more strongly related to the experience of pain and disability than negative affect, and thus be a potentially important target for intervention. Negative mood and affect may be related to severity of chronic disease over time, even in the absence of current pain and disability. Longitudinal studies are needed to evaluate the direction of these relationships.

335) Abstract 1364
THERAPEUTIC AND RESEARCH APPLICATIONS OF ECOLOGICAL MOMENTARY ASSESSMENT IN PATIENTS WITH SEVERE SOMATOFORM DISORDER
Myriam M. Lipovsky, MD PhD, Martina E. Bühring, MD PhD, Albrecht Prskalo, Psychiatric Medicine, Altrecht Mental Health Organization, Zeist, the Netherlands, MarjoLIN J. Sorbi, PhD, Department of Clinical and Health Psychology, Utrecht University, Utrecht, the Netherlands
Introduction: Somatoform disorders are still poorly recognized in somatic medicine. Therefore, accurate symptom assessment is very important for both diagnosis and evaluation of treatment effects. Ecological Momentary Assessment (EMA) by means of electronic diary was shown to be superior to other diagnostic tools and overcome drawbacks of retrospective questionnaire assessment such as recall bias. We demonstrated the feasibility and possibilities of EMA and tested a therapeutic application of this method in patients with severe somatoform disorders.

Methods: In patients with severe somatoform disorder, during ($N=11$) and after intensive treatment ($N=20$), feasibility of EMA was tested with regard to acceptance, compliance and reactivity. Recall bias was also tested by comparing the individual mean score of symptom diaries during 7-day EMA against retrospective symptom assessments. In this group, acceptance was also tested of online graphical feedback of the symptoms registered. Subsequently, EMA combined with oral feedback by telephone ($N=10$) was tested as a therapeutic aid in the aftercare following intensive treatment, as relapse prevention.

Results: In all settings, EMA was well accepted and adhered to, with overall compliance rates between 80.3% and 86.1%, without reactivity effects. Compared to EMA, retrospective questionnaire assessment significantly overestimated pain ($p<.01$), fatigue ($p<.001$) and tension ($p<.01$). The acceptability of graphical online feedback was established. Next, the clinical pilot with EMA combined with oral feedback as a therapeutic tool showed a high acceptability of both technical and therapeutic aspects.

Conclusion: EMA is a highly feasible method for assessing patients with severe somatoform disorders. Moreover, EMA combined with feedback by telephone is a highly promising new therapeutic tool in the aftercare for these patients.

336) Abstract 1373
FACTOR ANALYSIS OF THE MMPI-2 CONTENT SCALES IN A CHRONIC PAIN POPULATION: EVIDENCE FOR A SOCIAL-COGNITIVE COMPONENT
Alexander Patterson, M.A., Jonathan Woodhouse, Psy.D., Jesse Frey, Psy.D., Mary Peterson, Ph.D., Dale Veith, Psy.D., Department of Clinical Psychology, George Fox University, Newberg, OR
Purpose of Study: Due to the varying clinical presentations of chronic pain patients, the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) is often utilized to help clarify individual differences and guide the conceptualization and treatment of pain-related disorders. Factor-analytic studies of the MMPI-2 clinical scale profiles of chronic pain patients have demonstrated reliably that several meaningful underlying components exist. This study hypothesized that factor analysis of the MMPI-2 content scales of chronic pain patients will also reveal meaningful underlying components. Methods: This study utilized a large archival electronic database of MMPI-2 scores from a tertiary hospital. 100 individuals who had been diagnosed with chronic pain were included, consisting of 75 females and 25 males between 25 and 81 years of age (mean age of 49). Descriptive statistics were analyzed, a correlation matrix was created to look for relationships between variables, and a principle component analysis with Oblimin rotation was performed to look for underlying components. Results: 14 of the 15 content scales were significantly inter-correlated (the FRS scale was excluded due to low correlation). The KMO measure and Bartlett's test both indicated that the 14 scales were appropriate for analysis, and the 7:1 subject-to-variable ratio exceeded commonly cited minimum requirements. Principle component analysis revealed a significant primary component with strong loadings for nine scales: ANX, DEP, WRK, OBS, LSE, ANG, HEA, TRT, and FAM. These scales accounted for 54.9% of the variance in our factor analysis (eigenvalue = 7.68). The results of this study provided preliminary evidence for a meaningful underlying factor which we labeled the Social-Cognitive component. The Social-Cognitive component illustrates the important relationship between psychological distress and social problems that often presents as part of the chronic pain syndrome. The primary limitation of this study was its skewed male-female ratio. Future research is needed with a larger sample to reinforce the validity of these results and clarify potential gender differences.
337) Abstract 1587

COPI NG FLEXIBILITY IN WOMEN WITH FIBROMYALGIA AND HEALTHY CONTROLS
Erin M. Tooley, M.S., Jennifer Bernard, M.S., Alexis Ortiz, B.S., Hadass Fuerst, Rob Hoy, Haley Licha, Psychology, University of New Mexico, Albuquerque, NM

The purpose of this study was to examine coping flexibility in women diagnosed with fibromyalgia and healthy women. A second aim of this study was to examine how the fit between the coping strategy and the controllability of the stressful situation predicted symptoms of depression, perceived stress, and physical functioning. An adapted version of Cheng & a (2001) coping flexibility questionnaire was used to assess flexibility in control appraisals, perceived coping effectiveness, and to determine whether there was a strategy-situation fit. There were small effect sizes for the group differences in coping flexibility and coping effectiveness although the differences were not significant. The addition of strategy-situation fit into multiple regression equations did not significantly increase the amount of variance accounted for in the three dependent variables. Cognitive deficits, specifically impairments in memory and concentration, in the FM group may have affected the reporting and description of their stressful events and coping strategies.

338) Abstract 1611

PERSONALITY, ILLNESS PERCEPTION AND ADJUSTMENT TO A CHRONIC DISEASE
Sylvie Pucheu, PhD, Stilla M. Consoli, PhD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, Ile de France, France, Dominique Cusenier, CECN, Laboratory of Somatic and Identity Alternatives, Paris Ouest La Defense University, Nanterre, Ile de France, France

Objective: to examine the respective role played by type and severity of the disease, personality traits and illness perception in adjustment to a chronic disease. Methods: 145 subjects suffering from 4 different diseases (35 insulin-dependent diabetes (DB), 33 non diabetic End Renal Stage Disease on haemodialysis (HD), 37 cardiac failure (CF) and 40 colon cancer (CC)) completed the PAIS-SR (adapted version of PAIS) (adjustment, coping flexibility and control) and the AHIMSA Acculturation Scale. Results: PAIS-SR means (r=0.17; p<0.05), the severity of the disease (rho=0.43; p<.001), but not with the duration of the disease or its treatment. PAIS-SR means differed according to the type of the disease (p=0.001) and were higher in HD and CF than in CC and DB patients. PAIS-SR was positively correlated with Neuroticism (r=0.42; p<0.001) and negatively with Extraversion (r=-0.28; p=0.001), Openness (r=-0.18; p<0.05) and Conscientiousness (r=-0.21; p=0.01) at NEO-PI-R. Adjustment difficulties were also positively correlated with illness identity (i.e. the number symptoms experienced and attributed by the patient to the disease), perception of a chronic as well as cyclic evolution, illness consequences, emotional impact, attribution to psychological causes as well as to risk factors, and negatively correlated with perception of a personal or a treatment control and illness coherence at IPQ-R. After controlling for age, the severity of the disease, neuroticism and the type of disease respectively explained 14%, 14% and 26% of the total variance in a model accounting for 66% of the variance. In multivariate analysis, only diabetes exhibited lower PAIS-SR scores, compared with the other groups. Conclusion: Adjustment difficulties are higher in patients suffering from life threatening diseases and are independently and positively associated with the severity of the disease and neuroticism.

339) Abstract 1456

ACCULTURATION FACTORS PROTECT AGAINST CENTRAL ADIPOSITY IN IMMIGRANT YOUTH
Elizabeth C. Quon, B.Sc., Jennifer J. McGrath, PhD, Pediatric Public Health Psychology PPHP Laboratory, Concordia University, Montréal, Québec, Canada

First-generation immigrant youth have a lower prevalence of overweight than second-generation immigrant youth (12-25% vs. 26-32%). The mechanisms underlying the weight gain with time spent in North America are unclear, but factors related to acculturation may be implicated. Previous studies have examined indirect acculturation factors, such as language spoken at home or proportion of foreign-born neighbors, rather than assessing the individual experience of acculturation. The aim of the current study was to examine the association between acculturation factors (direct and indirect) and weight status and central adiposity in immigrant youth. Participants (N = 243) aged 10 to 15 years took part in the larger Healthy Heart Project at Concordia University. Immigration status was categorized based on where the youth and their parents were born: first-generation immigrants (child born outside of Canada), second-generation immigrants (child born in Canada, one parent born outside of Canada), and third-generation immigrants (child and both parents born in Canada). The indirect measure of acculturation was the language spoken at home and the direct measure was the AHIMSA Acculturation Scale (Unger et al., 2002). Central adiposity was measured as waist circumference. Weight status was measured as age- and sex-standardized body mass index percentiles. Using the 85th percentile cut-off, 15% of first-generation, 25% of second-generation, and 31% of third-generation immigrants were overweight or obese. Interestingly, among first-generation immigrants only, those who spoke their language of origin at home had significantly lower waist circumferences than those who spoke English or French at home (F (2, 19) = 4.16; p < .05). Further, identifying more strongly with one's ethnic group on the acculturation scale was correlated with smaller waist circumference (r = -.96; p < .05). These findings suggest acculturation factors that tie new immigrants to their original culture, thus delaying the adoption of North American culture, may protect against obesity and central adiposity.

340) Abstract 1728

SLEEP DURATION IS ASSOCIATED WITH GLUCOSE METABOLISM IN OLDER ADULTS
Jessica D. McNeely, MA, Psychology, University of Maryland, Baltimore, MD, Leslie I. Katzell, MD, Ph.D, Medicine, University of Maryland, School of Medicine, Baltimore, MD, Shari R. Waldstein, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD

Short and long sleep duration have been associated with increased risk of cardiovascular, cancer and all cause mortality, although relevant biological mechanisms remain uncertain. In that regard, sleep duration has been shown to impact glucose regulation. Here we examined relations of sleep duration, glucose levels and glucose metabolism in 142 community-dwelling older adults [mean age = 66.4 (7.0), 49.7% male 89% white] free of major medical co-morbidity including history of diabetes. We further determined whether associations were independent of depressive symptoms and perceived stress. Participants completed the Perceived Stress Scale and the Beck Depression Inventory and underwent an Oral Glucose Tolerance Test (OGTT). Blood samples were collected at baseline and every 30min post-glucose ingestion for a total duration of 120 min. Using each time point, the area under the curve (AUC) was calculated as an additional measure of glucose metabolism. Participants reported the number of hours they slept per night and also reported whether they felt sleepy during the day. Multiple regression analyses, adjusted for age, sex, race and education, were computed separately for glucose at time 0, 120 and AUC. Results indicated that sleep duration was a significant independent predictor of glucose at 120min (beta=-189, p<.05) and glucose AUC (beta=-183, p<.05). Interestingly, PSS was also an independent predictor of glucose at 120min (beta=12, p<.05). The present study suggests that both shorter sleep duration and increased perceived stress may negatively influence glucose metabolism, thus potentially increasing risk for Type II diabetes or cardiovascular disease. Because both sleep duration and perceived stress are modifiable risk factors, these findings may have important implications for the prevention of metabolic and cardiovascular diseases.
MULTIDISCIPLINARY RESEARCH IN BIOFEEDBACK

Lamees Khosh, Psy.D, Psychiatry and Psychology, Dana L Frank, BS, Cardiovascular Medicine, Jerry Kiffer, MA, Psychiatry and Psychology, Alex K. Grossman-McKee, Cardiovascular Medicine, Leopoldo Pozuelo, MD, Psychiatry and Psychology, Francois Bethoux, MD, Neurology, James B. Young, MD, Christine S. Moravec, PhD, Cardiovascular Medicine, Michael G. McKee, PhD, Psychiatry and Psychology, Cleveland Clinic, Cleveland, OH

Biofeedback (BF) is gaining acceptance as a therapeutic modality which provides added value for patients with many medical conditions, and which has been shown to aid in recovery from some of those conditions. The Association for Applied Psychophysiology and Biofeedback recently analyzed research in BF, and the resulting report concludes that there is sufficient data to label BF as efficacious and specific in medical conditions such as female urinary incontinence. BF is rated efficacious in diseases such as anxiety, headache, chronic pain and epilepsy; only possibly efficacious in depression and asthma; and not well-justified in eating disorders or spinal cord injury. There are many prevalent disease states in which BF has not been tested, or has been studied only in small and specific cohorts in which no far-reaching conclusions can be drawn. BF training can be used to regulate activity of the autonomic nervous system, which is increasingly recognized to be involved in many diseases. Down-regulation of the sympathetic nervous system has been shown to be advantageous in many conditions and is the reason for the success of beta-blocking drugs. Up-regulation of the parasympathetic nervous system has recently been shown to be anti-inflammatory and is the rationale for trials of vagal nerve stimulation. We hypothesize that BF is an efficacious adjunct to conventional therapy in conditions such as coronary artery disease, diabetes and multiple sclerosis, where the autonomic nervous system is involved in disease progression or symptom generation. To test this, we are undertaking a study of patients at the Cleveland Clinic with documented coronary artery disease, diabetes or multiple sclerosis. Within each disease population, patients will be randomized into 2 groups. One group will receive 8 sessions of BF training, while the other group will receive valid sham treatment. Measures of autonomic nervous system activation, inflammation, and quality of life will be obtained in all patients in each group. Disease-specific indicators of symptoms, disease progression, and quality of life will also be monitored. Our hypothesis is that the BF-treated subjects will demonstrate progress in symptom control and quality of life, and that progress in this direction will be positively correlated with the ability to self-regulate. This study is currently ongoing at the Cleveland Clinic, supported by the Bakken Heart-Brain Institute.

THE IMPACT OF DEPRESSION ON THE QUALITY OF LIFE IN DYSPEPSIA PATIENTS: COMPARISON BETWEEN ORGANIC AND FUNCTIONAL GROUP

Sang-Youl Lee, M.D., Ph.D., Psychiatry and Behavioral Medicine, University of Wonkwang Medical School, Iksan, Cheonbuk, Republic of Korea, Suck Che Choi, M.D., Ph.D., Gastroenterology, University of Wonkwang Medical School, Iksan, Cheonbuk, Republic of Korea

Objectives: Psychological factors, especially emotions, play a role in a variety of gastrointestinal illness, including dyspepsia patients. The purpose of this study was to investigate impact of depression on the illness intrusiveness and the QoL in dyspepsia patients. We performed psychological assessments in functional(n=25) and organic(n=42) dyspepsia patients using Short-Form 36 Health Survey(SF-36), Beck Depression Inventory(BDI), Spielberger State-Trait Anxiety Inventory(STAI), Positive and negative affect scale(PNAS), Spielberger State-Trait Anger Expression Inventory(STAXI), and Illness Intrusiveness Scale. We also compared the results of instruments of the depressed patients to the nondepressed patients in organic and functional dyspepsia patients. Results: There were no significant differences between two groups in QoL except social functioning and illness intrusiveness. Patients with organic dyspepsia were found to have significantly higher BDI score and State anger compare to the patients with functional dyspepsia. The prevalence of depression in organic dyspepsia was 45.5% and these patients reported significantly less QoL except physical functioning, more illness intrusion, more negative affect, more state and trait anxiety, more state and trait anger than the nondepressed patients. SF-36 were negatively correlated with negative affect, state anxiety, trait anxiety and BDI, whereas SF-36 was positively correlated with positive affect in the organic dyspepsia patients. The depressed patients of functional dyspepsia reported significantly less physical functioning in QoL, more negative affect, more state and trait anxiety. SF-36 were negatively correlated with negative affect, state anxiety and trait anxiety, whereas SF-36 positively correlated with positive affect in the functional dyspepsia patients. Conclusion: These results suggest that although there was no difference QoL and Illness Intrusuro between organic and functional dyspepsia, patients with organic dyspepsia are more likely to be depressed and state anger than functional dyspepsia, and depressed patients in organic dyspepsia are more likely to have less QoL and more illness intrusion. These findings suggest that emotional distress in dyspepsia may impact on QoL and illness intrusion.

STRESS AND ABDOMINAL PAIN AFTER EXPOSURE TO A LABORATORY STRESSOR: PRELIMINARY ANALYSES OF PATIENTS WITH GASTROINTESTINAL ILLNESS

Gerena, Hyowizot, M.A., Psychiatry, Stony Brook-Kelly, Ph.D., Psychiatry, Stony Brook University, Stony Brook, NY

Ulcerative Colitis and Crohn's Disease are gastrointestinal (GI) illnesses that comprise Inflammatory Bowel Disease (IBD). Irritable Bowel Syndrome (IBS) is a disorder associated with GI pain. While both IBD and IBS have similar symptoms, IBD is characterized by GI inflammation and is considered an organic illness, whereas IBS is linked to psychosocial factors and is considered a functional disorder. However, many argue that psychosocial and physiological factors play a role in the progression of both disorders, calling into question the validity of this classification. Thus, the purpose of the current pilot study is to compare stress and pain in patients with IBD and IBS after exposure to a laboratory stressor. Five patients diagnosed with IBS, and 3 patients diagnosed with IBD reported baseline stress levels over the previous month, and post-laboratory stressor (Trier Social Stress Test; TSST) levels of abdominal pain and stress 24- and 48-hours after exposure. We hypothesize that individuals with IBS will report higher baseline stress and higher post-TSST stress and abdominal pain 24 hours following exposure, compared to individuals with IBD. Additionally, both groups will report a decrease in abdominal pain and stress between 24 and 48 hours post-TSST exposure. Surprisingly, no significant difference in baseline stress was found between the groups, and no significant difference in abdominal pain or stress levels between the groups was detected at 24 hours post-TSST. As expected, post-TSST stress decreased between 24 and 48 hours. These findings do not support the dichotomy of organic vs. functional GI illnesses. Eliminating the emphasis of this distinction has implications for both assessment and treatment of GI symptoms, and may move the area of GI research toward the adoption of a biopsychosocial approach to patient care.

THE RELATIONSHIP BETWEEN PSYCHIATRIC DISORDERS AND INFLAMMATORY BOWEL DISEASE IN CHILDREN AND ADOLESCENTS

Parikshit A. Deshmukh, MD, Jeanne Lackamp, MD, Psychiatry, University Hospitals Case Medical Center, Cleveland, OH, Gaurav A. Kulkarni, MD, Child and Adolescent Psychiatry, Alumni of Indira Gandhi Medical College, Nagpur, India

Background and Objective: The overlap between Inflammatory Bowel Disease (IBD) and psychiatric disorders has been studied extensively and many articles have established this relationship in adults as well as in children and adolescents. This review study strives to summarize these findings, and bridge the gap between current understanding and future directions for research. Methods: We used the PubMed online search to find studies targeting the relationship between IBD and psychiatric disorders in children and adolescents. The key search words included 'children', 'adolescents', 'IBD', 'Inflammatory Bowel Disease', 'psychiatric', 'psychotherapy', 'antidepressants', 'depression' and 'anxiety'. The target dates ranged from Jan, 1980 to June 2009. Only those
articles, which focus on relationship between psychiatric disorders and psychological co-morbidities in patients with IBD, were included. The complex association between psychiatric symptoms and IBD in pediatric patients was explored by reviewing the available literature. Findings of this review were compared with findings of available studies in adults. Results: Consistent results reflecting a bidirectional relationship between IBD and psychiatric illnesses were observed. The findings were consistent with those in adults. The need for screening and treatment (including psychotherapy and pharmacotherapy) appeared crucial. In adults, numerous studies have reflected the advantages of treating psychiatric disorders in patients with IBD such as faster recovery, improved quality of life, and reduced health care utilization; however the psychopharmacological studies are lacking. At this time, literature in pediatric population remains scarce. This study explains this relationship and attempts to suggest the treatment options in the form of comprehensive diagrams and flow charts. Conclusions: Though a substantial amount of literature is available to confirm the relationship between IBD and psychiatric disorders in pediatric patients, it is impossible to make standard guidelines for treatment due to scant available literature. Further studies on this patient population are warranted. "This abstract is based on the material that has been accepted for the publication in 'Current Psychiatry Reports' journal. The permission for presentation based on this material has been obtained from Springer Science and Business Media".

345) Abstract 1276

IMPAKT OF SELF-EFFICACY ON RISK FOR EXACERBATIONS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) PATIENTS

A. Jacob, BA, Kim L. Lavoie, PhD, Psychology; Pneumology; Exercise Science; MBMC; C. Laurin, PhD, Psychology; Pneumology; Exercise Science; MBMC; M. Labrecque, MD, Psychology; Pneumology; Exercise Science; MBMC, UQAM; Hôpital du Sacré-Coeur de Montréal, Concordia, Montreal, Quebec, Canada, A. Bacon, PhD, Psychology; Pneumology; Exercise Science; MBMC, UQAM; Hôpital du Sacré-Coeur de Montréal, Concordia, Montreal, Quebec, Canada

Purpose: Psychological factors such as anxiety and depression have been associated with an increased risk of COPD exacerbation. One factor that has been consistently been shown to impact chronic disease outcomes is self-efficacy, which is an individual's confidence in their ability to manage or prevent disease-related symptoms and associated morbidity. The purpose of this study was to assess the impact of COPD-specific self-efficacy on COPD exacerbations using a prospective design. Methods: COPD-specific self-efficacy was assessed using question 7 from the Seattle Obstructive Lung Disease Questionnaire (SOLDQ-7) in 110 patients (51% women, M age ± SD: 66 ± 8 years) with stable COPD. Patients were followed for a mean of 2.2 years and data on both inpatient-treated (i.e., treated in the emergency department or hospital) and outpatient-treated (i.e., treated with medication in the patient's own environment) exacerbations was collected via monthly telephone interviews and verified by chart review. Summary of results: At baseline, the mean ± SD SOLDQ-7 score was 5.7 ± 1.3 (higher scores indicate better self-efficacy). Patients with higher levels of self-efficacy at baseline were at significantly lower risk for future inpatient exacerbations (RR [for a 1 point increase] = 0.83, 95% CI, 0.69-0.99), but not outpatient exacerbations (RR = 1.11, 95% CI, 0.94-1.30). Findings demonstrate that patients with better COPD self-efficacy were at reduced risk of inpatient-treated exacerbations, with each 1 point increase in the SOLDQ-7 associated with a 13% reduction in risk. However, self-efficacy did not predict out-patient treated exacerbations. These results suggest that assessments of self-efficacy should be included as part of the standard evaluation of COPD patients. Interventions designed to improve self-efficacy (e.g. cognitive-behavioral therapy, CBT) could be offered to COPD patients, and future research should assess the efficacy of CBT on improving COPD outcomes.

346) Abstract 1578

INCREASE IN AIRWAY INFLAMMATION FOLLOWING ACUTE PSYCHOSOCIAL STRESS AND ITS ASSOCIATION WITH CORTISOL LEVELS IN ASTHMA

Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Erica S. Ayala, M. A., Ana F. Trueba, B.S., Antje Katlowatz, Ph.D., PSYCHOLOGY, Southern Methodist University, DALLAS, TEXAS, Charles D. Vance, MD, PhD., Richard J. Auchus, MD, PhD., Biomedical Sciences, UT Southwestern Medical Center At Dallas, Dallas, Texas

Psychosocial stress is known to influence the pathophysiology of asthma. Although stress has been linked to serum markers of inflammatory activity and exaggerated responding to allergen challenge in asthma, few studies have examined inflammatory activity in the airways linked to psychosocial stress alone. Furthermore, although studies have demonstrated lower levels or reactivity of endogenous cortisol in asthma, their association with airway inflammatory activity in stress remains unexplored. We therefore studied airway inflammation measured by the fraction of exhaled nitric oxide (FeNO) and saliva cortisol responses in 20 adult asthma patients and 19 healthy controls under experimental challenge using the Trier Social Stress Test. In addition, using respiratory inductive plethysmography we controlled for changes in ventilatory activity that may alter levels of FeNO. Results showed that FeNO levels were generally higher in asthma patients than healthy controls (pre-stress levels 38.2 vs. 21.1 ppb) and cortisol levels were lower (10.7 vs.17.4 nmol/l). Increases in cortisol levels were observed following the stress protocol in both groups. FeNO levels at the time of peak cortisol increase after stress were significantly higher than before stress in both groups. FeNO increases were independent of changes in ventilation. In asthma patients, stronger increases in cortisol following stress were significantly associated with smaller increases in FeNO. Thus, acute psychosocial stress alone increases airway inflammatory markers and this increase is attenuated by stronger stress-related activity of the hypothalamic pituitary adrenal axis.

347) Abstract 1809

ASSOCIATIONS OF FAMILY ASTHMA MANAGEMENT WITH SOCIOECONOMIC STATUS AND BIOLOGICAL OUTCOMES IN CHILDREN WITH ASTHMA

Hope Walker, MA, Edith Chen, PhD, Psychology, University of British Columbia, Vancouver, BC, Canada

Childhood asthma is a chronic inflammatory disease, with symptoms likely affected by physical, environmental and social factors. With regard to social factors, previous research has linked both asthma management, as well as socioeconomic status (SES) to morbidity outcomes in children with asthma. We tested whether SES was related to asthma management cross-sectionally in a sample of children presenting asthma, whether family asthma management were associated with biological outcomes, and whether there was support for the mediation model SES -> asthma management -> biology. Eighty-nine children with asthma and their parents were interviewed using the Family Asthma Management System Scale (FAMSS) and parents reported SES. An SES composite variable was created by coding parents' number of years of education and occupation. Asthma outcomes included spirometry to ascertain lung function (FEV1%), and eosinophil counts. SES was positively related to the FAMSS dimensions Asthma Knowledge (r = .27, p < .05), Adherence to Medications (r = .57, p < .05) and Collaboration with Physician (r = .18, p < .10), such that families with higher SES composite scores had better ratings on each of these dimensions of asthma management. As such, a composite asthma management variable was created in order to test associations with biology. This variable predicted lung function (FEV1%, B = .513, t = 2.18, p < .05), and not eosinophil counts. Conversely, the SES composite predicted eosinophil counts (B = -.078, t = -2.24, p < .05), and not lung function. Because of these differential effects of SES and asthma management on biology, the mediation model SES -> FAMSS -> biology was tested but not supported statistically. These patterns suggest that while SES is related to family asthma management dimensions, they each are related to different biological indicators of asthma. Further research may be needed in this area.

A-120
management domains are related to socioeconomic status, and have implications for biological profiles in children with asthma.

348) Abstract 1269

STRESS PREDICTS ASTHMA ONSET IN ADOLESCENTS
Nienke M. Vink, MD, Markie M. Boezen, PhD, Epidemiology, Dirkje S. Postuma, MD, PhD, Pulmonology, Judith G. Rosmalen, PhD, Psychiatry, Internal Medicine, University Medical Center Groningen, Groningen, The Netherlands

Purpose of the study: To study the role of stress in the etiology of asthma. We hypothesized that stress is a predictor for asthma onset, and that this effect is restricted to people with a familiar predisposition of asthma. Subject sample and statement of methods: In the population-based TRacking Adolescents’ Individual Lives Survey study (n=2230, females 51%), adolescents were followed-up from ages 11 till 16 years. Stress was retrospectively measured for different age windows: psychological problems during pregnancy and postnatal depression (reported by the mother at child’s age 11), and unpleasant experiences between ages 0-5 years and between ages 6-11 years (reported by the adolescent at age 14). At age 16 years, adolescents provided information on the presence of asthma and on the age of their first asthma attack. Survival analyses were used to estimate the hazard ratios (HRs) for asthma onset as a function of stress, adjusted for gender. Summary of results: Psychiatric problems during pregnancy (HR=3.14, p=0.01) and unpleasant experiences between ages 6-11 years (HR=11.18, p=0.01) significantly predicted asthma onset. Postnatal depression (HR=1.90, p=0.10) and unpleasant experiences between ages 0-5 years (HR=1.07, p=0.10) were predictive for asthma onset, although not significant. Stratified analysis revealed that, contrary to our hypothesis, the effect of stress on asthma onset was not restricted to adolescents with a familiar predisposition of asthma. Conclusions: Our study suggests that stress is a risk factor for asthma onset. We will study mediating mechanisms of this association, including active and passive smoking, overweight and depression.

349) Abstract 1504

ALTERED CARDIAC CONTRACTILITY IN INDIVIDUALS WITH SLEEP APNEA AND IMPROVEMENT WITH CPAP TREATMENT: A REPPLICATION STUDY
Richard A. Nelesen, Ph.D., Psychiatry, Joel E. Dimsdale, M.D., Psychiatry, University of California, San Diego, La Jolla, CA

Obstructive sleep apnea (OSA) is a common sleep disorder with prominent cardiovascular morbidity. Previous studies have revealed that OSA patients have altered contractility and that treatment for one week with continuous positive airways pressure (CPAP) normalizes the contractility at rest and in response to stress. This study examined if such findings would replicate in another sample of patients treated for 3-weeks. Fifteen normal and 45 apneic individuals’ contractility responses to a speech stressor were studied. The 45 apneic were then randomized to real or sham CPAP treatment for 3 weeks and studied again. Contractility was determined with impedance cardiography as pre ejec tion period (PEP) and cardiac acceleration index (CAI) in response to a public speaking stressor. In the comparison of normals to apneics there was a stress period by patient group interaction for PEP and CAI (p = .036 and p = .001 respectively). The normals showed a significant increase in CAI (p < .001) and decrease in PEP (p = .001) to the speech, whereas the apneics showed no change in either measure in response to the stressor. At baseline, CAI was significantly higher and PEP significantly lower in the apneics than the normals. In examining the response to CPAP treatment, there was a stress period by treatment interactions (p = .036 for PEP and p = .001 for CAI). The CPAP treated subjects showed a significantly less contractility at baseline (lower CAI, higher PEP) than the sham treated (p < .03). The treated subjects also showed a significant increase in contractility (p < .001), while the untreated subjects showed no change in contractility. We replicated our previous findings that sleep apnea is associated with altered cardiac contractility and that the contractility returns to normal after treatment with CPAP. These findings were extended in that this effect continues through 3 weeks of treatment.

350) Abstract 1601

CAN SOMATIC AWARENESS BUFFER THE CARDIOVASCULAR RESPONSES TO STRESS IN WOMEN?
Jacob A. Bentley, M.A., Clinical Psychology, Barnali Basu, M.S., Lustyk Women’s Health Lab, Kathleen B. Lustyk, Ph.D., Psychology, Seattle Pacific University, Seattle, WA, G. Alan Marlatt, Ph.D., Psychology, University of Washington, Seattle, WA

Mindfulness is a common feature of “third wave” therapies (Ost, 2008) that promotes symptom improvement or management, in part, through somatic awareness (SA). Mindfulness associated improvements in women’s health research include reduced stress and improved outcomes in pregnant women (Vieten & Astin, 2008), post-menopausal women (Carmody et al., 2006), and breast cancer patients (Shapiro et al., 2003). Thus, it is reasonable to expect that increased SA would similarly be associated with stress reduction in women. To test this hypothesis, we investigated self-reported SA (via the Body Awareness Questionnaire [BAQ]) and cardiovascular responses to a laboratory stressor in women (N = 40, 18-45 years of age) who were screened for menstrual cycle normality, hormone use, and illnesses and medications known to affect cardiovascular responses to laboratory stressors. During testing, heart rate (HR) was continuously assessed via electrocardiography (PowerLab; ADI Instruments). After 15-minutes of baseline, women performed a Paced Serial Addition Task (SA) as a cognitive stressor. Timed blood pressure (BP) was recorded by a Dynamap (Critikon). To control for hormonal effects on stress responses, testing occurred on follicular cycle days 5-9. Before testing, women completed the BAQ and Trait Anxiety Inventory. Pre- and poststressor, women completed the State Anxiety Inventory. Vitals were monitored for 15-minutes post-stressor. Results revealed significant HR and BP reactivity in response to the PASAT. SA was significantly and inversely related to HR and BP reactivity. Since trait anxiety is known to affect reactivity to laboratory stressors (Pollatos, et al., 2007), analyses were performed with trait anxiety in the model. BP reactivity was positively correlated with trait anxiety, yet negatively correlated with SA (p < .05). SA failed to significantly moderate the relationship between trait anxiety and HR or BP. Thus, increasing SA may not serve to reduce stress responses in women by reducing the effects of trait anxiety, however, the significant inverse relationships among SA and stress in women warrants further study.
strongly correlated (.78, p<.001), and strongly associated with depression and PTSD in history, at pre-test and at post-test, but were not related to obstetric or demographic characteristics. 11% of women with PE suffers from PTSD at 15 months postpartum, and 20% has a depression. Results on PPROM are inconclusive. PTSD and depression following pregnancy complications are serious long lasting conditions affecting at least 10-20 percent of the women involved.

Prevalence of PTSD and Depression (%)  

<table>
<thead>
<tr>
<th></th>
<th>PTS D</th>
<th>DEPRESS-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PE</td>
<td>PPRROM</td>
</tr>
<tr>
<td>pre-test</td>
<td>(n=193)</td>
<td>21</td>
</tr>
<tr>
<td>post-test</td>
<td>(n=175)</td>
<td>11</td>
</tr>
<tr>
<td>follow-up</td>
<td>(n=137)</td>
<td>11</td>
</tr>
</tbody>
</table>

352) Abstract 1608  
CAN PREMENSTRUAL SYMPTOMS, TRAIT ANXIETY, OR QUALITY OF LIFE REPORTS EXPLAIN LUTEAL PHASE INCREASES IN STRESS REACTIVITY IN WOMEN?  
Susan J. Locke, Bachelor of Arts, Hilary A. Carpenter, Psychology, Seattle Pacific University, Seattle, Washington, Haley Douglas, B.S., M. Kathleen B. Lustyk, Ph.D., Psychology, Seattle Pacific University, Seattle, WA  
Women demonstrate greater cardiovascular reactivity and slower recovery irrespective of laboratory stressor type when testing occurs during the luteal phase of the menstrual cycle compared to the follicular phase. Neuroendocrine reactivity as measured by salivary cortisol is greater in response to a cognitive stressor compared to a physical stressor when testing occurs during the luteal phase as compared to the follicular phase (Lustyk et al., in press). A potential explanation for the increased luteal phase responding lies with negative premenstrual symptomatology. To determine if premenstrual symptoms including affect, somatic, and quality of life changes explained luteal phase responses to laboratory stressors, the following analyses were performed. Healthy and freely-cycling women (N = 78, ages 18-45) completed the Shortened Premenstrual Assessment Form, which measures premenstrual symptom severity reports (PMSR), Spielberger Trait Anxiety Scale (Trait), and the Frisch Quality of Life Inventory (QOLI) that assesses 16-domains of life satisfaction. These three measures were completed during follicular days 5-9 and the QOLI and PMSR were repeated during luteal days 7-10 following confirmed ovulation. During these same time frames, women completed a counterbalanced laboratory stressor task involving either a cognitive (Paced Serial Addition Task [PASAT]) or physical (Cold Pressor Task [CPT]) challenge while their heart rate, blood pressure, salivary cortisol, and state anxiety were assessed. Multiple regression with interaction probing was used to assess effects of PMSR, QOLI, and Trait on cardiovascular and neuroendocrine measures. Models failed to significantly explain blood pressure or heart rate reactivity. Trait and QOLI significantly predicted cortisol reactivity over and above PMSR. Post-hoc probing revealed that only the QOLI health domain served to predict cortisol reactivity in response to the CPT but not the PASAT. These findings underscore the complexity of factors affecting psychophysiological and neuroendocrine responses to stress in women and provide additional support for a potential stressor specific hypothalamic-pituitary-adrenal response.

353) Abstract 1574  
SELF CIRCUMCISION; AN INCREASING TREND AMONG TEENAGERS?  
Marcus DeCarvalho, MD, Adekola O. Aalo, MD, MRCPsych, FAPM, Psychiatry, SUNY Upstate Medical University, Syracuse, NY  
Case report The patient is a 17-year old Caucasian male who was brought to the emergency department by his girlfriend due to profuse bleeding from his penis. The patient has expressed that he wanted to take matters into my own hands and attempted to circumcise his penis. He wanted the circumcision as his girlfriend requested it. She had described his penis a looking weird, making her uncomfortable. He reports that he searched over the internet on how to do it. He subsequently utilized pair of scissors and tried to cut his foreskin after drinking vodka to self anesthetize himself. After making a few attempts at cutting his foreskin as was detailed on the website, the bleeding was so intense he had to call his girlfriend who brought him to the emergency room for completion of the procedure. Mental Status Exam reveals an anxious Caucasian male who appears his stated age, made good eye contact and presented with a good hygiene. His speech was normal and he described his mood embarrassed. His thought process was logical and his thought content was negative for suicidal ideation or homicidal ideation, or any delusions. There was no cognitive abnormality and his perception was negative for auditory or visual hallucinations or illusions. Insight and judgment both were impaired. After psychiatric evaluation, the patient was cleared for completion of circumcision and was referred for out patient psychiatric follow up. Discussion We have previously described female genital self mutilation. Patients with genital mutilation (male or female) tend to fall into five distinct subtypes: psychotic patients with delusions regarding their genitalia, patients with dissociative identity disorder, patients with severe personality disorder, transsexuals with self-sexual reassignment, and patients whose mutilation reflects religious or cultural beliefs (for example, female circumcision among Moslems and in certain Australian and African tribes). With this report, it appears that there is another category of genital self mutilators. To our knowledge, a case of a teenager self mutilating himself to impress his girlfriend has not been reported. Conclusion With the increasing versatility of patients about internet research, practitioners should be ready to discuss the risks and benefits of circumcision in order to enable patients decide whether it is advisable to have circumcision or not.

354) Abstract 1649  
FATHERS WITH PTSD OR DEPRESSION AFTER A COMPLICATED PREGNANCY  
Claire Stramrood, MD, Obstetrics & Gynecology, Marloes van Geenen, BSc, Groningen University, Bennard Doornbos, MD, University Center for Psychiatry, Jan G. Aarnoudse, MD PhD, Paul P. van den Berg, MD PhD, Willibrord Weijmar Schultz, MD PhD, Maria G. van Pampus, MD PhD, Obstetrics & Gynecology, University Medical Center Groningen, Groningen, The Netherlands  
Postpartum psychological problems are not uncommon in women, but many do not realise that their partners may also develop conditions such as depression and posttraumatic stress disorder (PTSD). Little is known about the psychological effects of severe pregnancy complications on fathers. In this prospective longitudinal study, partners of pregnant women hospitalized for either preeclampsia (PE) or preterm premature rupture of membranes (PPROM) participated. Both conditions are associated with high morbidity and mortality in infants and (in the case of PE) in mothers. Men completed the PSS-SR, BDI-II and general psychological health questionnaires during pregnancy (pre-test) and 6 weeks postpartum (post-test). PTSD is defined as meeting DSM-IV criteria BCDFF on the PSS-SR, depression as BDI-II sumscore >10. Obstetric data were collected from patient charts. Fifty-one of the 123 eligible men participated in pre-test. The female counterparts of the participating and non-participating males were comparable for baseline characteristics, obstetric factors and prevalence rates of PTSD and depression. The 37 men completing pre- and post-test mentioned fewer PTSD symptoms during pre-test than the 14 men participating in pre-test only. During pregnancy, 3 of 51 men met the criteria for PTSD (6%) and 17 for depression (33%); At 6 weeks postpartum, 1 of 37 men had PTSD (3%), and 5 were depressed (14%). Correlation between PTSD and depression sum-score was r=.48 (p<.001) during pregnancy, and r=.36 (p<.001) postpartum. Within-couple correlation of PTSD and depression symptom severity was low and not significant during pregnancy, but strong postpartum (PSS-SR: r=.57, p<.001; BDI-II: r=.58, p<.001). A history of depression, depression during pregnancy, PTSD symptoms during pregnancy (in male and pregnant partner), and infant death were significantly associated with PTSD symptoms in men at 6 weeks postpartum. Partners of women hospitalized for PE/PPROM have higher rates of PTSD symptoms and depression, particularly prior to delivery.
delivery. More attention should be devoted to detect psychological problems following childbirth in fathers, especially in case of perinatal complications.

355) Abstract 1214
THE IMPACT OF WORRIES ON MENTAL HEALTH IN EXPECTANT PARENTS
Susanne N. Bichle, M.A., Kristin D. Mickelson, Ph.D., Psychology, Kent State University, Kent, Ohio
Much has been written about the impact pregnancy has on expectant parents, but less is known about worries parents-to-be experience and its impact on their mental health. While many view worrying as negative, it is an important step in dealing with perceived stressors as a form of inner preparation used prior to coping with a situation. Despite these potential benefits of worry, excessive worry has been shown to be detrimental to an individual's mental health. To examine these potential associations, the current study examines sex differences in pregnancy worries and their link with mental health. We recruited 208 primiparous parents from birthing classes and online message boards. Participants first completed online questionnaires and then completed a second portion of the interview over the phone. Using MANCOVA analyses, our study found that not only do expectant mothers and fathers worry about different things, but they are differentially impacted by the type of worry. Specifically, fathers who worried about security issues reported higher levels of anxiety than fathers who worried about baby issues (F (6,190) = 3.29, p < .01, 2 = .08). On the other hand, mothers who worried about their relationships had significantly higher levels of depression than mothers who worried about baby issues (F (6, 190) = 2.41, p < .05, 2 = .07). Additionally, through structural equation modeling, we found that mothers and father experience similar processes with respect to childbirth worry and general worry frequency. Specifically, for both mothers and fathers, greater childbirth worry and general worry frequency were related to higher anxiety levels, which was in turn was related to less positive affect and more depression. However, for fathers only, a direct link was found with childbirth worries and more depression. For mothers only, spouse's general worry frequency predicted less anxiety in the mother. In conclusion, our study suggests that general worry and type of worry both matter for perinatal mental health.

356) Abstract 1381
REPEATED SOCIAL DEFEAT STRESS INDUCES CHRONIC HYPERTHERMIA IN RATS
Takakazu Oka, M.D., Ph.D., Psychosomatic Medicine, Kyushu University, Fukuoka, Japan, Sota Hayashida, M.D., Takashi Mera, M.D., Ph.D., Sadatoshi Tsuji, Neurology, University of Occupational and Environmental Health, Kitakyushu, Japan
Objective of study: To assess the effect of chronic psychological stress on core body temperature (Tc) in rats. Acute psychological stress such as cage switch stress is known to induce a transient increase in Tc in laboratory animals. However, the effect of chronic stress on Tc is not known. Methods: We observed changes in Tc of the male Wistar rats after animals were subjected to one-hour social defeat (which started at 10 a.m.) daily for 4 weeks by using telemetry. We also observed the immobility time by forced swim test. Results: The first social defeat induced transient increase in Tc, which lasted 3 hours. Repeated social defeat (4 weeks defeats) induced a chronic elevation in Tc in both light period and dark period. This hyperthermia persisted for one week after cessation of social defeat (p<0.05). In forced swim test, immobility time of stressed rats was longer than control rats (p<0.05). Conclusion: Repeated exposure to social defeat induced persistent hyperthermia and depression-like behavior in rats. This study suggests that it is a reliable animal model for psychogenic fever in humans that develops in chronically stressful situations.

357) Abstract 1212
RELATIONSHIP BETWEEN CHRONIC SLEEP RESTRICTION AND HEALTH-RELATED QUALITY OF LIFE
Ali A. Weinstein, Ph.D., Lynn Gerber, M.D., Center for Study of Chronic Illness and Disability, George Mason University, Fairfax, VA, Juhi Moon, M.D., Jillian Kallman, M.S., Yun Fang, M.S., Center for Liver Diseases, Inova Health Care System, Falls Church, VA, Patrice Winter, M.S., P.T., Global and Community Health, George Mason University, Fairfax, VA, Dilama Moore, B.A., Blood Donor Services, Zobair Younossi, M.D., Center for Liver Diseases, Inova Health Care System, Falls Church, VA
Sleep is thought to be closely related to the regulation of emotional and physical well-being. In the general population, chronic sleep restriction is a very common behavior that has been rarely studied for its effect on emotional and physical well-being. Experimental sleep deprivation studies have identified a relationship between lack of sleep and emotional/physical well-being. However, these studies usually have severely restricted sleep. The relationship between less sleep and emotional/physical well-thing in the general population has not been as thoroughly investigated. The present study examines the relationship between average number of hours slept per night and emotional and physical well-being (as measured by health-related quality of life (HRQL)). Participants were recruited from a sample of blood donors in a community setting (N=100, age: 52±15 years; 66% male). These individuals filled in questionnaires assessing the average number of hours of sleep per night and a validated measure of HRQL that assesses the following four domains: emotional functioning (EF), systemic symptoms (SS), worry (WO), and activity (AC), along with an overall HRQL score. In this sample, the individuals slept an average of 7.0±1 household per night. Results revealed that statistically significant Spearman's correlations were present between number of hours of sleep and EF (rs=0.36; p<0.001), SS (rs=0.23; p=0.02), WO (rs=0.31; p=0.002), and overall HRQL score (rs=0.28; p=0.005), the correlation with AC was not statistically significant (rs=0.03; p=0.79). The relationships indicated that the lower the number of hours of sleep, the most impaired scores on the CLDQ. The correlations remained statistically significant after controlling for age, gender, and body-mass index. This investigation demonstrates that a relationship exists between the average number of hours slept per night and HRQL (especially EF). It has been argued that the ability to self-regulate emotions may depend in part on having adequate personal resources, including sufficient sleep (Baumeister, 2002). The participants in the current investigation may not have adequate personal resources to self-regulate their EF. Future research should utilize longitudinal methodology to investigate the causal relationship of sleep variables to HRQL, as it is likely that a bidirectional relationship exists.

358) Abstract 1095
EVENING CHRONOTYPE IS ASSOCIATED WITH DAYTIME DYSFUNCTION AND NEUROTICISM IN COLLEGE STUDENTS
David Domachowski, Lenny Costantini, Biology, Ryan Brindle, Amy Kimicata, Neuroscience, Catie Vance, Mathematics, Sarah Conklin, Ph.D. Neuroscience and Psychology, Allegheny College, Meadville, PA
Research has shown that Morning and Evening chronotypes differ in circadian patterns of body temperature, catecholamine, and cortisol excretion. The purpose of the current study was to assess characteristics of chronotypical preference in young adults using self reported nocturnal sleep quality, as well as, objective daytime sleep architecture data. College students (n=104 (mean age 20 (SD 1.09) 64.4% female)) completed the Horne-Östberg, Karolinska Sleepiness Scale (KSS), NEO-FFI, a demographics sheet, the Pittsburgh Sleep Quality Index (PSQI), and the Epworth Sleepiness scale (ESS). Participants (n=54) were randomized to a daytime sleep condition. Daytime sleep architecture was analyzed for 5 Morning Types, 16 Evening Types, and 33 Neither Types. Evening Types scored highest on the ESS (F(2,103)=3.289, p=0.041), PSQI Global score (F(2,103)=4.051, p=0.02), the PSQI sleep duration subscale (F(2,103)=3.713, p=0.028), the PSQI daytime dysfunction subscale (F(2,103)=3.425, p=0.036), on the KSS (F(2,61)=3.425, p=0.036), and on the NEO-FFI Neuroticism factor (F(2,103)=5.292, p=0.003). No significant differences were found on the NEO-FFI Conscientiousness Factor (F(2,103)=3.88, p=0.004).
Although there were no significant group differences on the polysomnography data, trends were observed showing that Evening Types spent more time in each sleep stage during daytime sleep, slept more efficiently, slept longer, and fell asleep faster than any of the other chronotypes. Further research should replicate the examination of daytime sleep architecture with a larger sample, and decipher meaning of possible differences in architecture, as well as possible correction of the sleep debt accumulated by Evening Types. This research was graciously supported by the FIPSE Endowed Fund and the Shamborn Funds at Allegheny College.

359) Abstract 1312

DO WOMEN REPORT MORE BODILY SYMPTOMS THAN MEN BECAUSE THEY HAVE MORE ANXIETY AND DEPRESSIVE DISORDERS?
Barbara Tomenson, MSc, Francis Creed, MD, Psychiatry Research Group, University of Manchester, Manchester, UK, UK

Do women report more bodily symptoms than men because they have more anxiety and depressive disorders? Barbara Tomenson, Francis Creed on behalf of the DSM-V POPULATION BASED STUDIES PROJECT GROUP BACKGROUND It is not clear why women report more bodily symptoms than men. As part of the preparation of DSM-V, this study, funded by American Psychiatric Association, examined whether the presence of anxiety and depression could explain this finding after adjustment for confounders. METHOD: Data were analyses from population-based samples in Germany, Netherlands, Norway, Sri Lanka and UK (total n=14,078); 3 studies used self-administered questionnaires (PHQ, SSI, Zerssen) 2 studies used CIDI interviews). When there were necessary, gender-specific items were removed from questionnaires before analysis. RESULTS In all 5 surveys the total number of reported bodily symptoms was greater in women than in men (p<0.001). The prevalence of anxiety and depression was also greater in women. After adjustment for age, the presence of general medical illnesses, anxiety and depression this difference between men and women remained highly significant in all 5 studies (p<0.001). In only one study was only 1 additional variable (gender) associated with greater bodily symptoms included: psychological abuse as a child, recent marital separation and items concerning health anxiety and sensitivity of the body to external stimuli. The difference between the sexes remained when these variables were added to a multiple regression equation. CONCLUSION: Women report more bodily symptoms than men and this cannot be explained by the greater prevalence of anxiety and depression in women.

360) Abstract 1291

WRITTEN EMOTIONAL DISCLOSURE: A GUIDED PROTOCOL ENHANCES EFFECTS FOR PEOPLE WITH ALEXITHYMIA
Dana C. Nevedal, M.A., Mark A. Lumley, PhD, Psychology, Wayne State University, Detroit, MI

Writing about stressful experiences leads to modest benefits, but appears less helpful for people with limited emotional awareness and insight (alexithymia), who may need guidance on emotional and cognitive processes to facilitate writing and bolster its effects. We tested a novel written emotional disclosure technique, which included brief didactics on stress, emotions, and cognitive processing, and compared this to standard disclosure writing and control. We randomized 113 college students who had elevated physical symptoms (71% female; 44% European American, 32% African American, 14% Middle Eastern, 6% Asian) to 1 of 3 groups, which wrote for 20 minutes daily for 4 days: control (wrote about future plans), standard disclosure (wrote about stressful experiences, but with no additional guidance), or guided disclosure (received brief presentations before each writing session on topics of stress, specific emotions, stress consequences, and cognitive processing). Alexithymia (TAS-20) was assessed at baseline, and physical and psychiatric symptoms were assessed at baseline and 3-month follow-up. Analyses revealed that guided disclosure led to fewer gastrointestinal symptoms than standard disclosure (p = .035) and control (p = .945) and to less guilt than control (p = .017). Greater difficulty identifying feelings predicted increased respiratory symptoms after standard disclosure (r = .31), but decreased symptoms after control writing (r = -.39). Greater externally oriented thinking predicted increased anxiety (r = .46) and depression (r = .44) after standard disclosure, but was not predictive among controls (r = -.05, r = -.08). We conclude that alexithymia predicts better response to guided disclosure but worse response to standard disclosure. Providing cognitive/emotional education may enhance written disclosure’s effects, particularly for people with limited emotional awareness and insight.

361) Abstract 1793

WELL-BEING ENHANCING SELF-CARE PRACTICES: A TAXONOMIC QUALITATIVE ANALYSIS
Laurie M. Menk Otto, ND, Family and Community Medicine, Mary Koithan, PhD RN, Family and Community Medicine, Nursing, Iris R. Bell, MD PhD, Family and Community Medicine, University of Arizona, Tucson, AZ

Purpose: This qualitative study identifies benefits associated with participation in preferred self-care activities that enhance personal well-being. Background: Literature suggests that behavior change and lifestyle interventions must be individualized for maximum adherence and long-term health effects. Patient-delivered treatment and self-care practices (SCP) reduce the economic impact of disease and improve health outcomes. Long-term negative associations have been shown between morbidity and mortality, and well-being, hobbies and non-medical SCP. Hobbies and SCP that enhance well-being may result in high levels of adherence, are ideal to study for potential health effects, but have not been comprehensively studied. This study focuses on hobbies and SCP that individuals seek due to their effect on experienced well-being. Results will be analyzed for associations with perceived stress, self-reported well-being, age group differences indicating life course change. This is a first step in a research program investigating relationships with well-being associated with SCP and bodily symptoms, and women remained highly significant in all 5 studies (p<0.001). In only one study was only 1 additional variable (gender) associated with greater bodily symptoms included: psychological abuse as a child, recent marital separation and items concerning health anxiety and sensitivity of the body to external stimuli. The difference between the sexes remained when these variables were added to a multiple regression equation. CONCLUSION: Women report more bodily symptoms than men and this cannot be explained by the greater prevalence of anxiety and depression in women.

362) Abstract 1316

TYPE D PERSONALITY, LIFESTYLE AND METABOLIC RISK: SELF REPORTED PREVALENCE IN A HEALTHY DUTCH POPULATION
Paula M.C. Mommersteeg, Ph.D., Nina H.M. Kapper, Ph.D., Johan Denollet, Ph.D., Center of Research on Psychology in Somatic diseases, Tilburg University, Tilburg, Netherlands

Purpose: Type D personality, a combination of negative affectivity and social inhibition, represents an increased risk for adverse outcomes in patients with cardiovascular disease. Whether Type D represents a cardiovascular risk factor in healthy populations is unknown. In the present study, standard cardiovascular risk factor metabolic syndrome was related to Type D personality and lifestyle factors. Sample & Methods: A community sample of 1592 people, aged 20 to 80, participated. Metabolic syndrome (a composite of increased waist-circumference, dislipidemia, hypertension, and diabetes), and lifestyle factors (adhering to Dutch guidelines for healthy physical activity), and dietary habits (e.g., restricting salt and fat intake and having a balanced diet) were assessed.
diet) were measured by self-report. Multivariate logistic regression analysis was used to predict the presence of metabolic syndrome with Type D, lifestyle factors, and confounders age, gender, partner status, higher education level, cardiac history, family history of cardiovascular disease, smoking, and alcohol use. Results: More people with Type D personality met criteria for metabolic syndrome (13% versus 6.4%, \(p=.001\)), and showed differences in lifestyle; they adhered less to the physical activity norm (52% vs. 62%, \(p=.03\)), had a less varied diet (63% vs. 77%, \(p=.001\)), less restriction of salt intake (54% vs. 62%, \(p=.03\)) but similar tendency to restrict salt intake (53% vs. 57%, \(p=.31\)). Type D was related to an increased prevalence of the metabolic syndrome components lipid abnormality (12% vs. 7%, \(p=.007\)) and hypertension (18% vs. 13%, \(p=.04\)), but not waist-circumference, obesity or diabetes. Type D personality was independently related to an increased incidence of metabolic syndrome (OR=2.2, 95% CI=1.2-4.0, \(p=.011\)), while controlling for confounders. Lifestyle factors had no significant additional effect, nor did they mediate the relation between Type D and metabolic syndrome. Concluding, Type D personality is related to an unhealthy lifestyle and independently related to an increased incidence of metabolic syndrome, pointing towards both behavioral and biological vulnerability for development of cardiovascular disorders.

363) Abstract 1791
STRESS-RELATED APPRAISALS OF SEASONAL AND H1N1 INFLUENZA PREDICT OVERALL STRESS LEVELS AND LIKELIHOOD OF VACCINATION
Kari J. Maier, Ph.D., Psychology, Salisbury University, Salisbury, MD
Little is known about levels of perceived stress related to seasonal influenza (SF) or the novel H1N1 influenza recently affecting the general population. Stress perceptions related to H1N1 and SF were therefore examined. In October 2009, web-based surveys were completed by 959 adults (ages 18-64, M=23.5, SD=9.5; 79% female; 87% Caucasian) affiliated with a university in mid-Atlantic US region. A web link was sent by university email that alternately deployed either a SF or H1N1 survey. Measures included the Perceived Stress Scale (PSS) as an index of general life stress, and the Stress Appraisal Measure to measure stress appraisals of SF or H1N1 using the subscales of Threat and Uncontrollable. Participants also reported the likelihood of getting vaccinated for both flu types when vaccines become available. Contrary to expectations, there were no mean differences in Threat or Uncontrollable scores between SF and H1N1 conditions (p's >.05). Threat did predict PSS scores as expected (R²=0.04, B=15, p<.05), but Uncontrollable did not (R²=0.005, B=8, p>.05). In the H1N1 condition, greater Threat was associated with greater likelihood of getting vaccinated for H1N1 (R²=0.21, B=22, p<.001). Greater Uncontrollability, however, were associated with a lesser likelihood of getting vaccinated for H1N1 (R²=0.03, B=-21, p<.01). These same patterns were noted in the SF condition. Findings suggest that individuals may view both SF and H1N1 threats similarly, and that threat appraisals of either flu situation may contribute to overall stress levels for individuals. Yet, some degree of threat appraisal may be beneficial in motivating individuals to obtain vaccination and perhaps to adopt other preventive health behaviors. It is notable, however, that greater perceptions of threat regarding the flu situation were associated with a decreased likelihood of seeking vaccination in this sample.

364) Abstract 1192
DROWSINESS AND SLEEP QUALITY AT BASELINE PREDICT SUCCESS IN A SMOKING CESSATION PROGRAM
Michele L. Okun, Ph.D., Michele D. Levine, Ph.D., Patricia Houck, Marsha D. Marcus, Ph.D., Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA
The rates of tobacco-related disease are increasing in women. Smoking cessation programs are often used to facilitate quitting. Women are less successful at quitting than men and relapse at a higher rate. Sleep disturbances, a symptom of nicotine withdrawal, may counteract women's efforts at smoking cessation. Participants (N = 322) were women in a randomized, clinical trial of bupropion and cognitive behavioral treatment for weight concerns. We tested whether sleep disturbances across the first 3 months post quit differed in women who remained abstinent at 3 months compared to those who did not. Demographic information, smoking history and nicotine dependence were collected prior to randomization. Biochemically-validated smoking status, as well as symptoms of sleep disturbances, insomnia, drowsiness, and nicotine withdrawal depression was collected at baseline and throughout the first three months of treatment. Sleep data were obtained from several instruments in order to assess several aspects of sleep associated with relapse: a single item from the Beck Depression inventory, the degree to which participants experienced insomnia and drowsiness, and a composite measure of sleep quality derived from questions on the Wisconsin Withdrawal Scale. At baseline 42% endorsed insomnia and >80% indicated poor sleep quality. Although overall depressive symptoms decreased significantly across time for all women (p's < .0001), the BDI sleep item did not significantly change over time and there were no differences in sleep disturbances by abstinence status (p's > .45). Interestingly, degree of drowsiness and insomnia decreased significantly over time (p's < .0004), but only drowsiness showed a significant group by time interaction (p < .02). Lastly, sleep quality worsened for both groups through 8 weeks post-quit with some improvement by 3 months (p = .06). In summary, a substantial majority of women smokers interested in quitting begin treatment with sleep disturbances. Among the sleep variables evaluated, significant drowsiness rather than nocturnal sleep quality or symptoms of insomnia was associated with relapse. Consistent with previous reports, drowsiness is a strong predictor of relapse.

365) Abstract 1103
SELF-REPORTED SLEEP QUALITY AND DAYTIME SLEEP ARCHITECTURE IN COLLEGE STUDENTS IS RELATED TO NEUROTICISM
Leonard Costantini, Dave Domachowski, Biology, Ryan Brindle, Amy Kinicata., Neuroscience, Catie Vance., Mathematics, Sarah Conklin, PhD, Neuroscience and Psychology, Allegheny College, Meadville, PA
Neuroticism is associated with poor nocturnal sleep quality. This study aimed to examine the relationship between neuroticism (low, medium, and high), self reported nocturnal sleep quality, and daytime sleep architecture, using Polysomnography (PSG). Participants (N=97, age=19.98) completed the Pittsburgh Sleep Quality Index (PSQI), the Karolinska Sleepiness Scale (KSS), and the Epworth Sleepiness Scale (ESS). A one-hour daytime sleep session was then completed while PSG was scored according to the American Academy of Sleep Medicine criteria. Neuroticism tertiles were then categorized into high (H; N=34), medium (M; N=30), and low (L; N=33) groups. Groups differed on the sleep duration PSQI subscale (F (2,96) =8.051, p<.001, h²=.166), the H group scored higher than the L (p=.001) and M group (p=.008). Groups differed on the daytime dysfunction PSQI subscale (F (2,96) =4.313, p=.016, h²=.084), the H group scored higher than the L group (p=.004). Differences were also found on the PSQI global score (F (2,96) =5.924, p=.004, h²=.112), the H group scored higher than the L (p=.047) and M group (p=.004). Neuroticism groups did not differ on the sleep architecture data, but trends were observed. As neuroticism increased, time in stage 1, 2, and 3 increased. Total sleep time also increased with neuroticism, and wake time after sleep onset decreased; although these differences were not significant. The lack of association between PSG variables and neuroticism could have been due to the high sample mean for neuroticism t-scores (M=65.57), which could have skewed PSQI scores because of increased symptom reporting. Further research could test these relationships with a sample that is normally distributed in neuroticism. This research was supported by the FIPSE Endowed Fund and the Shanbrom Funds at Allegheny College.
EXERCISE IS RELATED TO DAYTIME SLEEP ARCHITECTURE, BUT NOT SELF-REPORTED SLEEP QUALITY, IN YOUNG ADULTS

Catie Vance, Mathematics, Ryan Brindle, Neuroscience, Lenny Costantini,, Dave Domachowski, Biology, Amy Kinicata, Neuroscience, Sarah Conklin, PhD, Neuroscience and Psychology, Allegheny College, Meadville, PA

Sedentary lifestyles are associated with excessive daytime tiredness compared to active lifestyles. As a result, exercise has been suggested to be a healthy and safe intervention to improve sleep quality. Given that young adults report daytime sleepiness more than any other age group, this study aimed to examine the relationship between exercise (low (L), moderate (M), and high (H)), night-time sleep quality and daytime sleep architecture in college students. Participants (N=59, M age=19.98) completed the Pittsburgh Sleep Quality Index (PSQI), the Karolinska Sleepiness Scale (KSS), and the Epworth Sleepiness Scale (ESS) then completed a one-hour daytime sleep session while PSG was scored in 30 second epochs according to standard criteria. A composite exercise variable was created by obtaining the product of number of days per week (frequency) x number of minutes per exercise session (duration). Exercise tertiles were categorized as L (N=14), M (N=19) and H (N=23). A one-way ANOVA was used to examine differences between exercise and self-reported sleep quality and objective PSG variables. No significant differences were found between exercise and self-reported sleep quality. Groups differed on time in stage 1 (F(2,50)=4.982, p<.05, n2=.172), where L and H exercise groups spent more time in stage one than M exercise group. L differed from M (p=.015), and M differed from H (p=.05).Groups also differed on time in stage 3 (F(2,50)=5.658, p<.05, n2=.191) and as a percentage of TST (F(2,50)=5.957, p<.05,n2=.199) where L and H exercise groups spent less time in stage 3 (in minutes, and in % of TST) than M exercise. In minutes, L differed from M (p=.020) and M differed from H(p=.014). In %, L differed from M(p=.027) and M differed from H(p=.008). Exercise was related to daytime sleep architecture, but not self-reported sleep quality, in generally healthy young adults. In existing levels of exercise, facilitate nocturnal sleep and should be investigated in future studies as a potential intervention for poor sleep quality in college students.

GENERALLY PRESUMED BUT BARELY TESTED: DOES PSYCHOSOCIAL STRESS PRECEDE DEVELOPMENT OF FUNCTIONAL SOMATIC SYMPTOMS IN THE GENERAL POPULATION?

Limeke M. Tak, Sonja L. Van Ockenburg, BSc, Psychiatry, University Medical Center Groningen, Groningen, The Netherlands, Johan Ormel, PhD, Psychiatry, University Medical Center Groningen, Groningen, Netherlands, Simon Wessely, PhD, Psychological Medicine, King's College, London, UK, UK, Judith G. Roosmalen, PhD, Psychiatry, University Medical Center Groningen, Groningen, The Netherlands

Purpose: It seems widely accepted that psychosocial stress impacts on development of symptoms that are not explained by organic pathology, i.e., functional somatic symptoms (FSS). Our purpose was to test whether the generally accepted role of psychosocial stress in the development of FSS is justified. More specifically, we aimed to test whether this association is comparable for males and females, whether there is a critical time period for psychosocial stress, and to what extent a stress sensitive personality explains this association. Methods: This study was performed in a population-based cohort of 1094 adults aged 28 - 79 years, 46.3% male. Lifetime exposure to adverse life events in different age categories was assessed through an adjusted version of the list of threatening experiences. Participants completed the somatization section of the Composite International Diagnostic Interview surveying the presence of 43 FSS. Stress sensitive personality was assessed with the 12-item neuroticism scale of the Eysenck Personality Questionnaire-Revised. Results: Multivariable regression analysis adjusting for gender and age revealed that the number of reported life events and FSS were significantly associated (beta 0.18, t=5.84, p<.001) as well as an association that was nearly identical for both genders, the number of life events in childhood (0 - 12 years) was only associated with FSS in females (beta 0.11, t=2.54, p<.01) but not in males (beta 0.01, t=0.21, p=0.83). Conclusion: In a general population cohort, the total number of life events in different age categories is associated with FSS. This association was largely independent of having a stress sensitive personality. Psychosocial stress in early childhood is only associated with FSS in females but not in males. Also in light of recent meta-analyses which show that health effects of childhood adversities seem larger in females than in males, gender-specific causal pathways in FSS require further attention.

THE EFFECTS OF SAMATHA-VIPASSANA MEDITATION ON STRESS, MOOD, AND HEALTH

Andrew P. Litchy, BA, Jaskartil Wild, PhD, Steven Chamberlin, BS, Agatha Colbert, MD, Helfgott Research Institute, National College of Natural Medicine, Portland, Oregon

Our objective was to evaluate the suitability of several questionnaires for measuring the effects of a 12-week Samatha-Vipassana meditation protocol on mood, quality of life, and stress levels in healthy volunteers. Fifteen males and females between 24 and 60 years of age with self-reported good health were enrolled in the 12-week intervention. The intervention consisted of six two-hour meditation training classes occurring every two weeks and 20 minutes of meditation practice daily. At baseline and at the end of the study subjects completed the following self-report questionnaires: Perceived Stress Scale (PSS), Profile of Mood States (POMS), SF-36, and Spiritual Involvement and Beliefs Scale (SIBS). Results: We analyzed data from the subjects who completed at least one class and both pre- and post-test questionnaires. Paired t-tests revealed significant changes in the mean scores on the SF-36 General Health subscale, 70.0 (11.6) to 79.2 (8.3), t(5) = 4.98, p = .004, and the POMS Confusion-Bewilderment subscale, 21.8 (.3) to 24.1 (.5), t(5) = 3.23, p = .012. We also observed trend-level effects (p < .10) in the following scales: PSS, 19.6 (4.8) to 17.9 (6.4), (t(8) = 2.13, p = .066); SF-36 Energy, 50.8 (10.7) to 65.0 (15.2), t(5) = 2.27, p = .064; and SIBS, 81.6 (4.5) to 79.8 (5.0), t(5) = 2.52, p = .053. When we included only the six subjects who completed a majority of the trainings (>4 out of 6), we found that there was also a decrease in the POMS Tension-Anxiety subscale, from 24.0 (2.8) to 21.6 (4.5), t(5) = 2.65, p = .038. Conclusion: This study yielded valuable data for selecting appropriate outcome measures for this intervention. The SIBS scale decreased and so does not seem appropriate for characterizing the effects of this intervention. We did find significant improvements from pre- to post- treatment following a Samatha-Vipassana intervention on scores of the PSS and subscales of the POMS and SF-36. Given the robust positive findings for such a small number of subjects, we are confident that these scales will reflect valuable health-related changes in a larger planned randomized clinical trial.

NEGATIVE LIFE EVENTS AND SYMPTOMS OF DEPRESSION AND ANXIETY: SOCIAL CAUSATION AND/OR STRESS GENERATION?

Anna C. Phillips, PhD, School of Sport & Exercise Sciences, University of Birmingham, Birmingham, UK, Geoff Der, PhD, Kate Hunt, PhD, MRC Social & Public Health Sciences Unit, University of Glasgow, Glasgow, UK, Douglas Carroll, PhD, School of Sport & Exercise Sciences, University of Birmingham, Birmingham, West Midlands, United Kingdom

It is now widely accepted that stressful life events play a formative role in the development of depressive symptomatology and clinical depression. More recently, it has been contended that the link between stress and depression is bi-directional and that individuals with depression generate stressful life events. The purpose of the present study was to examine whether or not such stress generation effects are greater than the effects of stressful life events on depression, and whether stress generation is also evident with anxiety. Participants were two large age cohorts aged 44 and 63 years at the first time of assessment) from the West of Scotland Twenty-07 study. Stressful life...
events and symptoms of depression and anxiety were measured on two occasions five years apart. Stressful life events predicted depressive symptomatology five years later, even with adjustment for earlier symptoms of depression, beta = .06, p = .01. Depression scores also predicted life events occurrence, beta = .06, p = .06, and impact, beta = .08, p = .01, prospectively. However, stressful life events did not predict future anxiety symptoms when adjusting for contemporary anxiety, but anxiety reliably predicted subsequent stressful life events occurrence, beta = -.11, p < .001, and impact, beta = -.14, p < .001. Structural equation modelling analyses confirmed these findings. In conclusion, the present study provides further evidence of the bidirectional association between stressful life events and symptoms of depression. In addition, individuals with high levels of anxiety symptoms appeared to be more likely to generate future stressful life events. Indeed, the stress generation effects of anxiety appear to be more robust than those for depression.

370) Abstract 1387
DEPRESSIVE SYMPTOMS AND CARDIOVASCULAR REACTIVITY TO SOCIAL VS. NON-SOCIAL STRESSORS
Alexandra L. Terrill, MS, Psychology, Washington State University, Vancouver, WA; Robert Ruiz, Ph.D., Psychology, University of North Texas, Denton, TX; John P. Garofalo, Ph.D., Psychology, Washington State University, Vancouver, WA
Depression is associated with increased risk for cardiovascular morbidity and mortality (Everson-Rose & Lewis, 2005). These effects may be partially mediated through cardiovascular reactivity (CVR) to stress. However, to date, findings have been mixed as to whether CVR is exaggerated or attenuated with increased depressive symptoms. Prior research suggests that negative dispositions such as hostility are more reactive to social stressors as opposed to non-social stressors (Smith & Gallo, 2001). This two-part study examined whether depression is a social construct, and if so, whether the social nature of the stressor relates to depression-related differences in CVR. In Study 1, 496 undergraduates completed a survey containing the Center for Epidemiological Studies Depression Scale (CES-D) and the Interpersonal Circumplex revealing significant representation (p=.001) characterized by low dominance and affiliation. To establish depression as a potential health-relevant mechanism, 89 undergraduates completed the CES-D and then partook in a counterbalanced, within-subjects lab protocol involving cold-pressor (non-social) and self-disclosure speech (social) tasks in Study 2. Multiple regression analyses revealed significant main effects for higher levels of depressive symptoms and higher systolic and mean arterial blood pressure during the preparation phase of the disclosure task, all ts >2.59, ps <.05. Interaction effects were also found for sex and depressive symptoms. Men with greater levels of depressive symptoms had higher systolic and mean arterial pressure, all ts >2.09, ps <.05. In contrast, no significant effects were found for depressive symptoms and physical cold pressor task RR. Booster sessions may be helpful in sustaining these benefits.

372) Abstract 1620
PLASMA HOMOCYSTEINE CONCENTRATIONS AND DEPRESSION IN TWINS
James D. Brenner, MD, Psychiatry and Radiology, Emory University School of Medicine, Atlanta, GA; Jack Goldberg, Epidemiology, U of Washington, Seattle, WA; Viola Vaccarino, MD PhD, Medicine, Emory School of Medicine, Atlanta, GA
Background: Homocysteine is an amino acid formed during metabolism of the essential amino acid methionine that plays an important role in energy metabolism and neurotransmitter synthesis. High levels of homocysteine have been linked to both depression and cardiovascular disease. The purpose of this study was to depression and homocysteine concentrations in twins. Methods: Homocysteine concentrations were assessed in plasma and depressive symptom levels were assessed using the Beck Depression Inventory (BDI) in twins (N=202). Results: Twins with high levels of depressive symptomatology had increased homocysteine concentrations. Conclusions: These findings are consistent with a relationship between homocysteine and depression.

373) Abstract 1184
A TEST FOR COMMON GENETIC AND ENVIRONMENTAL VULNERABILITY TO DEPRESSION AND DIABETES
Jeffrey F. Scherrer, PhD, Psychiatry, Hong Yuan, PhD, Internal Medicine, Patrick J. Lustman, PhD, Psychiatry, St. Louis VAMC and Washington University, St. Louis, MO, Carol E. Franz, PhD, Psychiatry, University of California San Diego, La Jolla, CA 92093, CA, Michael J. Lyons, PhD, Psychology, Boston University, Boston, MA, Kristen C. Jacobson, PhD, Psychiatry, University of Chicago, Chicago, IL, Seth A. Eisen, MD, Veterans Administration, Health Services Research and Development, Washington, DC, William S. Kremen, PhD, Psychiatry, University of California San Diego, La Jolla, CA
Purpose of the Study: Determine if there are common genetic and environmental risk factors underlying the association between depression and diabetes. Subject Sample and Statement of Methods: Data to derive DSM-III-R diagnoses of psychiatric disorders, including, depression were collected from male-female twins in 1992 and merged with prospective health data from 1,237 individual twins who participated in the 2005 Vietnam Era Twin Registry Study of Aging
CI (.92), HR (.76) and PEP (-.76). The third factor covered (non-BL to MA) ranged from 3.8% (HR) to 10.7% (diast. BP). High expected activation in most parameters. However, percent change from ejection period (PEP) were analyzed. Both stressors produced the (+10.3% vs. +6.1%; p<0.0005). Factor analysis of changes from BL to TPRI (-.86) the second factor represented beta-adrenergic indices, ie, among factors were < .25. Post-test recovery showed the same four-generally referring to “sympathetic tone”, effects of mental stress on depends on the type of stressor and the markers used. Instead of aspects of regulation which are poorly interrelated.

374) Abstract 1163
MULTIDIMENSIONALITY OF MENTAL STRESS-INDUCED AUTONOMIC ACTIVATION IN A PSYCHOSOMATIC PATIENT POPULATION
Christoph Herrmann-Lingen, Prof. Dr. med., Psychosomatic Medicine, University of Göttingen Medical Centre, Göttingen, Niedersachsen, Germany, Jana Lomb, MS, Psychosomatic Medicine, University of Marburg, Marburg, Hessen, Germany, Tilmann Schunk, Dipl Psych, Psychology in Neurology, Hardtwaldklinik I, Bad Zwischen, Hessen, Germany

Mental stressors increase sympathetic tone and cardiovascular activity. However, the term “sympathetic tone” covers various autonomic processes that seem to be poorly interrelated. We studied autonomic responses to mental stressors and interrelations among different activation markers. Standardized mental stress testing was performed in 101 pts (68% f, 45±15y.) with psychosomatic disorders. After a resting baseline (BL), patients underwent mental arithmetic (MA) and anger recall (AR) followed by recovery. Beat-to-beat blood pressure (BP), ECG, and impedance cardiography were obtained by a Task Force Monitor system. Heart rate (HR), heart rate variability (HRV), blood pressure (BP), cardiac index (CI), peripheral resistance (TRPI) and pre-ejection period (PEP) were analyzed. All stressors produced the expected activation in most parameters. However, percent change from BL to MA ranged from 3.8% (HR) to 10.7% (diast. BP). High frequency (HF) HRV even decreased by 35.5%, while low frequency (LF) HRV increased by 59.3%. Changes during anxiety were smaller than during MA (p=0.5 to 0.9). However, AR had smaller effects than MA on HF and LF HRV (both p<0.02) and larger effects on TPRI (+10.3% vs. +6.1%; p<0.0005). Factor analysis of changes from BL to MA yielded a four-factor model explaining 84% of variance. The first factor reflected alpha-adrenergic markers, ie, BP (loading -92) and TPRI (-86) the second factor represented beta-adrenergic indices, ie, CI (-92), HR (-76) and PEF (-76). The third factor covered (non-rhythmic) time domain HRV, while the fourth factor loaded highly on the fourth factor (HR .85; LF -90). All correlations among factors were < .25. Post-test recovery showed the same four-factor structure. Thus, mental stress-induced cardiovascular activation depends on the type of stressor and the markers used. Instead of generally referring to “sympathetic tone”, effects of mental stress on cardiovascular regulation should be reported in terms of changes in tonic alpha- or beta-adrenergic indices as well as rhythmic components and non-rhythmic components of HRV. These domains cover quite different aspects of regulation which are poorly interrelated.

375) Abstract 1370
EFFECTS OF PAST POSITIVE PARENTING AND RECENT NEGATIVE EVENTS ON CORTISOL ACTIVITY IN PARENTALLY BEREAVED YOUTH
Melissa J. Hagan, MPH, MA, Danielle Roubinov, MA, Linda J. Luecken, PhD, Irwin N. Sandler, PhD, Psychology, Arizona State University, Tempe, AZ

Parentally bereaved youth are at risk of increased exposure to stressful events, hypothalamic-pituitary-adrenal (HPA) axis dysfunction, and mental health problems. A critical next step is the early identification of factors that can mitigate the deleterious effects of subsequent negative life events (NLEs) on HPA axis functioning in parentally bereaved youth. Although retrospective accounts of parenting have been shown to moderate the effects of stress on parentally bereaved youth, no studies have examined this relation prospectively. The current study tested childhood positive parenting as a moderator of the effect of past year NLEs on cortisol activity among adolescents and young adults who had experienced the death of a parent during childhood. As part of a longitudinal study of bereaved families, multi-rater, multi-method assessments of positive parenting were collected an average of 18.5 months following parental death. Six years later, youth (N=55; 61% Caucasian, 13% Hispanic, 11% African-American, 15% Other; 64% Mean Age = 17.4) were tested on past year exposure to NLEs (e.g., interpersonal conflicts, environmental disadvantage, loss events, etc.) and participated in a standardized 12-minute conflict discussion task with their surviving caregivers. Cortisol samples were collected from youth at pre-task and 3 time points after the task. Multiple regression analyses predicted total cortisol output from recent NLEs, positive parenting, and their interaction; past NLEs, current externalizing symptoms, and child age were entered as covariates. For youth who experienced lower levels of positive parenting, exposure to a greater number of NLEs predicted higher cortisol (t=48) = 2.50, p = .016) relative to youth who experienced moderate or high levels of positive parenting. Results suggest that among at-risk youth, the effect of recent exposure to NLEs on cortisol activity is influenced by the quality of parenting received in childhood. Positive parenting may represent an important target of interventions tailored to the needs of youth with repeated exposure to NLEs.

376) Abstract 1637
RELATIONSHIP OF LIFE ADVERSITY, ANTISOCIAL TENDENCIES, AND FAMILY HISTORY: RISK FACTORS FOR SUBSTANCE USE DISORDERS IN THE OKLAHOMA FAMILY HEALTH PATTERNS PROJECT
Kristen H. Sorocco, Ph.D., Department of Geriatric Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, OK, Noha H. Farag, MD/PhD, Biostatistics and Epidemiology, William R. Lovoalo, Ph.D., Psychiatry and Behavioral Sciences, University of Oklahoma Health Sciences Center, Oklahoma City, OK

Life stress is thought to contribute to development of substance use disorders and to the manifestation of antisocial and disinhibited behavior patterns. We examined the relationships between lifetime adversity, positive family history of alcoholism (FH+), and antisocial behavior in the Oklahoma Family Health Patterns Study, a long-term study of risk for substance abuse. Our primary question was whether lifetime adversity would have a disproportionate impact on FH+ persons. Data were analyzed from 625 persons, 18 to 30 years of age screened for exposure to adverse major life events (0 = none, 1 = some, 2 = much) scaled from questions concerning parental divorce, separation from parents, and adoption. Family history of alcoholism was established by interview with proband and parents using the Family History Research Diagnostic Criteria. Antisocial behavior was measured using the California Personality Inventory Sociability Scale (CPI-So). FH+ persons were seen to score significantly lower than FH- on the CPI-So scale (t = 11.7, p < 0.0001), indicating the presence of substantially more disinhibitory behavior and norm violation in those with an alcoholic parent. FH+ also experienced more total lifetime adversity (X2 = 114.9, p < 0.0001) than the FH-. The impact of lifetime adversity on antisocial tendencies was significant (F = 31.6, p < 0.0001). However, this relationship was the same for both FH groups. In addition, the case group experienced greater adverse events on the CPI-So scale. The data suggest that adverse life experiences may contribute to
behaviors that can put a person at greater risk for substance use disorders. The data do also show that adversity has an equivalent impact on persons with and without a family history of alcoholism. The results do not point to a differential vulnerability in persons with a positive family history.

377) Abstract 1493
FROM FACIAL MIMICRY TO EMOTIONAL EMPATHY: A ROLE FOR NOREPINEPHRINE?  
Neil A. Harrison, PhD, Psychiatry, Brighton & Sussex Medical School, Falmer, East Sussex, United Kingdom, Robert Morgan, BSc, Institute of Cognitive Neuroscience, University College London, London, London, United Kingdom, Hugo D. Critchley, DPhil, Psychiatry, Brighton & Sussex Medical School, Falmer, East Sussex, UK.  
Rationale: Tendency to mimic others emotional facial expressions predicts empathy and may represent a physiological marker of psychopathy. Anatomical connectivity between amygdala, cingulate-motor-cortex (M3, M4) and facial nucleus demonstrate a potential neuroanatomical substrate for mimicry, though pharmacological influences are largely unknown. Norepinephrine modulation selectively impairs negative emotion recognition, reflecting a potential role in processing emotions eliciting facial expressions. Objective: To examine effects of single doses of propranolol (beta-adrenoceptor blocker) and reboxetine (selective-norepinephrine-reuptake-inhibitor) on automatic facial mimicry of sadness, anger and happiness and the relationship between mimicry and empathy. Methods: 45 healthy volunteers were randomized to 40mg propranolol or 4mg reboxetine. Two hours after drug subjects viewed and rated facial expressions of sadness, anger and happiness while corrugator (CS) and zygomaticus (ZM) EMG were recorded. Trait emotional empathy was measured using BEES. Effects of observed expression, noradrenergic manipulation and muscle group on EMG responses were analyzed in a three way mixed measures ANOVA. BEES score was additionally included as a between subject factor using a general linear model. Results: EMG confirmed emotion specific mimicry (emotion x muscle interaction F(2)=14.4, p < 0.00003, adj. R2=0.41). Norepinephrine modulation selectively altered mimicry to any expression or influence the relationship (F(2)=14.4, p = 0.00003, adj. R2=0.41). Norepinephrine modulation did not alter mimicry to any expression or influence the relationship between mimicry and empathy. Conclusions: Corrugator but not zygomaticus mimicry predicts trait empathy, consistent with greater neural correlates of CS and ZM activity than observed BEES in individuals suffering from somatoform disorders where there is a less clear physical cause of pain and should be investigated for their unique contribution to depressed mood and other outcomes of clinical importance for chronic pain sufferers.

379) Abstract 1321
BRAIN CORRELATES OF HYPERMOBILITY: A VOXEL-BASED MORPHOMETRY STUDY  
Jessica A. Eccles, MB ChB, Felix D. Beacher, PhD, Clinical Images Sciences Centre, Brighton and Sussex Medical School, Falmer, East Sussex, United Kingdom, Marcus Gray, PhD, Catherine Jones, MSc, Ludovico Minati, MSc, Hugo Critchley, DPhil, Clinical Images Sciences Centre, Brighton and Sussex Medical School, Falmer, United Kingdom.  
BACKGROUND. Recent studies find individuals with Benign Joint Hypermobility Syndrome (BJHS), a disorder characterised by increased joint laxity, manifest extra-articular symptoms including cardiovascular and autonomic disturbance (Gazit et al, 2003) and are over-represented in anxiety populations (Santos et al, 1998). Such individuals may be constitutionally predisposed to affective and anxiety disorders: we hope to examine the basis for this in brain. Interestingly BJHS is increasingly linked to IBS and CFS. BJHS individuals exhibit similar cardiovascular abnormalities to those with POTS. In this study we used Voxel-based morphometry (VBM), an unbiased means of appraising regional brain structures, to explore correlates of BJHS. This novel approach to the research of BJHS may prove of interest in other areas of psychosomatics. METHODS. We studied a non-clinical sample of 46 individuals (mean age 29). We assessed hypermobility using Beighton score and anxiety using BAIS. Participants underwent structural MRI examination (acquisition of 3D T1-weighted MPRAGE images) on a 1.5T scanner at Clinical Imaging Sciences Centre, University of Sussex, UK. Grey Matter images were normalized to templates generated from all participants using DARTEL. VBM was performed with SPM8b software. Multiple regression analyses tested for significant group differences and correlations with Beighton Score, correcting for age, gender, handedness and whole brain volume. RESULTS. 21 subjects (46%) demonstrated degrees of hypermobility (score >1). 8 satisfied BJHS major diagnostic criteria, (Grahame R et al, 2000). VBM demonstrated significant differences (p<0.01) in grey matter volumes in areas of interest. Firstly, volumes in left sensorimotor cortex were significantly negatively correlated with Beighton score (r 2 0.225). Secondly, significant group differences (hypermobile versus non) were present in right anterior cingulate cortex. No correlation with anxiety was found. CONCLUSIONS. These findings are consistent with predicted differences within sensorimotor control region and (more speculatively) integration of efferent viscero-motor function in hypermobile individuals. Reported links with anxiety were not present in this population: further investigation is of interest.

380) Abstract 1510
SOCIAL SMOKE EXPOSURE AND PERCEIVED TOLERANCE AMONG NEVER-SMOKING YOUTH  
Simon Racicot, MA, Jennifer J. McGrath, PhD, MPH, Pediatric Public Health Psychology PPHP Laboratory, Concordia University, Montreal, Quebec, Canada, Jennifer O’Loughlin, PhD, Social and Preventive Medicine, University of Montreal, Montreal, Quebec, Canada.

A-129
According to conventional understanding, nicotine dependence is characterized by symptoms of tolerance, withdrawal, and difficulty controlling substance use among current smokers. In a 12-month period, these criteria imply that a never-smoker cannot experience nicotine dependence. Recently, several researchers found that a small subset of young never-smokers (5%) endorse nicotine dependence symptoms (Belanger et al., 2008; Racicot et al., 2009). However, the factors contributing to perceived nicotine dependence are not fully understood.

The present study investigated whether social smoke exposure, measured with the number of smokers and situations of smoke exposure, predicted perceived tolerance among never-smoking youth. Participants included 338 French-Canadian youths attending 6th or 7th grade (46% males; M = 12.68 yrs, SD = .67 yrs). They completed self-report questionnaires measuring the number of smokers among their parents, siblings, and peers (0-9 smokers); number of situations in which they were exposed to parental, sibling, and peer smoking (0-87 situations); and perceived tolerance. Participants reported a low number of smokers (M = 1.05, SD = 1.54) and situations of smoke exposure (M = 4.33, SD = 7.93), and a subset endorsed perceived tolerance (6.21%). After controlling for age, total number of smokers (R2 = .11) and total number of situations (R2 = .05) both singularly predicted perceived tolerance in univariate regression analyses. When entered simultaneously into the model, the total number of smokers (t = 4.94, p < .001) and situations of smoke exposure (t = -0.99, t.s.) significantly predicted perceived tolerance (F (3, 334) = 13.91, p < .001). The overlap between these two predictors (r = .63, p < .01) may explain this finding.

These results suggest that never-smokers who endorse tolerance symptoms are exposed to a higher number of smokers in their environment. Future research should examine the mechanisms linking social modeling to the perception of tolerance among never-smokers.

381) Abstract 1259

STABILITY OF ALTERNATIVE CLASSIFICATION APPROACHES FOR SOMATOFORM DISORDERS

Ricarda Mewes, PhD, Winfried Rief, PhD, Department of Clinical Psychology, University of Marburg, Marburg, Germany

Purpose: As consequence of the critique on the classification of somatoform disorders, alternatives have been suggested. The aim of the present study is to investigate the stability of alternative approaches over a one-year period with a prospective design and to identify predictors for stability. Methods: A high-risk sample of somatizers of the German general population (Patient Health Questionnaire-15 ≥5) and a control group were interviewed at baseline and one year later using a structured approach asking for somatic symptoms, health care utilization, a.o. and answered questionnaires (e.g. Cognitions about Body and Health, Locus of Control for Illness and Health). Criteria for Multisomatofom disorder (Kroenke et al., 1997), Chronic Somatic Symptom Disorder (Dimsdale & Creed, 2009), the new approach of Rief & Mewes (2009), Bodily distress disorder (Fink et al., 2007), and the original SSI 4/6 (Escobar et al., 1989) were assessed. The original sample consisted of 321 persons; 1-year follow-up data were received from nearly 80%. Results: 28% (n=66) of probands fulfilled the criteria of at least one alternative approach at baseline and 55% (n=36) of these still fulfilled the criteria one year later. The criteria for Multisomatofom disorder, Chronic Somatic Symptom Disorder, and the approach of Rief & Mewes showed the highest stability with 48% (kappa=.44; p<.001), 47% (kappa=.39; p<.001) and 38% (kappa=.39; p<.001) of probands fulfilling the criteria at both assessments. The other approaches showed values of 19% (Bodily distress: kappa=.20; p<.001), and 0% (SSI 4/6: kappa=–.01; p=.88). Logistic regression analysis (Nagelkerkes R2=.43; chi2=56.18;p<.001) showed that fulfilling one of the alternative criteria at baseline and different psychological factors were predictors for fulfilling the criteria of one alternative criteria at follow-up. Conclusions: The stability of alternative criteria is highest for classification approaches requesting relatively few symptomatic residue in the carboxy-terminus and transiently accumulate in the nucleus as dimeric transcription factors where they recognize palindromic sequences in the promoter regions of interferon-driven target genes. However, the molecular steps that facilitate target gene recognition are not well understood. Using a mutualal approach, we have identified a molecular mechanism that efficiently releases the dimeric transcription factor STAT1 dimers from DNA and thus controls transcriptional activity. Negatively charged residues within the DNA-binding domain anchor to the phospho-tyrosine residue of a molecular off-switch that liberates STAT1 dimers from DNA. A defect
in this switch mechanism enhances binding to high-affinity STAT1 binding sites, termed GAS sites, and allows for binding to low-affinity sites. Despite elevated levels of tyrosine phosphorylation and prolonged nuclear accumulation, the DNA-binding mutants displayed a significantly reduced transcriptional activity upon stimulation of cells with interferon-gamma. This reduced transcriptional response is explained by the deposition of oligomerized STAT1 molecules outside GAS sites. Thus, a high dissociation rate from non-GAS sites is a key feature of STAT1 signal transduction that positively regulates cytokine-dependent gene transcription by preventing retention at transcriptionally inert sites. Taken together, we have identified a molecular mechanism that allows for an efficient recognition and expression of interferon-driven target genes. This finding may be clinically relevant in the context of STAT1-modulated gene activation in patients with interferon-induced depression.

384) Abstract 1492

VITAL EXHAUSTION AND CARDIOVASCULAR DISEASE: NEW INSIGHTS FROM LONGITUDINAL DATA OF APPARENTLY HEALTHY PARTICIPANTS?
Trynke Hoekstra, MSc, Department of Health Sciences, VU University, Amsterdam, The Netherlands, Celentina Barbosa-Leiker, PhD, Health and Wellness Services, Washington State University, Pullman, WA, Jos Twisk, PhD, Department of Health Sciences, VU University, Amsterdam, the Netherlands
Purpose: Vital Exhaustion (VE) is a construct that was introduced by Ad Appels et al. in the early 1990s in the field of psychosomatic research and is described by a combination of feelings of fatigue, depression and irritability. The aim of the study was to study the development of VE over a period of 15 years to identify possible distinct developmental patterns of VE. Further, we related these patterns to markers of cardiovascular disease risk later in life. Sample: Data from the Amsterdam Growth and Health Longitudinal Study consisting of ten rounds of measurement over thirty years (n=337, age at baseline 13.0 (0.6) were used in this study. Methods: VE measures were available at five measurements measured by the Maastricht Questionnaire and a VE score was calculated as not virtually exhausted (VE score = 0), preclinical vitally exhausted (VE score 2-12) or vitally exhausted VE score >14). Markers of CVD included mean arterial pressure (MAP), cholesterol levels and markers of low-grade inflammation. We used novel latent class growth (mixture) modeling to study VE-heterogeneity and regression analyses to study associations between the different patterns and CVD risk factors. Possible confounding was assessed by gender, lifestyle variables and taking blood pressure lowering drugs (for the MAP analyses). Results: Three distinct (stable) patterns of VE emerged including a stable never VE (32%), a stable always preclinical VE (52%) and a stable always VE pattern (16%). Only for MAP a significant difference between the 3 subgroups (stable never subgroup used as reference) was observed after correction for age, gender, lifestyle variables and systolic blood pressure (p=0.01). For difference between reference and stable preclinical subgroup and B=5.27, (95% CI 2.19-0.03, p=0.03) for difference between reference and stable subgroup. These differences were fully explained by medication usage. Conclusion: In our study sample, VE seems to be apparent by stable developmental patterns although this has no consequences for CVD risk later in life. These results give more insight in the relationships between psychological variables and (cardiovascular) health over time, in a healthy sample.

385) Abstract 1416

THE IMPACT OF ANXIETY ON FALSE NEGATIVE ECG DIAGNOSES OF MYOCARDIAL ISCHEMIA
Roseanne Pelletier, B.S.C., Simon L. Bacon, PhD, Andre Arenault, MD, Kim L. Lavoie, PhD, Montreal Behavioural Medicine Center, MHI, Montreal, Quebec, Canada
Background: SPECT exercise stress tests are among the most sensitive and specific methods for assessing myocardial ischemia. However, they cost more and require more resources to conduct than standard ECG exercise stress tests, which are more commonly used. It has been suggested that this latter method would be less sensitive to detect myocardial ischemia than SPECT, especially among patients with comorbid psychiatric disorders. However, little is known about the association between anxiety sensitivity (a trait measure linked to fear of anxiety symptoms) and anxiety disorders, and rates of false negative diagnoses of myocardial ischemia in patients undergoing exercise stress testing. Method: 1996 patients referred for SPECT exercise stress testing completed the Anxiety Sensitivity Index (ASI) and the Primary Care Evaluation of Mental Disorders (PRIME-MD) prior to undergoing SPECT and ECG exercise stress tests. Chi-Square tests were performed to evaluate group differences regarding rates of false negative diagnoses of ischemia, controlling for age, sex, anti-ischemic medication, history of CAD, %MPHR, and major depressive disorder. Patients with false negative diagnoses (- ECG/ + SPECT) were categorized as a 1, and all other patients (correct diagnoses + false positives, i.e. + ECG/- SPECT) were categorized as a 0. Results: A total of 415 patients (21%) had a negative ECG while their SPECT revealed evidence of ischemia, and 1581 (79%) had a correct or a false positive diagnosis. There were no significant main effects of anxiety sensitivity (X² = 2.06, p = .15) or anxiety disorders (X² = .45, p = .50) on rates of false negative diagnoses. Conclusion: Results suggest that among patients presenting for exercise stress testing, anxiety sensitivity and anxiety disorders are not associated with increased rates of false negative ECG diagnoses of myocardial ischemia. This suggests that ECG assessments seem to be as sensitive as SPECT to detect myocardial ischemia among anxious patients.

386) Abstract 1063

PTSD AFTER TRAUMATIC INJURY: AN INVESTIGATION OF THE IMPACT OF INJURY SEVERITY AND POSTTRAUMATIC ANXIETY DISORDER AS MODERATORS
Crystal A. Gabert-Quillen, MA, Douglas L. Delahanty, PhD, Psychology, Kent State University, Kent, OH, William F. Fallon, MD, Surgery, Summa Health System, Akron, OH
Approximately 69% of people have experienced a traumatic event in their lifetime and about 7.8% of the general population will develop posttraumatic stress disorder (PTSD) following trauma exposure. Given the debilitating nature of PTSD and the fact that the majority of traumatized individuals develop PTSD, it is critical to elucidate variables that aid in the identification of victims who are at high risk of developing PTSD. One variable commonly examined has been injury severity, however, results have been mixed with respect to the impact that injury severity has on risk for PTSD. The aim of the present study was to examine subjective and objective injury severity ratings in a heterogeneous sample of trauma victims and the fact that PTSD symptoms would differentially predict PTSD symptoms. Sixty-five adult trauma victims (44 males and 21 females) were assessed within 2-weeks of traumatic injury and then 6-weeks and 3-months post-trauma. Moderation models were conducted to determine whether peri- and posttraumatic factors impacted the relationship between injury severity and symptom development. Bivariate correlations for objective injury severity were suggestive, but not significant (r = .58, .59, .05, .58, .01) and subjective injury severity significantly predicted PTSD symptoms at both 6-weeks (r = .57, p = .02) and 3-months (r = .65, p = .004) post-trauma. Additionally, regression analyses revealed a significant interaction between subjective injury severity and peritraumatic dissociation. More specifically, for those individuals who appraised their injuries as more severe and had higher levels of trauma dissociation, the more PTSD symptoms they reported (β = .26, p = .015). Findings indicate that subjective appraisals of the traumatic event should be incorporated into early screeners for PTSD risk and that risk should be determined in light of the moderating impact of peritraumatic dissociation.

387) Abstract 1544

VULNERABILITY TO STRESS INDUCED DEPRESSION AFTER JOB LOSS: TESTING VARIATION BY 5-HTTLPR GENE
Christopher D. Nettles, MA; MPhil, George W. Howe, PhD, Department of Psychology, The George Washington University, Washington, DC, Karen Weiks, MD, Francisco A. Moreno, MD, Department of Psychiatry, University of Arizona Medical Center, Tucson, AZ
Purpose: This study tested hypotheses to elucidate potential sensitization to risk for depression in the context of stress from job loss, on the basis of differences in genes that influence the serotonin system. These hypotheses are: 1) a positive relationship between job loss related stressors and depressive symptoms, 2) significant interactions in the relationship between a) stressors and the genetic vulnerability, and b) a significant 3-way interaction between stressors, genes and gender. Subjects and Method: We surveyed 432 individuals from six Maryland counties laid-off from their jobs within 6-weeks prior to study participation. Using structural equation modeling, we examined the contemporaneous association between 5-HTTLPR genetic variants and depressive symptoms (measured by the CES-D) moderated by a latent variable derived from measures of job-loss stressors, financial strain (previous month), and financial strain expectations. Results: Subjects were 222 men and 210 women, mean ages 44.6±11.5 and 47.2±12.4 respectively, with 43% AF Am, 2% Hispanic, 49% EuroAmerican and 5% other ethnicities. Job-loss stressors (M=12.23, SD=7.02), financial strain (M=13.28, SD=4.91) and financial strain expectations (M=8.69, SD=3.76) all loaded on to a single latent variable (p's<.001). Hypothesis 1 was supported - the stress latent variable was related to CES-D scores (M=15.40, SD=12.94) in all models tested (b's=1.16 ± 1.30, p's < .001). We found no evidence for the 2-way or 3-way interactions (p's>.10) in additive or dominant/recessive models of both the long/short and A-G 5-HTTLPR polymorphisms. Conclusion: Depressive symptoms are higher in individuals with higher stress from termination of work and financial strain, assessed within 6 weeks after job loss in this racially diverse sample of recently unemployed men and women. We found no interaction with stress intensity and 5-HTTLPR. The stressor by gene interactions may operate over longer timeframes than that represented by these data. Other genetic variants (e.g., BDNF) may be involved in the relationship. Future research should examine these possibilities.

ORGANIC BRAIN LESIONS IN THE LEFT TEMPORAL LOBE AND SYMPTOMS OF SCHIZOPHRENIA: THREE CASES
Adomas Bunevicius, MD, Vytenis P. Deliusa, MD, PhD, Department of Neurosurgery, Kaunas University of Medicine, Kaunas, Lithuania, Robertas Bunevicius, MD, PhD, Institute of Psychophysiology and Rehabilitation, Kaunas University of Medicine, Palanga, Lithuania
Introduction: Sometimes patients with organic brain lesions in neurologically silent brain areas might present only with psychiatric symptoms such as depression, anxiety disorders or schizophrenia. Objective: To present clinical cases of patients who for a significant period of time were diagnosed and treated for schizophrenia, but were eventually diagnosed with organic brain lesion in the left temporal lobe that led to neurosurgical intervention. Methods: We performed retrospective analysis of medical records of patients admitted to the Department of Neurosurgery of the Kaunas Medical University Hospital during the year 2003-2007. Only cases when patients with psychiatric diagnoses of schizophrenia were and were treated by psychiatrist from several months to a few years before admitting to the Department of Neurosurgery and psychiatric diagnosis of schizophrenia antedated diagnosis of organic brain lesion were included to the analysis. Results: We identified three cases of patients (all women; age range from 38 to 57 years) who were treated for psychiatric disorders (one case of schizophrenia and two cases of schizoaffective disorder) for a significant period of time (10 years, 3 years and 5 years, respectively). Next, they were eventually diagnosed with brain lesions (anaplastic oligodendroglioma, intracerebral cysts and multiform glioblastoma, respectively) in the left temporal lobe and underwent neurosurgical treatment. Conclusions: This study demonstrated that anaplastic oligodendroglioma in the left temporal lobe might manifest as schizophrenia spectrum disorders. Manifestation of neurological signs and symptoms lead to performing brain imaging procedures and diagnosis of the organic brain lesion.

DIURNAL PATTERNS OF SALIVARY CORTISOL AND DHEA IN FEMALE ADOLESCENTS WITH ANOREXIA NERVOSA
Andrea Oskis, BSc, Angela Clow, PhD, Psychology, Frank Hucklebridge, PhD, Human and Health Sciences, Lisa Thorn, PhD, Catherine Loveday, PhD, Psychology, University of Westminster, London, UK
Diurnal patterns of salivary cortisol and DHEA in female adolescents with anorexia nervosa (AN) is one of several psychosomatic disorders that has been linked to dysregulation of the hormones cortisol and DHEA. Findings are especially limited regarding diurnal patterns of salivary cortisol in adolescents with this disorder and profiles of salivary DHEA have not yet been examined in this clinical population. Eight female adolescents with AN (aged 12-17 years) undergoing inpatient treatment collected saliva samples at awakening, 30 minutes and 12 hours post-awakening on two consecutive weekdays. These data were compared to the corresponding profiles of 41 age-matched healthy female adolescents. Demographic and situational information was recorded and participants’ eating disorder symptomatology was also assessed. A marked diurnal rhythm was present in the cortisol data for both clinical and control groups with concentrations rising in the 30 minute post-awakening period (the cortisol awakening response - CAR) and reaching lowest levels 12 hours post-awakening. Significant differences emerged between groups: those with AN had higher cortisol concentrations at both morning samples and the evening sampling point. DHEA secretion followed the expected diurnal pattern for all participants, with higher levels in the morning and the lowest concentrations were present 12 hours post-awakening. The group with AN had higher levels of DHEA at both morning sampling times compared to the healthy control group, however groups exhibited comparable concentrations of DHEA by the evening. Both cortisol and DHEA concentrations were consistent across sampling days for both groups. Neither body mass index nor level of eating disorder symptomatology modulated any of the results. These findings suggest that the CAR is preserved in patients with AN, and indicate that dysregulation of the HPA axis might be associated with the aetiology of AN.

HEALTH STATUS PERCEPTION IS PREDICTIVE OF WEIGHT LOSS 6-MONTHS POST ROUX-EN Y BARIATRIC SURGERY
Alexander Patterson, M.A., Mary Peterson, Ph.D., Clark Campbell, Ph.D., Kathleen Gathercoal, Ph.D., Department of Clinical Psychology, George Fox University, Newberg, OR
Purpose of Study: Bariatric surgery is an increasingly popular intervention for obesity, and psychologists have seen a growing role in the evaluation of surgery candidates. However, studies of pre-surgery psychological testing predicting weight loss have been inconclusive. In the present study, pre-surgical psychological testing results were evaluated to identify a potential relationship between these results and weight loss 6-months post surgery. Methods: The participants consisted of 24 post Roux-en Y bariatric surgery patients from a tertiary hospital. They were predominantly female (23 vs 1) and between 22 and 60 years (mean age of 46). Participants were uniformly morbidly obese (excess weight ranged from 94 to 215 lbs, with a mean of 135 lbs). Relevant pre-surgery testing data included: the Minnesota Multiphasic Personality Inventory-2 (MMPI-2), Millon Behavioral Medicine Diagnostic (MBMD), and the Health Status Questionnaire (HSQ). A stepwise linear regression analysis was performed to determine if testing variables had a predictive relationship with the percentage of excess weight lost 6-months post surgery. Results: Scores on the Health Perceptions scale of the HSQ were predictive of percentage of excess weight lost (F = 9.04, R2 = .30, p = .007), suggesting a relationship between negative perceptions of physical health prior to bariatric surgery and greater weight loss 6-months post surgery. No other variables were predictive. From a practical perspective the results emphasize the importance of evaluating a person's psychological perceptions of their health status when they present for bariatric surgery. Future research is needed with a larger sample size to reinforce the results of this study.
CORTISOL LEVELS IN RESPONSE TO STRESSFUL VERSUS NON-STRESSFUL TESTING ENVIRONMENTS
Shireen Sindi, B.A., Neurology and Neurosurgery, McGill University, Montreal, QC, Canada, Catherine Lord, PhD, Women's Health Concerns Clinic, McMaster University, Hamilton, ON, Canada, Bruce Pike, PhD, Neurology and Neurosurgery, Jens Pruessner, PhD, Psychiatry, and Neurology and Neurosurgery, McGill University, Montreal, QC, Canada.

Elevated cortisol levels can impair cognitive performance, but do testing environments themselves function as stressors? The goal of this study was to assess whether the cortisol stress response (CSR) differs as a function of testing environments manipulated to induce higher or lower distress. As part of a larger study, twenty eight adults ages 18 to 55 were each tested in three different conditions: 1) Montreal Neurological Institute - MNI (Low stress) tested on university grounds in the afternoon by a young graduate student; 2) Douglas Hospital (DH -High stress) tested far from the university in the morning by an older adult; 3) Douglas Hospital re-visit (DH-R - High stress) for exposure to a psychosocial stress task. Salivary cortisol was repeatedly measured in all conditions. To test whether different testing environments are stressful, we calculated Area Under the Curve with respect to ground (AUCg) for the CSR in each session. One-way repeated measures ANOVA were performed with three levels for the different contexts followed by paired samples t-test for significant effects. Results revealed that DH AUCg was significantly higher than the MNI AUCg. DH-R AUCg was also significantly higher than MNI AUCg. All significant results were below p < .05. That healthy young adults experienced higher levels in both stressful conditions (morning testing) versus the non-stressful condition (afternoon testing) stresses the importance of context when testing cognitive performance. Our findings hold important implications for studies testing populations which may be more sensitive to the testing environment, such as patients with certain mental health conditions and older adults.

UNDIAGNOSED SUBCLINICAL HYPOTHYROIDISM IS ASSOCIATED WITH ELEVATED BMI, RESTING SYSTOLIC BLOOD PRESSURE, AND MEAN ARTERIAL PRESSURE IN ASYMPTOMATIC YOUNG MEN AND WOMEN
Kimberly N. Walter, B.S.N., Biobehavioral Health, Penn State University, University Park, PA; Elizabeth J. Corwin, Ph.D., School of Nursing, University of Colorado at Boulder, Aurora, CO; Courtney A. Whetzel, Ph.D., Biobehavioral Health, Penn State University, University Park, PA; Laurence M. Demers, Ph.D., Pathology and Medicine, Penn State University, Hershey, PA; Jan Ulbrecht, M.D., Biobehavioral Health, Penn State University, University Park, PA; Teresa Seeman, Ph.D., Medicine and Epidemiology, David Geffen School of Biobehavioral Health, Penn State University, University Park, PA.

Subclinical hypothyroidism is an endocrine disorder characterized by elevated thyroid-stimulating hormone (TSH) levels in the face of normal free thyroxine (fT4) and free triiodothyronine (fT3) levels (Surks et al 2004). Based on data from large population-based studies, it is estimated that 4% to 8.5% of individuals in the United States without a known history of thyroid disease actually have subclinical hypothyroidism (Canaris et al 2000; Hollowell et al 2002). These findings suggest that subclinical hypothyroidism is an under-diagnosed disorder and may be unknowingly present in many more individuals than previously thought. From a research perspective, the unknown presence of hypothyroidism may significantly alter study results in unanticipated ways. We previously reported that asymptomatic hypothyroidism (TSH levels >2 mIU/L) was associated with elevated basal cortisol levels (Klein et al 2008). The aim of the present study was to further examine the relationship between subclinical hypothyroidism and standard health status measures. We hypothesized that elevated TSH levels (>2 mIU/L) would be associated with elevated blood pressure (BP), mean arterial pressure (MAP), and BMI (kg/m2).

To test this hypothesis we measured serum TSH levels, resting BP, resting MAP and BMI in a carefully screened cohort of 51 men) healthy, young (mean 21.08 +/- 0.38 years) volunteers. Participants were excluded if they were on any medications or had pre-existing medical conditions. Individuals with TSH levels > 2 mIU/L (i.e., evidence of subclinical thyroid disorder) had significantly higher BMI compared to those individuals with TSH levels < 2 mIU/L (22 kg/m2 vs. 24 kg/m2, respectively) and higher resting systolic BP (102 mmHg vs. 111 mmHg) and MAP (74 mmHg vs. 80 mmHg) (p<0.05). These results are consistent with previously reported basal cortisol elevations and suggest that asymptomatic subclinical hypothyroidism also may have an impact on cardiovascular functioning and BMI. These findings provide further suggestive evidence that researchers targeting a normal control population should appropriately screen study participants for this undiagnosed subclinical thyroid disease.

METAPERCEPTIONS OF ALCOHOL-RELATED BEHAVIORS IN COLLEGE STUDENTS
Abraham M. Rutitch, Ph.D., Psychology, California State University, Northridge, Northridge, CA, Cameron Hopkin, B.A., Psychology, Duke University, Durham, NC, Sulamun R. Coleman., Psychology, California State University, Northridge, Northridge, CA.

One challenge in treating alcohol abuse is potential patients’ reluctance to enter into and continue treatment. Often, patients with regarded as more risky and dependent drinkers deny that they need treatment, believing that their behavior is normal and not a cause for concern. This is particularly true in the college population, in which risky drinking is reinforced by perceived social norms. If people believe that close others see their behavior as problematic, they are more likely to seek treatment; thus, metaperceptions (the perceptions people hold of the way others perceive them) are a crucial yet rarely examined element of alcohol abuse and treatment. College students (N = 198) responded to various hypothetical behaviors in dyads. Some behaviors had negative consequences (e.g., “Suppose you drove even though you knew you were drunk”); others had more positive consequences (e.g., “Suppose you were more witty and fun because you’d been drinking”). For each behavior, one participant (the perceiver) indicated how positively or negatively they would think of their partner if they performed the behavior; the other participant (the metaperceiver) indicated how they believed their partner would perceive them. Participants also completed the AUDIT scale, which assesses risky drinking behavior. Riskier drinkers held less negative metaperceptions of behaviors with positive consequences (standardized beta = .36, p < .01), and made these metaperceptions less accurately (beta = -.27, p = .03). However, riskier drinkers did not hold more positive metaperceptions of behaviors with negative consequences (beta = .05, ns), nor were these metaperceptions less accurate (beta = .01, ns). Thus, riskier drinkers know that behaviors with clear negative consequences are perceived negatively, but inaccurately perceive the social benefits of drinking. Interventions targeting the metaperceptions of problem drinkers, particularly focused on the perceived positive consequences of alcohol use, could increase participation in and adherence to treatment programs. Such interventions could potentially be applied to other clinical problems, such as drug abuse and eating disorders.

CHILDBOOD ABUSE IS RELATED TO HOSTILITY AND BODY COMPOSITION
Jennifer E. Phillips, M.S., Psychology, University of Pittsburgh, Pittsburgh, PA; Janine D. Flory, PhD, Psychology, Queens College, City University of New York (CUNY), Flushing, NY, Matthew F. Muldoon, MD, MPH, Clinical Pharmacology, Stephen B. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA.

Early life stress has been implicated in the development of unfavorable physical health outcomes in adulthood, including overweight and obesity. Similarly, negative psychological attributes have been associated with both early life adversity and higher body mass. Here, we examine the association of childhood maltreatment with adulthood body composition in a sample of nonpatient volunteers. Subjects were 710 participants from the University of Pittsburgh Adult Health and Behavior project (30-54 yrs., 45% female, 84% Caucasian/16% African-American). Abuse in childhood was assessed by a single item question (“Were you abused as a child?”) during administration of the
posttraumatic stress disorder (PTSD) module of the Structured Clinical Interview for DSM-IV, Non Patient Version (SCID-NP), and hostility was measured by the Cook-Medley Hostility Scale. Covariates (age, sex, and race) accounted for 19.7% of the variation in waist circumference (F3,706=58.11, p < .001), 3.9% in body mass index (BMI) (F3,706=9.52, p < .001), and 30.0% in body fat percentage (F3,706=102.34, p < .001). Presence of abuse before age 16 showed significant associations with adult waist circumference (b = 7.86, p < .001), BMI (b = 3.27, p < .001), and body fat (b = 3.73, p < .002). Abuse was also positively associated with hostility (b = 3.39, p < .001), which, in turn, was positively associated with waist circumference (b = 0.29, p < .001), BMI (b = 0.09, p < .004), and body fat (b = 0.10, p < .02). We next examined whether hostility mediated the association of abuse with body composition using the Sobel test. Results showed that hostility significantly accounted for the relationship between reported abuse in childhood and central adiposity, BMI, and body fat (z = 2.54, p < .02; z = 2.69, p < .01; z = 2.43, p < .02). Adjustment for parental education and participants’ own educational attainments did not significantly attenuate these findings. Thus, early life maltreatment may be an important risk factor contributing to adult obesity, and may operate partly through its association with hostility. Research supported by HL PO1-40962.

395) Abstract 1015

TREATMENT OF CHRONIC PAIN WITH BUPRENORPHINE IN A VETERAN WITH TRAUMATIC BRAIN INJURY
Shilpa Sachdeva, MD, Adekola Alao, MD, Psychiatry, SUNY Upstate, Syracuse, NY

Case Presentation: We report a case of a 27-year-old Iraq War veteran with no previous psychiatric history who sustained severe traumatic brain injury (TBI) following a blast injury from an improvised explosive device. The patient subsequently suffered severe anxiety symptoms controlled only by combination therapy with benzodiazepines and venlafaxine. Even more disabling, the patient also experienced intractable headache and shoulder pain unresponsive to non-steroidal anti-inflammatory agents, tramadol, gabapentin, or NMDA-receptor antagonists. Given the risk of respiratory depression with his current medications, opioid analgesics were not favored for the management of his pain. The patient was started on sublingual buprenorphine at a dose of 8mg three times daily with significant improvement. This dose was maintained and the patient was able to function relatively pain-free. Discussion: Chronic pain is a significant complication in patients with TBI and is reported by a majority of patients with TBI, regardless of the severity of the injury. The treatment of chronic pain among individuals can be challenging. Patients with TBI may be on other medications for impulse control, such as antidepressants and benzodiazepines. Further treatment with narcotic analgesics may therefore increase the risk of respiratory depression. Buprenorphine is a partial mu agonist whose effects plateau at higher doses, at which time it begins to act like an antagonist. By this property at higher doses that limits its dose-dependent respiratory depression. Buprenorphine thus has the advantage of effective analgesia with minimal sedation and may be useful for treating chronic pain among TBI patients already taking benzodiazepines. While clinicians should be aware of these possible benefits, more studies are necessary to evaluate the efficacy of buprenorphine among TBI patients with chronic pain.

396) Abstract 1788

SING ME A HAPPY SONG: THE ASSOCIATIONS BETWEEN SINGER LONGEVITY AND EMOTION WORD-USE IN LOVE SONGS
Sarah D. Pressman, PhD; Melanie N. Canterberry, BA; Sean M. Burkett, BA; Psychology, University of Kansas, Lawrence, KS

Emotional expression has been long known to have both positive and negative impacts on health. More recently, researchers have begun to address whether the words that individuals use in expressive writing are associated with increased life duration. This study examined whether the types of positive and negative feelings expressed in love songs are associated with longer life duration. The hypothesis was that even if the singers do not write the songs, they are subjected to thousands of repeated expressions of the words in an emotional fashion. It is also possible that individual differences will factor into the types of songs that certain performers prefer and how well they sing them. We anticipated that more positively worded songs would be associated with longer life spans, while negative songs would be associated with shortened life duration. Subjects were 63 well-known, deceased singers (44 male, 22 female) born between the late 1800s and mid 1900s. One popular love song from each singer was chosen and the lyrics were subjected to digital word encoding to examine the use of emotion words. Information on the singers was retrieved from Internet databases. Words examined were scales and subscales from the Profile of Mood States. Race, sex, whether they wrote the song, and year of song release were examined as covariates but none were associated with length of life. Cause of death was related to longevity (natural, self-inflicted, accidental) and was controlled in all analyses. Linear regressions indicated that positive affect was associated with increased life duration (b = .22, p < .05). This was primarily due to the well-being component of positive affect (e.g., cheerful and happy) (b = .26, p = .01). Overall negative affect was not associated with life duration, however, anger words were tied to decreased life duration (b = -.02, p < .05). These findings indicate that song lyrics, even in the absence of the singer writing the majority of these songs, may be an important indicator of life span.

397) Abstract 1379

MALINGERING IN SICKLE CELL ANEMIA
Shilpa Sachdeva, MD, Adekola Alao, MD, Psychiatry, SUNY Upstate, Syracuse, NY

Introduction There has been some suggestion that sickle cell disease (SCD) are not adequately treated in times of pain crises. Many patients do not seek medical attention during these episodes, and some believe that they are underreported. The tendency to form polymers is dependent on the concentration of Hbg S, which is why carriers may be asymptomatic. When polymers are formed, the affected red blood cells appear rigid and crescent shaped, fragile and easily hemolysed. This leads to blockage of small blood vessels, thus, compromising blood supply to bones and tissues contributing to severe bone pain. Among psychiatric complications, depression, anxiety and PTSD, have been described. Case Report A 17 year old African American female presented to the ER with a fracture in her right tibia and fibula. She admitted to having a history of SCA with numerous episodes of bone pain crises with intense and severe pain. These presentations were treated with ketorolac and meperidine at various dosages at multiple times in the past. On this occasion, the patients radiological studies did not confirm any evidence of sickle cell changes. This anomaly prompted the ER physician to order a repeat immunoglobulin electrophoresis, which came back Hb AA. When the patient was confronted with this, she became angry and attempted to leave against medical advice. Her fracture was treated by an orthopedic surgeon and the patient was discharged. Discussion The emergency department physician plays a pivotal role in determining the quality of care patients will receive during a SCD crisis. There has been a case reported on a 35 year old African American male malingering sickle cell crises with multiple co-morbid conditions including Candidal esophagitis, deep vein thromboses, IVC filter. There have also been reports of under-medication of patients with sickle cell crises. However, the possibility of a patient malingering sickle cell crisis should be at the forefront of the ER physician. Conclusion: If in doubt, ER physicians should order Ig Electrophoresis in patients of Sickle cell crisis to confirm or rule out diagnosis of SCD in a suspicious patient. As illustrated in this case, ER physicians regularly prescribe narcotic pain killers without any objective evidence of SCD pathology. It is suggested that there should be verification of the diagnosis of SCD prior to the prescription of narcotics.
398) Abstract 1354

ADAPTIVE OR MALADAPTIVE? AN INVESTIGATION OF PERFECTIONISM IN CHRONIC FATIGUE SYNDROME

Stefan Kempke, MA, Patrick Luyten, PhD, Psychology, Boudewijn Van Houdenhove, MD, PhD, Psychiatry, K.U.Leuven, Leuven, Belgium

Objective: To investigate the role of adaptive perfectionism (i.e. high personal standards) and maladaptive perfectionism (i.e. concerns over mistakes and doubts about actions), respectively, in chronic fatigue syndrome (CFS). Methods: The study was conducted in a sample of 192 CFS patients who where attending a tertiary care center for CFS. Dimensions of perfectionism were assessed with the Multidimensional Perfectionism Scale (MPS-F) developed by Frost et al. (1990). Patients had a mean age of 40.17 years (S.D. = 9.43) and were predominantly female (85.4%). Structural equation modelling was used to analyze relationships between adaptive and maladaptive perfectionism, severity of fatigue, and severity of comorbid depression. Results: As expected, results supported a model (CFI = .987; RMSEA = .056; SRMR = .054) in which maladaptive, but not adaptive, perfectionism was positively related to severity of fatigue (r = .38, p < .001) and depression (r = .84, p < .001). However, analyses also showed a substantial association between both perfectionism dimensions. Conclusion: Findings of this study suggest that clinicians treating CFS patients should mainly target maladaptive aspects of perfectionism, but also pay attention to these patients' possible (too) high personal standards.

399) Abstract 1383

METABOLIC SYNDROME COVARIATES WTH REDUCED GREY MATTER VOLUME IN THE HIPPOCAMPUS

Ikechukwu C. Onyewuanyi, BSc (Hons), Psychiatry, Matthew F. Muldoon, MD, MPH, Medicine, University of Pittsburgh, Pittsburgh, PA, Ahmad R. Hariri, PhD, Psychology and Neuroscience, Duke University, Durham, NC, Stephen B. Manuck, PhD, Psychology, Peter J. Gianaros, PhD, Psychiatry and Psychology, University of Pittsburgh, Pittsburgh, PA

Converging animal and human studies show individual components, namely hypertension and visceral obesity, of the metabolic syndrome (MetS) to be associated with morphological changes in corticobulbar brain areas, particularly the hippocampus, and such changes may be linked to effects of MetS on cognitive functioning. However, no studies have yet determined whether presence of the MetS itself, as opposed to particular MetS components, is similarly associated with indicators of brain morphology. Accordingly, we examined whether meeting criteria for MetS covaried inversely with grey matter volume, focusing specifically on the hippocampus. Participants were 15 individuals meeting criteria for the MetS and 15 controls meeting zero criteria, matched for age and gender. MetS criteria were based on the National Cholesterol Education Program Guidelines. Regional grey matter volume was quantified by voxel-based morphometry (VBM) algorithms applied to high-resolution structural magnetic resonance images. Individuals meeting criteria for MetS showed less grey matter volume in bilateral hippocampus after controlling for total grey matter volume (x, y, z coordinates for R hippocampus: 23, -18, -22; L hippocampus: -24, -22, -23, ts > 2.77, P<0.005, ks > 20 voxels). Moreover, in univariate analyses, diastolic blood pressure (rs > -0.39, p < 0.05) and waist circumference (rs > -0.38, p < 0.05) emerged as specific components of the MetS that correlated negatively with hippocampal volume. Regression analyses revealed a significant correlation on the range of peripheral target organ damage associated with MetS to include corticobulbar brain areas, such as the hippocampus. Future research should examine whether syndrome-related changes in hippocampal volume mediate effects of MetS on cognitive functions (e.g., memory) subserved by hippocampal activity.

400) Abstract 1245

DECREASES IN VAGAL TONE DURING ACTIVATED POSITIVE EMOTION

Richard D. Lane, M.D., Ph.D., Psychiatry, University of Arizona, Tucson, AZ, Harry T. Reis, Ph.D., Psychology, University of Rochester, Rochester, NY, Chiu-Hsieh Hsu, Ph.D., Epidemiology and Biostatistics, University of Arizona, Tucson, AZ, Wojciech Zareba, M.D., Ph.D., Medicine, University of Rochester, Rochester, NY.

Purpose of study: Positive emotional states are typically associated with vagal (parasympathetic) tone increases that are cardioprotective. However, positive emotions vary in arousal level. We examined whether high frequency heart rate variability (HF-HRV), an index of vagal tone, varied as a function of high vs. low arousal positive emotion. Subject sample and statement of methods: We studied 161 asymptomatic patients (72% female; mean age 35 years) with Long QT Syndrome, a genetic disorder that puts affected individuals at risk for sudden cardiac death. Data were collected during 3-day home visits across the U.S. Each day a 14-hour Holter (continuous ECG) recording was completed. Patients engaged in typical daily activities and were paged 10 times per day at random times. Patients answered 60 questions using a handheld computer pertaining to the 5 minutes preceding the page. On each occasion 16 emotion terms, clustered into 4 subscales, were each rated on a 7-point intensity scale: Activated Positive Affect (APA): (interested, alert, excited, enthusiastic), Low Arousal Positive Affect (LAP): (calm, relaxed), Activated Negative Affect (ANA): (guilty, anxious, angry, hostile, jittery, afraid) and Low Arousal Negative Affect (LAN): (sad, lonely, depressed). Holter data for each 5-minute epoch were analyzed for HF-HRV. Summary of results: A linear mixed-models analysis controlling for gender and sex revealed that compared to low levels of APA (rated 0-1), moderate (rated 2-4) (p<.0001) or high (rated 5-6) (p<.0001) levels of APA were associated with lower HF-HRV, and compared to low levels of LAP, moderate (p<.005) or high (p<.0001) levels of LAP were associated with greater HF-HRV. The interaction between APA and LAP on HF-HRV was significant (p<.0001). ANA ratings of 1 or higher (vs. 0) were associated with slight decreases in HF-HRV (p<.01) but LAN and HF-HRV were not associated. Conclusions: These findings indicate that high arousal, particularly positive, emotions are associated with decreases in HF-HRV, consistent with reports that sudden deaths have occurred during high arousal positive emotional states.

401) Abstract 1722

VALIDATION OF AN ASSESSMENT OF TYPE D PERSONALITY AMONG U.S. CARDIAC PATIENTS COMPROMISED AND NON-CARDIAC SAMPLES: DS14

Elina Spektor, M.A., Maria Dzioek, M.A., Sonia Suchday, Ph.D., Clinical Psychology, Health Evaluation, Erikau Graduate School of Psychology, AECOM, Bronx, NY.

Objective: The DS14 is a measure of Type D (Distressed) Personality, which is comprised of social inhibition (SI) and negative affectivity (NA). This broad personality type has been associated with poor cardiac and health outcomes. The aim of this study was to validate the DS14 in the U.S. Methods: Participants were recruited from a diverse urban hospital and private cardiology practice in NY. Participants included 119 cardiac patients and 65 non-cardiac medical patients who were administered the DS14 between 2007-9. Results: Principal Component Analyses (Promax) was conducted on the cardiac and non-cardiac samples separated. Findings revealed that the cardiac sample best fit a unitary factor model, while the non-cardiac population fit a 2-factor model of NA and SI as has been found in previous research. A significant correlation between the unitary Type D model and the Center for Epidemiological Studies-Depression Scale (CES-D) within the cardiac population demonstrated convergent validity (r = .64, p < 0.001). Both NA and SI each showed a significant correlation with CES-D (r = .55, .57, p < .001, respectively). Divergent validity was also demonstrated. Reliability Analysis of both populations suggested that reverse coded items (1, 3) need to be rewritten or removed for the U.S. samples. Within the non-cardiac population, items 9, 10, and 11 also need to be rewritten or removed as they did not fit uniquely within any factor. Cronbach's alpha coefficient of scale for cardiac population was .91. The Cronbach's alpha coefficients for the non-cardiac population of NA and SI were .81 and .84 respectively. Conclusion: This study established the DS14 as a valid and reliable measure for use among U.S. samples. A 2-factor model of NA and SI is best supported for the non-cardiac sample, but a unitary Type D scale best fits a cardiac sample.
SPIRITUALITY/RELIGIOSITY (S/R) IN CARDIOVASCULAR REACTIVITY (CVR) OF HEART FAILURE (HF) PATIENTS
Meredith A. Pung, Ph.D., Paul J. Mills, Ph.D., Psychiatry, University of San Diego, California, La Jolla, CA

Purpose: To examine the role of S/R in CVR among HF patients.

Methods: Subjects were 81 men & 18 women with NYHA class II-IV HF [mean age 60 yrs (SD=13.4); mean EF 33% (SD=11.0); 68% White, 25% Black]. Subjects completed the Daily Spiritual Experiences, Forgiveness, Private Practices, Positive Religious Coping, & Overall S/R subscales of the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS) & underwent CVR testing assessing SBP, DBP & HR at rest, speech prep, speech, math, & recovery. Repeated measures ANOVAs were run with time as within-Ss factor & median-split BMMRS subscale scores as between-Ss factor. EF was related to SBP (r=.28, p=.01) & race was related to HR. EF was covaried when examining SBP, DBP & HR at rest, speech prep, speech, math, & recovery. When examining interactions, for Private Practices, the pattern for both SBP (F=2.05, p=.09) & DBP (F=2.24, p=.06) marginally differed by group. Initially (from baseline to speech prep), those scoring high on Private Practices exhibited greater SBP CVR; however, from speech prep through math task, the slope was steeper for individuals scoring low on Private Practices indicating greater SBP CVR for the majority of the task. For DBP, the curve was generally steeper for those scoring low on Private Practices. Finally, when examining HR patterns, the slope was steeper at the beginning & end of the task for those scoring low on Overall S/R (F=2.32, p=.06), indicating greater HR CVR for those individuals. There were no other significant interactions. Conclusion: Results suggest that some dimensions of S/R are associated with CVR among HF patients, with a possible protective role of forgiveness & perhaps overall S/R. The role of private religious practices is unclear.

SOCIODEMIC STATUS AND RACE: IMPACT ON CARDIAC ACTIVITY AT REST AND DURING STRESS
Nicole Szeto, Psychiatry, University of California, La Jolla, CA, Richard A. Nelesen, Ph.D., Joel E. Dimsdale, M.D., Psychiatry, University of California, San Diego, La Jolla, CA

Socioeconomic status (SES) impacts health in many ways (i.e., heart disease or change in immune function). This study examined the potential interaction of ethnicity and SES on hemodynamic functioning at rest and during acute stress. Sixty-one subjects were studied (36 male, 25 female, 36 black, 24 white). SES was determined by the Hollingshead social class scale (HSC) and by The MacArthur Subjective Social Status Scale (MSSSS). Dependent measures were heart rate (HR), mean arterial pressure (MAP) and cardiac output (CO) determined by impedance cardiography. These were measured at rest and in response to a speech stressor. For HR there was a significant speech X race X gender interaction (p = 0.018). White women had the largest increase in HR (p < .001); whereas Black women had lowest HR levels with the smallest increase (p < .001). MAP increased significantly in all groups in response to the speech. Blacks had lower CO than whites (p = 0.022). SES measured by the traditional HSC or as perception of social position (MSSSS) was not related to cardiac activity. These observations are consistent with previously reported findings with white women having higher HR and Blacks lower cardiac output.

SEROTONIN TRANSPORTER PROMOTER POLYMORPHISM MODERATES CARDIOVASCULAR REACTIVITY
Jordan M. Thompson, B.S., Behavioral Sciences, Mustafa al’Absi, Ph.D., Behavioral Science, University of Minnesota Medical School, Duluth, Duluth, MN, Edward Perkins, Ph.D., Biochemistry, University of Minnesota, Duluth, MN

Cardiovascular disease is the leading cause of death in the United States and is a tremendous financial burden to society. One of the contributing factors to the development of cardiovascular disease is chronic stress. The cardiovascular response to stress differs among individuals. This difference is related to variation in stress-related genes among other factors. In the presence of a stressor the central nervous system plays a role in modulating the cardiovascular response to stress. The cardiovascular response can be affected by a serotonin transporter promoter polymorphism (5HTTLPR). In this study we examined this response in sixty-two individuals with different combinations of the long (l) and short (s) allele variants of 5HTTLPR. The participants completed a stress protocol involving exposure to the cold pressor test preceded and followed by periods of rest. Blood pressure and heart rate measures were collected throughout the session. Results show that individuals homozygous for the l allele had the greatest cardiovascular response to the cold pressor. Participants with the l/s genotype had the lowest responses, while the heterozygous genotype demonstrated an intermediate response. Specifically, heart rate and systolic blood pressure response were significantly greater in the individuals with the l/l genotype (p < .01). These findings suggest that serotonin in the central nervous system plays a role in modulating the cardiovascular response to stress.
FEELING CHINESE MAY BE LESS STRESSFUL BUT FEELING AMERICAN MAY BE BETTER FOR HEALTH: ACCULTURATION, SOCIOECONOMIC STATUS (SES), STRESS & CARDIOVASCULAR HEALTH IN A CHINESE IMMIGRANT COMMUNITY IN NYC

Sonia Suchday, Ph.D., Clinical Psychology (Health Emphasis) Ph.D., Ferkaft Grad Sch of Psych/Albert Einstein Coll of Md, Bronx, New York; Natacia Wright, M.A., Division of Health Behavior & Nutrition Research/EPI, Albert Einstein College of Medicine, Bronx, New York; Jing Fang, Ph.D., Division For Heart Disease & Stroke Prevention, CDC, Atlanta, GA; Sun-Hoo Foo, M.D., Neurology, New York Downtown Hospital, New York, New York; Judith Wylie-Rosett, Ed.D., Division of Health Behavior & Nutrition Research/EPI, Albert Einstein College of Medicine, Bronx, New York

Purpose: Assess acculturation with a new measure - Acculturative Ladder:AL and the association of acculturation with SES, stress, and health among first generation Chinese immigrants in NYC. Sample & Methods: In a study assessing acculturation, SES, and health among first generation Chinese Immigrants (N=2072, Females=53%; Mean Age=52.69, SD=13.3 years) in NYC Chinatown, participants cardiovascular health was assessed including anthropometric measures and the Global Heart Function Questionnaire (a semi-structured interview Chinese) assessed demographics, AL (new measure modified version of the MacArthur SES ladders where participants rated their identification with being Chinese and with being American), the Stephenson Multigroup Acculturation Scale (SMAS) assessing dominant/ethnic culture identification, and the perceived stress scale. Results Summary: The AL correlated appropriately with objective immigration indicators and SMAS subscales indicating preliminary validity of the scale: Being Chinese positively/negatively correlated with ethnic/dominant culture identification, r=0.08/r=0.18, respectively (p<.001), negatively correlated with years in US (r=11, p<.001), proportion of lifespan in US (r=11, p<.001), and positively correlated with migration age to US (r=0.06, p=0.004); Being American correlated positively/negatively with dominant/ethnic culture identification, respectively (r=0.42, p<.001), and was positively associated with number of years in US (r=11, p<.001), proportion of lifespan in US (r=25, p<.001), and negatively associated with migration age to US (r=11, p<.001). Chinese culture identification was associated with poorer health assessed by elevated blood pressure (SBP=r=0.07, p<0.003, DBP=r=0.08, p=0.001), being overweight/obese (p<0.006), and poor self-rated health (r=0.04, p=0.05) but less stress (r=0.83, p<0.001); Identification with American culture was associated with higher status assessed by higher levels of education (r=0.10, p=0.001), income (r=12, p<.001), and better self-rated health (r=0.11, p<0.001) among Chinese immigrants. Being more Chinese may not be good for physical health but is less stressful. Feeling American may imply better health and high SES.

ATTACHMENT INSECURITY IS ASSOCIATED WITH HEALTH-RELATED QUALITY OF LIFE IN HEART FAILURE

Christine Cho, B.Sc., Robert Maundner, M.D., Psychiatry, Gary E. Newcomb, M.D., Cardiology, St. Joseph Hospital Heart Institute, Toronto, Ontario, Canada, Robert P. Nolan, Ph.D., Psychiatry, Toronto General Hospital, Toronto, Ontario, Canada, Jan Angus, Ph.D., Nursing, University of Toronto, Toronto, Ontario, Canada

Purpose: Heart failure is one of the most common illnesses affecting adults and impaired health-related quality of life (HRQL) is a major part of the burden of heart failure. Psychosocial factors, such as support coming from a close relationship, are important determinants of HRQL. The study aims to identify whether attachment style is related to HRQL. Methods: The study is a cross-sectional cohort study. Participants were selected for moderate heart failure by echocardiogram. Of the targeted 150 patients, 20 have been recruited so far. Participants completed the Minnesota Living with Heart Failure Questionnaire and the Reciprocal Attachment Questionnaire. Results: There was a positive correlation between compulsive self-reliance (high attachment avoidance) and HRQL scores (r=0.55, p=0.01), with higher HRQL scores indicating greater lifestyle disruptions due to heart failure. There was also a positive correlation between HRQL scores and both separation protest (r=0.57, p=0.01) and feared loss (r=0.55, p=0.01), which are dimensions of attachment anxiety. There were no significant correlations between HRQL scores and compulsive care-seeking, angry withdrawal, compulsive care-giving, proximity seeking, availability or use of attachment figure. Conclusion: The data supports the idea that in patients with heart failure, high levels of attachment avoidance and attachment anxiety are associated with diminished HRQL.

INTERACTION OF SEX AND DEPRESSIVE DISORDERS IN THE VASCULAR AND METABOLIC REACTIVITY OF CARDIAC OUTPATIENTS

Andre Arsenault, MD, Nucl Medicine, Xueli Zhao, PHD, Bernard Meloche, Bachelor, Lynn Jolicoeur, Bachelor, Nuclear Medicine, Montreal Heart Institute, Montreal, Quebec, Canada; Simon Bacon, PHD, exercise science, Concordia University, Montreal, Quebec, Canada; Kim Lavoie, PHD, Dept. of Psychology, UQAM, Montreal, Quebec, Canada

Background: We previously proposed forearm hyperemic reactivity (FHR), which may be considered a surrogate marker of endothelial function, as a potential biomarker of cardiovascular disease (CVD) to evaluate vascular and metabolic reactivity using a modified rest myocardial perfusion imaging protocol. Depressive disorders have been linked to CVD development and progression. However, the effect of depressive disorders in the reactive uptake of Myoview™ according to sex has not been reported. Methods: A total of 58 patients (8 women, mean age 57.4±3.4 years) were included from a myocardial perfusion (SPECT) exercise stress testing group at Montreal Heart Institute (MHI) and underwent a psychiatric interview (PRIME-MD) to assess depressive disorders. The ratio of the down slope after the maximum point of the fitted time activity curve between the elbow and wrist in
the hyperemic arm (DSR_hwe) was used to assess the metabolic reactivity of kinetics of Myoview®. The fitted time activity curve were obtained from a gamma camera. Summary of results: The DSR_hwe of men was significantly high (F=4.24, p<0.04). It was significantly lower in patients with versus without depressive disorders (F=5.31, p<0.025). The ratio was also significantly decreased in depressive women, but not in men (F = 5.19, p=0.062). Depressive disorders appear to interact with sex in the metabolic response to hyperemic challenge. Future research in needed to replicate and explore the mechanisms of these findings in larger samples.

410) Abstract 1444

TOWARD AN EXAMINATION OF THE EMOTIONAL AND PHYSICAL EFFECTS OF EXPOSURE TO STRUCTURAL RACISM.
Tanisha I. Burford, Ph.D., Psychology and Neuroscience, Duke University, Durham, NC, Jules P. Harrell, Ph.D., Travette McNair-Nelson, BS, Adrian Thompson, BS, Sheronda Shearon, MS, Psychology, Howard University, Washington, DC

There is growing evidence that racism contributes to poor health outcomes among African Americans. However, research in this area has tended to oversite the health impact of exposure, awareness, perception and processing of observed social and economic racial disparities. The aim of this laboratory study was to examine the effects of exposure to structural racism (SR) on self-reported affect and physiological responding through a new paradigm. Using the Multidimensional Model of Racial Identity (MMRI), we also explored the relationship between black identity and responses to SR. Sixty-five college students were exposed to SR via presentation of an animation depicting racial inequities in incarceration rates between Blacks and Whites along with two control animations. The control conditions presented statistics of frequency of mental health disorders and walking trips by age group. Order of the animated materials was counterbalanced. Cardiovascular measures that have been linked to risks for cardiovascular diseases including interbeat-interval (IBI), respiratory sinus arrhythmia (RSA), and blood pressure (BP), were obtained across five sampling periods. Several mixed-model repeated measures ANOVA were tested to address the study’s hypotheses. As expected, the racial animation (RA) elicited higher ratings of negative affect (F (2, 122) = 180.154, p < .001). RSA was differentially sensitive to the content of the animations such that the (RA) resulted in the most sustained decline in cardiac vagal tone (F (8, 49) = 2.48 p = .024). Further, presentation of the RA first resulted in the most significant decrease in IBI (F (2, 55) =12.9, p < .001). Additionally, gender had an effect on SBP such that recovery levels for SBP were higher for males when the RA was encountered first (F (3, 53) = 3.711, p = .017). Finally, black-centered racial identity dimensions were associated with reduced cardiac arousal during the RA. The findings encourage researchers to move beyond studies of AS and TS goals by I and O, and ratings of SEC by T, seem to offer unique information about ABP during social interactions; self-ratings of AS and TS goals by P do not.

412) Abstract 1770

COMPARISON OF BLOOD PRESSURE ASSESSMENT METHODS USING CFA
Donald Edmondson, Ph.D. Joji Ishikawa, M.D., Ph.D., Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, NY, Tyla Turgel, B.A., Psychology, Stony Brook University, Stony Brook, NY, Matthew M. Burg, Ph.D., Medicine, Joseph E. Schwartz, Ph.D., Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, NY

In this paper, we examined the reliability and validity of the BPTBU on BP readings in a sample of 65 participants. Participants were first assessed in their homes, followed by a clinic visit. BP readings were taken in the clinic using both manual and automated methods (BPTru). We analyzed the correlation between manual and automated BP readings, with a correlation coefficient of 0.94 found. Additionally, we examined the agreement between the two methods using Bland-Altman analysis, which showed a bias of -0.8 mmHg and a limit of agreement of ±5 mmHg. The results suggest that both methods are reliable and valid for use in clinical settings.

413) Abstract 1708

ASSESSMENT OF TRACKING COEFFICIENTS FOR THE DEVELOPMENT OF C-REAFTIVE PROTEIN WITH STRESS AND DEPRESSION AS PREDICTORS.
Bruce R. Wright, MD, Celestina Barbosa-Leiker, PhD, Health & Wellness Services, Washington State University, Pullman, WA, Trynke Hoekstra, MSc, Department of Health Sciences, VU University, Amsterdam, The Netherlands, Jody J. Miller, BS, College of Nursing, Washington State University, Spokane, WA, Jos Twisk, PhD.
Recent research has increasingly linked inflammatory markers like C-reactive protein (CRP) to medical conditions like coronary artery disease, to psychological conditions like stress and depression, and to lifestyle factors like smoking and obesity. Relatively little is known, however, about how CRP tracks over time, or how psychological factors influence the longitudinal development of CRP. The aim of this research was to determine if CRP tracked over time (time 1 value predicting the development over times 2-4). For those that CRP tracked for, lifestyle variables and body mass index (BMI) were tested as confounders. Lastly, perceived stress and depression were examined to see if the psychological variables predicted the development of CRP over time. Participants were 84 college students who entered the study as freshman (43% male, 18 yrs. old) and returned for at least 1 additional visit. Data was collected yearly for 4 years. The Center for Epidemiologic Studies Depression Scale (CES-D) and the Perceived Stress Scale (PSS) were used to assess depression and stress. Tracking coefficients for CRP were examined using Generalized Estimating Equations in 3 models: a crude model with CRP at time 1 predicting the development of CRP over times 2-4, if CRP tracked, a lifestyle model with CRP at time 1 and smoking status, daily pro-inflammatory medication use, and oral contraceptive use (females only) at time 1, and a full model with CRP and BMI at time 1. Lastly, a model with CES-D and PSS scores at time 1 and times 2-4 predicting CRP at times 2-4 was examined. CRP tracked over time for females (CRP tracking B = -0.253, p<0.01) but not for males (CRP tracking B = .028, p=.65). For females, CRP was not influenced by lifestyle variables (CRP tracking B = -0.253, p<0.01) but was influenced by BMI (CRP tracking B = 2.08, p<0.01). In females, baseline and development of stress and depression did not predict the development of CRP. Conclusion, CRP tracked for women and was influenced by BMI. Stress and depression were not related to the development of CRP in the female sample. CRP did not track for men, and thus no other models were examined for the male sample.

**414 Abstract 1731**

**THE IMPACT OF SEX AND C-REACTIVE PROTEIN LEVELS ON ENDOVENTRICAL FUNCTION IN CARDIAC OUTPATIENTS**

Bernard Meloche, technologist, nuclear medicine, Xuexi Zhao, PhD, research, Kim Lavoie, PhD, Psychology, Simon Bacon, PhD, Science exercise, Lynn Jolicoeur, technologist, Andre Arsenault, Md, nuclear medicine, Montreal Heart Institute, Montreal, Quebec, Canada

Endothelial dysfunction is associated with arterial inflammation, is an early marker of cardiovascular disease (CVD), and has been linked to increased CVD morbidity and mortality. The measurement of endothelial function (EF) has gained attention in recent years in the psychophysiological literature. We have developed a single photon emission computed tomography (SPECT) variation of the well-known flow-mediated dilatation procedure for measuring EF, called the forearm hyperemic reactivity (FHR) test. However, the interaction of CRP level and sex on FHR has not been determined. A total of 59 patients (13 women, mean age 59.2±2.4 years) underwent the FHR test to assess CRP levels, which were divided for women and was influenced by BMI. Stress and depression were not related to the development of CRP in the female sample. CRP did not track for men, and thus no other models were examined for the male sample.

**415 Abstract 1235**

**TYPE D PERSONALITY INDEPENDENTLY PREDICTS 1- AND 2-YEAR MORTALITY IN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PATIENTS**

Henneke Versteeg, MSc, Department of Medical Psychology, Tilburg University, Tilburg, The Netherlands, Dominik A. Theuns, PhD, Ruud A. Erdman, PhD, Agnes Muskens, Luc Jordans, MD, PhD, Department of Cardiology, Thoraxcenter, Erasmus Medical Center, Rotterdam, The Netherlands, Susanne S. Pedersen, PhD, Department of Medical Psychology, Tilburg University, Tilburg, The Netherlands

Background: Little is known about the role of psychological factors as determinants of prognosis in patients treated with implantable cardioverter defibrillator (ICD) therapy. We examined the influence of the distressed (Type D) personality, characterized by increased negative emotions paired with social inhibition, as a risk marker for 1- and 2-year mortality in ICD patients. Methods: Consecutively implanted ICD patients (N=375) from the Erasmus Medical Center were asked to complete the 14-item Type D Scale (DS14) at baseline and were followed up for 1- and 2-year mortality. Results: Of all patients, 22.4% (84/375) had a Type D personality. At 1 year, the incidence of mortality was higher in Type D patients compared to non-Type D patients both at 1-year (7.1% vs. 2.1%; HR: 3.43; 95%CI: 1.11-10.64 p = .03) and at 2-year follow-up (13.1% vs. 8.2%; HR: 2.73; 95%CI: 1.24-6.01; p = .01). The risk associated with Type D at 1-year (HR: 3.19; 95%CI: 1.01-10.08) and 2-year follow-up (HR: 2.79; 95%CI: 1.25-6.20) remained after adjustment for gender, age, indication for ICD, coronary artery disease as underlying etiology, and shocks (appropriate or inappropriate) during the follow-up period. Conclusions: ICD patients with a Type D personality had a 2- to 3-fold increased risk for 1- and 2-year mortality post implantation, independent of demographic and clinical factors. The DS14 could be used to identify this high-risk group of patients, as this risk marker is not captured by any of the standard assessments in clinical practice. More aggressive treatment or adjunctive psychological intervention may be warranted in this subgroup of patients.

**416 Abstract 1676**

**IS C-REACTIVE PROTEIN MEDIATING UPTAKE OF MYOVIEW** IN DEPRESSIVE PATIENTS ACCORDING TO SEX

Xuexi Zhao, PhD, Nuclear Medicine, Montreal Heart Institute, Montreal, Quebec, Canada, Kim Lavoie, PhD, Dept. of Psychology, UQAM, Montreal, QC, Canada, Simon Bacon, PhD, exercise science, Concordia University, Montreal, QC, Canada, bernard Meloche, Bachelor, Lynn Jolicoeur, Bachelor, Andre Arsenault, MD, Nuclear Medicine, Montreal Heart Institute, Montreal, QC, Canada

We developed a two-component kinetic model of Myoview to evaluate vascular and metabolic forearm hyperemic reactivity (FHR). C-reactive protein (CRP) has been associated with cardiovascular disease (CVD) development and progression. Depressive disorders have also been linked to CVD. In this study, we investigated the extent to which inflammation had an effect on the kinetics of Myoview in patients with and without depressive disorders according to sex. A total of 59 patients (9 women, mean age 58.7±3.2 years) were recruited from among patients undergoing exercise stress testing at Montreal Heart Institute (MHI). A psychiatric interview (PRIME-MD) was used to assess depressive disorders. The transit rate from blood to muscle in the hyperemic arm (kbm_it) of a two-component kinetic model was used to evaluate molecular muscle uptake from the fitted time activity curve (TAC). The TAC was obtained from a five minutes dynamic imaging using a large field-of-view gamma camera with a LEHR collimator. Blood was drawn prior to the FHR test to assess CRP levels, which were divided into tertiles: < 0.88, 0.88-1.9. The total uptake in the hyperemic arm was significantly decreased in women but not in men with increasing CRP levels (A = 0.11, F = 4.98). These results indicate that the effect of CRP levels on FHR is different between men and women. These findings suggest that studies assessing EF should be mindful of sex differences in the impact of CRP (inflammatory processes) on HFR (endoventricular function), such that analyses should include sex as a covariate, or present results stratified for sex. Future research in needed to replicate these findings in larger samples.
CULTURAL SPECIFICITY ON BUFFERING CULTURAL SUPPORT DURING STRESS PROVOCATION: A FOCUS ON CHINESE IMMIGRANTS
Christine Lee, M.A., Sonia Suchday, Ph.D., Ferkau Graduate School of Psychology, Judith Wylie-Rosett, Ed.D., Albert Einstein College of Medicine, Yeshiva University, Bronx, New York

Background: While previous research has shown that social support attenuated cardiovascular reactivity (CVR) to stressful circumstances, it is unknown if this hypothesis will also apply to an immigrant population such as Chinese immigrants. Purpose: The current study assessed the qualitative and quantitative aspects of social support on CVR to stress among Chinese immigrants in the New York City area as no studies on social support and CVR have been cross-culturally validated. Methods: One hundred fifty Chinese immigrants (mean age = 53 years, 86 females, average length of stay in the US = 20 years) were recruited from the New York Downtown Hospital in Chinatown. Following the study description and informed consent procedures, participants completed questionnaires assessing the number of people within their social network, their perceived availability of social support, and participants' level of social support seeking behavior. Following an 8-minute adaptation period, participants recalled a stress provoking event related to their immigration experience in a semi-structured interview format. Recovery was then monitored for 20 minutes and participants were then debriefed. Blood pressure and heart rate were monitored at 1-minute intervals during baseline and recovery, and one minute intervals throughout the interview. Results: Hierarchical multiple regression analyses revealed that a higher level of emotional support seeking predicted a lower systolic blood pressure (SBP), \( \beta = -0.17, t = -2.18, p < 0.04 \), but a higher heart rate (HR), \( \beta = 0.18, t = 2.18, p < 0.04 \), during baseline. Seeking more instrumental support predicted SBP reactivity, \( \beta = 0.18, t = 2.2, p < 0.03 \), and diastolic blood pressure (DBP) reactivity, \( \beta = 0.17, t = 2.17, p < 0.04 \). Perceived availability of emotional support predicted SBP reactivity, \( \beta = 0.2, t = 2.45, p = 0.02 \). Finally, larger social networks predicted HR reactivity, \( \beta = 0.17, t = 2.08, p = 0.04 \), and SBP reactivity, \( \beta = 0.18, t = 2.25, p = 0.03 \). Conclusion: Social support differentially affects cardiovascular responses to stress among Chinese immigrants compared to non-immigrant US samples. Social support may not have an attenuating effect on CVR during provocation among Chinese immigrants.

OVERLAP AND DISTINCTIVENESS OF TYPE D AND NEGATIVE AFFECT
Manfred E. Beutel, MD, Jörg Wiltink, MD, Psychosomatic Medicine and Psychotherapy, Yvonne Till, MD, Thomas Münzel, MD, Stefan Blankenberg, MD, Internal Medicine II/ Cardiology, Matthias Michal, MD, Psychosomatic Medicine and Psychotherapy, University Medicine Mainz, Mainz, Germany

Purpose of study It has remained a matter of debate, if the relationship between individual distress and CHD is due to a general disposition to experience negative affect or if it is mandatory to differentiate state and trait subtypes of emotional distress. However, there have only been limited attempts to explore the overlap of different kinds of emotional distress with Type D systematically. The purpose of our study was to determine the relationship of Type D to depression, generalized and social anxiety in the general community and in coronary heart disease. Subject sample and methods We investigated cross-sectional data of the first 5000 subjects of the Gutenberg-Heart Study, a community-based, prospective, representative observational single-center cohort study in the Rhein-Main-Region in western Mid-Germany (age range 25-74 years). We computed intercorrelations and principal component factor analyses of Type D (DS-14) and established brief, specific and sensitive measures of depression (PHQ-9), generalized anxiety (GAD-2) and social phobia (Mini Spin), separately for participants with (4.5%) and without a diagnosis of coronary heart disease. Summary of results We found moderate correlations between the two DS-14 subscales, negative affectivity and social inhibition, depression, generalized anxiety and social phobia. Correlations between distress scales were higher in the predominantly male subsample of participants with a diagnosis of coronary heart disease (N=226), who were considerably more distressed than participants without CHD (N=4706). Factor analyses at item level almost fully reproduced Negative Affectivity and Social inhibition as separate factors, both in the normal (4 factor solution) and in the CHD sample (3 factor solution). Depression and anxiety loaded on a general distress factor. Social phobia emerged as a separate factor in participants without CHD and loaded on general distress among participants with CHD. While there was moderate overlap with state measures of distress, Negative affectivity and Social inhibition emerged as distinct factors. Our results make a strong point in favor of differentiating state and trait subtypes of emotional distress.
DEPRESSIVE SYMPTOM CLUSTERS AS PREDICTORS OF CAD EVENTS OVER A 13-YEAR PERIOD
Jesse C. Stewart, Ph.D., Psychology, Indiana University-Purdue University Indianapolis and Indianapolis, IN; Timothy E. Stump, M.A., Christopher M. Callahan, M.D., Medicine, Indiana University School of Medicine, Indianapolis, IN

Although depression appears to be an independent risk factor for CAD, few studies have evaluated the relative importance of the facets of this multidimensional construct in predicting CAD outcomes. Thus, it is not known whether particular clusters of depressive symptoms are more cardiotoxic than others. We examined the utility of four depressive symptoms clusters in predicting CAD events over 13 years. Participants were 3767 primary care patients (69% female, 63% African American) aged 60+ years who were screened for depression between 1991-1993. Depressive symptoms were assessed by the Center for Epidemiological Studies-Depression Scale (CES-D). Depressed affect, positive affect, somatic symptoms, and interpersonal distress subscale scores were computed based on a previous factor analysis of the CES-D. The primary outcome was incident CAD events, defined as nonfatal acute myocardial infarction (a positive serum CK-MB or troponin test recorded in a comprehensive electronic medical record system) or CAD death (ICD-9 codes 410-414 or ICD-10 codes 120-125 listed as the first cause of death in the National Death Index). During follow-up, 979 (26%) individuals experienced a CAD event. Cox proportional hazards models (adjusted for demographics, health behaviors, CAD risk factors, and medical conditions) revealed that the somatic symptoms subscale was a predictor of CAD events (p < 0.02). In addition, the positive affect subscale was a marginally significant predictor (p = 0.09); however, the depressed affect (p = 0.19) and interpersonal distress (p = 0.21) subscales were not predictors. A 2-SD increase in the somatic symptoms subscale was associated with a 17% increase in the likelihood of a CAD event (RR = 1.17, 95% CI: 1.03-1.33), whereas a 2-SD increase in the positive affect subscale was associated with a 10% decrease in likelihood (RR = 0.90, 95% CI: 0.79-1.02). Combined with recent results, our findings (a) provide intriguing support for the proposition that the depression-CAD relationship is driven by the somatic cluster and (b) suggest that depression treatments attempting to reduce CAD risk should target the somatic symptoms.

Abstract 1069
A POSITIVE PHQ-2 DEPRESSION SCREEN AMONG HOSPITALIZED CHF PATIENTS PREDICTS 12-MONTH MORTALITY
Bruce L. Rollman, MD, Bea Herbeck Belnap, PhD, Medicine, University of Pittsburgh, Pittsburgh, PA; Satl Mazumdar, PhD, Biostatistics, U of Pittsburgh Graduate School of Public Health, Pittsburgh, PA; Patricia R. Houck, MS, Psychiatry, Dennis McNamara, MD, Rene J. Alvarez, MD, Medicine, University of Pittsburgh, Pittsburgh, PA; Herbert C. Schallberg, PhD, Psychiatry, Weill Medical College of Cornell University, Riverdale, NY; Charles F. Reynolds, MD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

PURPOSE: Congestive heart failure (CHF) affects over 5 million Americans, with over 660,000 newly diagnosed cases, 280,000 deaths, and $35 billion in treatment costs incurred yearly. One potential contributor to poor outcomes is unrecognized depression. An American Heart Association advisory advocated administering the two-item Patient Health Questionnaire (PHQ-2) to all new cardiovascular disease patients for depression (Circulation, 2008; 118:1768). However, the prognostic value of a positive PHQ-2 screen among CHF patients is unknown. METHODS: We administered the PHQ-2 to CHF patients (EF < 40%) with NYHA class II-IV symptoms prior to discharge from 4 Pittsburgh-area hospitals. We defined a positive depression screen as one or both PHQ-2 items endorsed affirmatively (PHQ-2 (+)), and a negative screen as both items endorsed negatively (PHQ-2 (-)). We collected sociodemographic and clinical data at baseline, then followed patients to determine vital status. We used Kaplan-Meier analyses to determine incidence of all-cause death and log-rank tests to evaluate their statistical significance, and Cox models to adjust for baseline covariates. RESULTS: Over a 16-month period ending 4/09, 610 patients consented to our screening procedure; 526 (86%) were both NYHA class II and NYHA class III/IV, and 472 (77%) met all PHQ-2 (+) requirements. Compared to PHQ-2 (-) patients (n=101), PHQ-2 (+) patients (n=372) were younger (65 vs. 70), more likely to have NYHA III/IV symptoms (67% vs. 40%), and reported lower levels of health-related quality of life (SF-12 PCS: 30.7 vs. 34.2) (p<0.002). However, they were similar on other characteristics (65% male, 85% White, 41% diabetic, 25% mean ejection fraction (EF)). As of 9/1/09, we identified 94 deaths, and at 12-months follow-up 21% of PHQ-2 (+) patients died (p=0.01). After adjusting for NYHA class, age, gender, and EF, a positive PHQ-2 screen remained predictive of mortality (hazard ratio: 2.4 (95% CI: 1.1-5.1) p=0.02). CONCLUSIONS: Among hospitalized CHF patients, a positive PHQ-2 is predictive of 12-month mortality. Clinical trials are necessary to assess whether screening and treating CHF patients for depression will reduce mortality.

PAPERS
Paper Session 1 – Depression and Cardiac Disease Risk

Abstract 1137
PERSISTENT COGNITIVE DEPRESSIVE SYMPTOMS ARE ASSOCIATED WITH CORONARY ARTERY CALCIFICATION
Mark Hamer, PhD, Mika Kivimaki, PhD, Epidemiology and Public Health, University College London, London, -, United Kingdom, Avijit Lahiri, MD, Cardiac Imaging and Research Centre, Wellington Hospital, London, -, United Kingdom, Andrew Steptoe, DPhil, Epidemiology and Public Health, University College London, London, United Kingdom

The assessment of sub-clinical atherosclerosis before clinical disease is manifest helps delineate the temporal relationship between depression and coronary heart disease (CHD). The equivocal nature of the existing literature in this area may in part be explained by methodological limitations. By assessing depressive symptoms only at one point in time, most previous studies may have failed to ascertain long-term evidence. We examined the association of long-term depressive symptoms assessed at three time points (over 7 yrs) with coronary artery calcification (CAC). Participants were 454 healthy men and women (aged 53 to 76 yrs) from the Whitehall II epidemiological cohort. Measures of CAC were taken using electron beam computed tomography at the last follow up assessment and we used the 30 item General Health Questionnaire to assess cognitive symptoms of depression at baseline and through follow up. Clinically relevant levels of CAC (Agatston score >100) were detected in 25.3% of the sample and 18.9% of the sample reported depressive symptoms at least once during follow up. Participants that were persistently depressed had over a two fold increased risk of significant CAC (odds ratio [OR] = 2.56, 95% CI 1.04-5.35) compared with never depressed after adjustment for socio-demographic and conventional cardiac risk factors. Persistent depression was also associated with higher risk of detecting CAC (Agatston score >0) in fully adjusted models (OR=2.56, 1.14-5.78). In gender stratified analyses this association persisted in men only. Participants that reported only being depressed on one occasion were not at elevated risk of CAC. In summary, persistent cognitive symptoms of depression were related to sub-clinical coronary atherosclerosis in men free of known cardiovascular disease and diabetes. These findings support the hypothesis that persistent long-term depression is an antecedent to CHD.

Abstract 1237
RECURRENT MAJOR DEPRESSION, BUT NOT C-REACTIVE PROTEIN PREDICTS PROGRESSION OF CORONARY ARTERY CALCIFICATION IN HEALTHY WOMEN
Karen A. Mathews, PhD, Psychiatry, Psychology, Epidemiology, Joyce T. Bromberger, PhD, Psychiatry, Epidemiology, Yue-Fang Chang, PhD, Neurosurgery, Kim Sutton-Tyrrell, DrPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA; Daniel Edmundowicz, MD, Cardiovascular Institute, University of Pittsburgh Medical Center, Pittsburgh, PA

Depression is a risk factor for coronary heart disease (CHD) and inflammation may be one pathway. We examined whether recurrent
major depression was associated with progression of coronary artery calcification (CAC) in midlife women and whether C-reactive protein (CRP) levels accounted for any associations. 150 healthy women (1/4 black) from the Study of Women’s Health across the Nation (SWAN) Pittsburgh site had 2 CAC measures 2 ½ years apart and had lifetime Structured Clinical Interview for DSM-IV Axis I Disorders; 1 reported a stroke at baseline and was removed from analyses. At baseline, 33 women had recurrent episodes of major depression and 64 had any CAC. Progression was defined as log(2nd CAC + 25) – log (1st CAC + 25). Logged CRP was correlated with the initial and progression scores (Spearman rs >0.20, ps <0.01). Backward linear regression models that included age, ethnicity, BMI, waist circumference, lipids, smoking status, BP, CRP, and initial CAC showed that recurrent major depression was associated with progression in the full sample, estimate (SE) = 0.10 (0.04), p = .01, and in women who had any initial CAC, estimate (SE) = 0.17 (0.07), p = .02. In both models, initial CAC, SBP, BMI, and time between scans were significant covariates and CRP was not. In summary, recurrent major depression predicts progression of CAC, but only among those with at least some initial CAC. This association was not due to CRP or to comorbid conditions at baseline that often accompany major depression. ACKNOWLEDGMENTS: Supported by NIH/NIHHS AG012546, MH059689, HL065591.

Paper Session 2 - Pain

Abstract 1706

THE RAISED TRIAL (RHEUMATOID ARTHRITIS INSTRUCTION IN SKILLS AND EMOTIONAL DISCLOSURE): MAIN EFFECTS OF COPING SKILLS TRAINING AND WRITTEN EMOTIONAL DISCLOSURE

Mark A. Lumley, Ph.D., Psychology, Wayne State University, Detroit, Michigan; Frances J. Keefe, Ph.D., Psychology, Duke University Medical Center, Durham, North Carolina; Angela Mosley-Williams, M.D., Medicine, John Dingell VA Medical Center, Detroit, Michigan; John Rice, M.D., Medicine, Duke University Medical Center, Durham, Michigan; Alonza Mayo, BA, Anita Kalaj, BA, Jennifer Carty, BA, Psychology, Wayne State University, Detroit, Michigan; Daphne McKee, Ph.D., Mark Connelly, Ph.D., Sandra Waters, Ph.D., Psychiatry, Duke University Medical Center, Durham, North Carolina; Jay Cohen, Ph.D., Lynn Neely, Ph.D., Psychology, John Dingell VA Medical Center, Detroit, Michigan; Jennifer Stevenson, MSW, Psychology, Wayne State University, Detroit, Michigan

Two approaches to improving pain and functioning in rheumatoid arthritis (RA) are pain coping skills training (CST) and written emotional disclosure (WED) about stress. These interventions have not been tested in combination, which might result in a more powerful joint effect. We recruited 264 adults with RA (81.1% female, age M = 55.1 years; 68% European American, 28% African American), from two sites in the United States, and randomized them in a 2 x 2 factorial design to one of two writing conditions (4 days at-home WED vs. control writing about health behaviors) followed by one of two 8-session classes (CST vs. arthritis education control), which were held individually with a therapist. Blinded physician evaluations of joint- and disease activity and patient reports of pain and functioning were assessed at baseline and at 1-month, 4-month, and 1-year follow-ups. Adherence was very high and attrition low; only 17 participants (6.4%) provided no follow-up data, and only 24 (9.1%) were lost to 1-year follow-up. Factorial ANOVAs were conducted on changes from baseline to each follow-up point to test for main effects of CST and WED and their interaction. No significant interactions were found, but there were several main effects of each intervention. Compared to arthritis education control, CST led to a greater decrease in pain at 1-month (p = .04) and 1-year (p = .02) on the Arthritis Impact Measurement Scales-2 Pain scale, and to reduced sensory (p = .01) and affective pain (p = .03) at 1-year on the McGill Pain Questionnaire. Compared with control writing, WED led to reduced disease activity by physician assessment (p = .03), fewer swollen joints (p = .05), and improved self-reported physical functioning on the AIMS2 (p = .03) at 1-month, and to reduced disease activity at 4 months (p = .04). This study finds positive benefits of both interventions lead to long-term improvements in pain, and WED leads to time-limited improvements in disease activity. These interventions appear to target different mechanisms, and both may have useful roles in RA management. Funded by NIH R01 AR040659.

Abstract 1411

ANXIETY AND PSYCHOSOCIAL STRESSORS AS PREDICTORS OF DEPRESSION AND PAIN OUTCOMES: ANALYSIS OF A TRIAL OF PRIMARY CARE PATIENTS WITH CONFOBID MUSCULOSKELETAL PAIN AND CLINICAL DEPRESSION

Matthew J. Bair, MD, Medicine, Center for Implementing Evidence Based Practices, Indianapolis, IN; Ellen L. Poleshuck, PhD, Psychiatry, University of Rochester Medical Center, Rochester, NY; Erin E. Krebs, MD, Teresa M. Damash, PhD, Medicine, Center for Implementing Evidence Based Practices, Indianapolis, IN; Wanglu Tu, PhD, Jingtwei Wu, MS, Medicine, Indiana University School of Medicine, Indianapolis, IN; Kurt Kroonen, MD, Medicine, Center for Implementing Evidence Based Practices, Indianapolis, IN

We analyzed longitudinal data from the Stepped Care for Affective Disorders and Musculoskeletal Pain (SCAMP) study, a randomized clinical trial that demonstrated the effectiveness of a stepped care approach, using a combined medication-behavioral intervention for primary care patients with chronic musculoskeletal pain and depression. Using multivariable linear regression modeling, we examined the independent relationships between baseline anxiety and psychosocial stressors on depression and pain severity at 12 months. Depression severity was assessed by the Hopkins Symptom Checklist and pain severity was assessed by the Brief Pain Inventory. The primary independent variables were anxiety according to the Generalized Anxiety Disorder 7-item scale and psychosocial stress assessed by the Psychosocial Stressor Scale. We constructed separate models for depression and pain controlling for trial group assignment (intervention vs. usual care), age; sex; race/ethnicity; education; income; employment; pain location (back vs. hip/knee); clinic site (University vs. VA); and medical comorbidity. We also tested for an anxiety and psychosocial stressor interaction. Overall, the sample (N = 250 participants) was 52% women with a mean age of 55.5 years, and a racial distribution of 60.4% White, 36.4% Black, and 3.2% other. Pain location was 60.4% for back pain and 39.6% for hip or knee pain. Fifty-nine percent of participants were enrolled from the University primary care clinics and 41% from the VA clinics. Depression and pain were moderately severe at baseline (mean SCL-20 depression = 1.9 and BPI pain severity = 6.15) and similar across intervention and usual care arms. Baseline anxiety symptoms were independently associated and strongly predicted both depression (t score = 2.13, p = 0.034) and pain severity (t score = 2.75, p = 0.007) at 12 months. However, in the multivariable models baseline psychosocial stressors were not significantly associated with either depression or pain. Anxiety, but not psychosocial stressors predicted 12-month depression and pain outcomes. Anxiety should be considered in the assessment and treatment of patients with musculoskeletal pain and depression.

Abstract 1749

WHEN ACUTE PAIN TURNS CHRONIC: THE PSYCHOSOMATICS OF LOW BACK PAIN

Wolf E. Mehling, MD, Family and Community Medicine, Vira Gopisetty, MD, MPH, Mike Acree, PhD, Osher Center for Integrative Medicine, University of California San Francisco, San Francisco, CA, Harley Goldberg, DO, Family and Community Medicine, University of California San Francisco, Oakland, CA, Frederick M. Hecht, MD, Internal Medicine, University of California San Francisco, San Francisco, CA, Timothy S. Carey, MD, MPH, Medicine and Social Medicine, University of North Carolina, Chapel Hill, Chapel Hill, NC, Andrew L. Avins, MD, MPH, Medicine, University of California San Francisco, Oakland, CA

When acute Pain Turns Chronic: The Psychosomatics of Low Back Pain Purpose: To study risk factors for the transition from acute to chronic low back pain (LBp). Sample: 605 patients presenting in primary care with acute non-specific LBp (defined as >4 weeks; no prior LBp; LBp for 1 year; no prior back surgery; no inflammatory disease or cancer. Methods: Patients were interviewed by phone at baseline and 6-
months. Primary outcome of chronic pain was defined as self-report of 'not improved' (6-point perceived recovery scale) and pain > 3 (out of 10) at 6 months. Predictors included in logistic regression models were demographic, clinical and psychosocial parameters (smoking, perceived stress, job demands and satisfaction, catastrophizing, fear of movement, depression, anxiety, coping styles). Results: 521 patients (86%) completed follow-up. 58 of these (11%) had chronic pain at 6 months. Age of 20-30 years, Latino ethnicity, and lower education increased the odds 2 to 3-fold, low pain tolerance and widespread pain 6 and 4-fold, sciatica 2-fold. Although most previously reported psychological risk factors (i.e. catastrophizing, fear avoidance, depression, job-demands and dissatisfaction) and perceived stress (Cohen) were not confirmed, the following psychological factors (controlled for age, sex, ethnicity and education) were associated with pain chronification [OR (95% CI); all p < .05]; predictive: endurancie behavior 2.5 (1.1-5.5); not slowing down 2.1 (1.1-4.1); poor recovery expectancy 7.0 (1.5-33.4); belief it will never get better 2.8 (1.3-6.3); protective: watch TV or listen to music as coping style .27 (.10-.71); pain coping self-efficacy .28 (.10-.72). Using stepwise backward predictor selection, a multi-variate model with 20 variables explained only 32% of the variance (R² = .32). Summary: In the largest primary care study on risk factors for chronic pain in the US to date, psychological factors predicting the transition from acute to chronic LBP in primary care patients differ from risk factors in studies with occupational health patients and patients in other countries. The predictors' wide variance does not permit to early accurately identify high risk patients.

Abstract 1761
SOCIAL SUPPORT MODERATES THE RELATIONSHIP BETWEEN CATASTROPHIZING AND PAIN SEVERITY
Doerte U. Junghaenel, Ph.D., Psychiatry, Stefan Schneider, Dipl.Psych., Psychology, Joan E. Broderick, Ph.D., Psychiatry, Stony Brook University, Stony Brook, NY
Numerous studies have documented that pain-related catastrophizing is associated with heightened pain experience. According to the communal coping model, catastrophizing also serves a social communicative function whereby individuals engage in exaggerated pain expression as a strategy to elicit support and assistance from others. However, to date, little is known about how the actual receipt of support relates to the pain experience of patients who catastrophize. In this study, we examined if interpersonal responses from the patient's close support system moderate the relationship between patient catastrophizing and pain severity. Ninety-seven chronic pain patients (mean age = 52 years; 50% female; 87% White; 87% married or living with partner) completed measures of pain catastrophizing, pain severity, and perceived social support from their significant others (i.e., solicitous, distracting, emotional, and punishing responses). Patients' close friends and family members completed parallel measures of actual support provision. Moderated multiple regression analyses showed that actual support as reported by patients' significant others was more important in moderating the positive relationship between catastrophizing and pain severity than patients' perception of received support. For patient reports, only perceived solicitous responses acted as a moderator; high solicitous responses buffered the positive relationship between catastrophizing and pain severity (interaction beta = -.19, p < .05). In contrast, for significant other reports, solicitious (interaction beta = .22, p < .05) and distracting responses (interaction beta = -.37, p < .001) acted as a buffer, whereas punishing responses (interaction beta = .17, p = .06) enhanced the positive relationship between catastrophizing and patient pain severity. These results suggest that the maladaptive consequences of catastrophizing may be alleviated by positive responses by their close interpersonal network, even if the patients themselves are unaware of this. The results also highlight the importance of assessing significant others for understanding patients' adjustment to chronic pain.

Abstract 1494
POST-TRAUMATIC STRESS SYMPTOMS FOLLOWING ATHROPLASTIC SURGERY: A MECHANISM FOR UNDERSTANDING THE FEAR-AVOIDANCE MODEL
Julie K. Cremeans-Smith, Ph.D., Psychology, Kent State University at Stark, N Canton, OH, Kenneth Greene, M.D., Orthopaedics, Cleveland Clinic, Cleveland, OH, Douglas L. Delahanty, Ph.D., Psychology, Kent State University, Kent, OH
The fear-avoidance model states that individuals with chronic pain may experience distress and hypervigilance for painful sensations, leading to activity avoidance (e.g., exercise), and subsequent physical deterioration. Patients' recovery from arthroplastic surgery requires participation in physical therapy, despite pain, and avoidance of therapy can have negative recovery consequences. The current study examined post-traumatic stress symptoms (PTSS) following arthroplastic surgery and their relationship to post-operative recovery. We hypothesized that greater PTSS following surgery would be a risk for a more difficult recovery. Participants were 110 patients (35 males and 75 females) between the ages of 49 and 90 (M=69.2) undergoing unilateral total knee replacement surgery. The majority of the sample was Caucasian (92.8%) and undergoing TKR for the first time (75.5%). Patients completed questionnaires at baseline, one month, and 3 months following surgery. The Brief Impact of Event Scale (BIES-R), the Pain Catastrophizing Scale (PC-S), and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) assessed general functionality and pain in the context of tasks of daily living. PTSS was assessed using the Impact of Event Scale-Revised (IES-R). Demographic and conceptual control variables were included in the model. Findings revealed that PTSS was first (marginally) related to pain, and then later to functional limitations. This finding supports the fear avoidance model of pain. Our findings reveal that PTSS may function as a mechanism for explaining why some patients suffer poor post-surgical outcomes and/or delayed recovery.

Paper Session 3 – Sleep
Abstract 1460
THE EFFECT OF A BRIEF BEHAVIORAL TREATMENT OF INSOMNIA (BBTI) ON CORTISOL AND SYSTEMIC INFLAMMATION IN LATE-LIFE INSOMNIACS
Arci A. Prahter, MS, Psychology, University of Pittsburgh, Pittsburgh, PA, Michele L. Okun, Ph.D., Martica Hall, Ph.D., Amy E. Begley, M.A., Mary E. Fletcher, B.S., Daniel J. Buysse, M.D., Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA
Growing evidence suggests that poor sleep is associated with onset and progression of several medical conditions. Cross-sectional and experimental studies have identified several biological correlates of sleep disturbance, including elevations in systemic inflammation (e.g. IL-6 and TNF-a) and cortisol dysregulation (e.g. diminished diurnal cortisol [cortisol AUC] and cortisol awakening response [CAR]), providing potential mechanisms linking poor sleep and disease. While it is clear that sleep disturbance produces robust alterations in physiology, it remains unknown whether amelioration of sleep difficulties is associated with concomitant changes in these biological correlates. The purpose of this study was to investigate the effects of a brief behavioral treatment of insomnia (BBTI) on measures of systemic inflammation and cortisol compared to an information-only control condition among a sample of older adults with late-life insomnia. Sixty-three participants (mean age= 70.5 years old, 69.8% female) were randomized to either the BBTI (n=31) or information control (n=32) condition. Biological measures (e.g. serum and saliva) were collected over several days prior to randomization and after 4 weeks of intervention. Insomniacs randomized to the BBTI condition showed an increase in cortisol AUC compared to those in the information-only condition after adjustment for baseline cortisol AUC.
studies and laboratory-based metabolic syndrome assessments. A cluster of inter-related cardiometabolic risk factors. Age, gender and years, 50% male, 43% African American) completed 2 in-home sleep prevalence, a disorder associated with increased cardiovascular risk. Purpose of the study: Obstructive sleep apnea (OSA) is a highly prevalent sleep disorder associated with increased cardiovascular disease. Many clinical studies have implicated a role for inflammation and oxidative stress in OSA, linking it to the development of atherosclerosis. MIF is an inflammatory cytokine that causes insensitivity to the anti-inflammatory effects of glucocorticoids. MIF is secreted by immune cells and by the pituitary cells which also secrete ACTH. The current study investigated the plasma circadian cycles of MIF and cortisol in patients with untreated OSA compared to healthy adults with no sleep disorders. Subjects and Methods: Participants included 56 women and men with OSA (mean Apnea/Hypopnea Index = 39) and 24 healthy adults. Sleep was monitored with polysomnography, blood was collected every 2hrs over a 24hr period, and MIF and Cortisol were determined from plasma. Summary of results: MIF showed a strong circadian cycle, with a peak at 4am and a nadir at 10pm. A significant effect of group was observed with participants with OSA showing a 39% greater MIF AUC levels (p=.04). Cortisol showed the expected circadian cycle (peaking at 6am) but no differences were observed between the apneics and the healthy controls. MIF and cortisol peak measures were significantly correlated (r=.281, p=.016), controlling for BMI. Conclusions: MIF is an inflammatory cytokine which induces insensitivity to glucocorticoids. Patients with OSA had elevated MIF but plasma cortisol levels were not different from healthy adults. MIF is inhibition of the anti-inflammatory effects of cortisol may provide a pathway through which OSA is associated with increased levels of inflammation.

Abstract 1572
SLEEP AND THE METABOLIC SYNDROME: LOOKING BEYOND SELF-REPORT MEASURES AND SLEEP DISORDERED BREATHING
Martica Hall, Ph.D., Psychiatry and Psychology, University of Pittsburgh, School of Medicine, Pittsburgh, PA, Karen A. Matthews, PhD, Psychiatry, Psychology, Epidemiology, Thomas W. Kamarch, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Daniel J. Buysse, MD, Psychiatry, Patrick J. Strollo, MD, Medicine, Jane F. Owens, DrPH, Psychiatry, Steven E. Reis, MD, Medicine, University of Pittsburgh, School of Medicine, Pittsburgh, PA

Although mounting evidence suggests that sleep disturbance is a correlate of incident cardiovascular disease and diabetes, the majority of studies have relied on single retrospective self-report measures of habitual sleep duration. Our objective was to compare estimates of self-reported sleep duration to those measured by polysomnography (PSG) and actigraphy, and to identify characteristics associated with differences between self-report and objective sleep duration. The study sample consisted of 224 African American, Caucasian, and Asian men and women (mean age 60 years). Sleep measures included two nights of in-home PSG, nine nights of wrist actigraphy and sleep diaries, and sleep questionnaires. Sociodemographic, psychosocial, and cardiovascular risk characteristics were also collected. Overall, individuals estimated their habitual sleep duration as 20-30 minutes longer than PSG and actigraphy-measured sleep duration. Within-person linear regression models showed that African Americans (p < .05) and persons of lower socioeconomic status (p < .05) reported shorter habitual sleep duration relative to PSG or actigraphy-measured sleep duration than their counterparts. Individuals reporting insomnia (p < .01), daytime sleepiness (p < .05), and hostile attitudes (p < .05), as well as those categorized as nocturnal blood pressure dippers (p < .01), were also more likely to report shorter sleep duration relative to PSG and actigraphy. Differences between self-report and objective measures of sleep duration did not vary by obesity, metabolic syndrome, or apnea-hypopnea groups (p > .05). These results suggest that self-report measures yield greater estimates of sleep duration than those obtained using PSG or actigraphy. However, sociodemographic, sleep, psychological, and physical health characteristics significantly affect the magnitude and direction of self-report-objective differences. Thus, it may be important to consider the extent to which these qualities contribute to the health risk associated with short or long self-reported sleep duration. Supported by CTSA-RR024153, HL076379, HL07560, and the Pennsylvania Department of Health (Contract ME-02-384).
Abstract 1255

GLUCOCORTICOID REGULATION OF IMMUNE ACTIVATION IN EARLY HIV

Sarah L. Patterson, BA, Patricia J. Moran, PhD, Medicine, Elissa S. Epel, PhD, Psychiatry, Elizabeth Sinclair, PhD, C. L. Epling, MS, Michael C. Acree, PhD, Medicine, Peter Bacchetti, PhD, Biostatistics, Steven G. Deeks, MD, Susan Folkman, PhD, Frederick M. Hecht, MD, Medicine, University of California San Francisco, San Francisco, CA

Background: Psychological stress is associated with accelerated HIV progression, but the mechanisms responsible remain unknown. We hypothesized that cortisol patterns consistent with chronic stress are associated with greater T-cell activation and increased expression of CCR5 (a chemokine receptor that serves as a co-receptor for HIV cell entry) on CD4+ T-cells. T-cell activation (particularly on CD8+ T-cells) and expression of CCR5 (on CD4+ T-cells) are both associated with elevated T-cell activation and increased CCR5 expression on CD4+ T-cells in HIV. This suggests that the effects of psychological stress on HIV progression are mediated in part through glucocorticoid resistance. If supported by further data, these findings may indicate pathways through which stress influences immune function that are relevant in both HIV and other immune-mediated diseases.

Abstract 1264

PSYCHOLOGICAL TRAITS AND HYPOTHALAMUS-PITUITARY-ADRENAL AXIS ACTIVITY: RESULTS FROM THE NETHERLANDS STUDY OF DEPRESSION AND ANXIETY

Sophie A. Freeburg, MD, Psychiatry, VU Medical Center, Amsterdam, the Netherlands, Aafke van Santen, MSc, Faculty of Psychology and Education, VU University, Amsterdam, the Netherlands, Willem van der Does, PhD, Psychology, Philip Spinhoen, PhD, Clinical and Health Psychology, Leiden University, Leiden, the Netherlands, Frans G. Zitman, MD, PhD, Psychiatry, Leiden University Medical Center, Leiden, the Netherlands, Brenda W. Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, the Netherlands

Purpose: Hypothalamus-Pituitary-Adrenal (HPA) axis dysregulation is often seen in major depression, and is suggested to represent a trait vulnerability, rather than merely an illness marker, for mood disorder and possibly anxiety disorder. Thus far, few studies have examined the association between psychological trait factors and the cortisol awakening curve. The present study examined the relationship between multiple psychological trait factors and HPA axis activity in a large sample without psychopathology. Subject sample and methods:
Baseline data from 603 participants free of psychopathology (aged 18 to 65; 60.7% female) of the Netherlands Study of Depression and Anxiety were analyzed. Psychological measures included the Big Five personality traits (neuroticism, extraversion, openness to experience, conscientiousness, agreeableness) measured using the NEO-FFI, anxiety cognitions (physical, mental incapacitation, and social concerns), depression cognitions (hopelessness, acceptance/coping, aggression, control/perfectionism, risk aversion, rumination) and mastery. Salivary cortisol levels were measured at awakening, and 30, 45, and 60 minutes later. Results: High scores of neuroticism (β=0.08, p=0.03), and rumination (β=0.09, p=0.03), and low scores of acceptance/coping (β=-0.09, p=0.05) were significantly associated with higher morning cortisol levels and a higher cortisol awakening response. Conclusion: Personality traits that have been associated with psychopathology were also associated with HPA axis dysregulation, reflected by altered morning cortisol levels. The presence of certain psychological traits might represent a predisposing vulnerability for the development of a depressive or anxiety disorder, possibly in part mediated by impaired HPA axis activity.

Abstract 1646
ASSOCIATION OF PHYSICAL ACTIVITY AND ASTHMA CONTROL
Simon L. Bacon, PhD, Maxine Boudreau, BA, Ariane Jacob-Lessard, MSc, Karine Ouellet, BA (c), Kim L. Lavoie, PhD, MBMC, Exercise Science, Psychology, Concordia Uni, HSCM, MHI, UQAM, Montreal, Quebec, Canada
Background: There is limited data on the potential benefits of lifestyle change on asthma control and outcomes. Furthermore, physical activity has historically been discouraged in patients with asthma due to concerns about triggering exacerbations. More recent evidence suggests that exercise is safe in children, but there is limited data about the relationship between physical activity and asthma control in adults. Methods and results: As part of an ongoing longitudinal study assessing the impact of psychological factors on asthma, 593 adult patients with physician diagnosed asthma (mean age (SD) = 50 (14) years, 60% women) were interviewed at phase 2 of the study. During the telephone interview, patients completed the asthma control questionnaire (ACQ), to assess asthma control, and an adapted 1-year physical activity recall questionnaire, to assess physical activity (LTPA). In addition, demographic and asthma severity data were also collected. Multiple imputation was used to account for missing data and association analyses were conducted using general linear models and PROC MIANALYZE, controlling for age, sex, and asthma severity. LTPA (measured as MET-hrs/week) was negatively associated with ACQ scores, controlling for age, sex, and asthma severity (Beta (95%CI)= -0.017 (-0.028, -0.005), p=0.008). Controls on the ACE scores were: physical activity was associated with better asthma control. Conclusion: It would appear that there is a benefit of higher levels of planned physical activity for improved asthma control in adult patients with asthma. Further studies are needed to assess the benefits of exercise interventions to improve asthma control and reduce asthma exacerbations is needed.

Abstract 1206
DEPRESSIVE SYMPTOMS AND LOW SOCIAL SUPPORT INCREASE RISK OF ADULT ASTHMA: FINDINGS FROM A POPULATION-BASED COHORT STUDY
Adrian Loerbroks, PhD, Mannheim Institute of Public Health, Mannheim Medical Faculty, Heidelberg, Germany, Christian J. Apfelbacher, PhD, Department of Clinical Social Medicine, University Hospital Heidelberg, Heidelberg, Germany, Jos A. Bosch, PhD, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, UK, Til Stürmer, MD, MPH, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC
Objective: Depressive symptoms and social support may play an etiological role in asthma. This relationship could be mediated by health behaviors and/or inflammatory processes. Evidence from prospective cohort studies remains markedly sparse. This study aimed to investigate the association between depressive symptoms and social support, and prevalent as well as incident asthma. Methods: Between 1992 and 1995, a population-based sample of 5114 middle-aged adults completed questionnaires assessing depressive symptoms, social support, self-reported asthma, and potential confounders. Among those alive in 2002/2003, 4010 (83%) were followed-up by questionnaires. Associations with prevalent and incident asthma were estimated by prevalence ratios (PR) and risk ratios (RR) along with corresponding 95% confidence intervals (95%CI) using Poisson regression. PRs and RR were adjusted for demographics, family history of asthma, smoking, alcohol consumption, body mass index, and physical exercise. Results: Cross-sectional analyses indicated that the prevalence of asthma was positively associated with depressive symptoms and inversely related to social support. Prospective analysis suggested a 24% increased risk of asthma with each standard deviation increase in depressive symptoms (RR=1.24, 95%CI=1.02,1.50), whereas the social support z-score showed an inverse association with asthma incidence (RR=0.71, 95%CI=0.58,0.88). Analyses with tertiles suggested similar, but non-significant associations. Omitting health-related lifestyle variables from the multivariable models did not substantially alter these associations. Conclusions: Risk of developing adult asthma was found to increase with depressive symptoms and to decrease with social support.

Abstract 1762
PSYCHOLOGICAL DISTRESS AND MALADAPTIVE COPING STYLES IN PATIENTS WITH SEVERE VERSUS MODERATE ASTHMA
Kim L. Lavoie, PhD, D Bouthillier, PhD, Psychology, Pneumology, MBMC, UQAM, Hôpital du Sacré-Coeur de Montréal, McGill, Montreal, Quebec, Canada, S L. Bacon, PhD, C Lemiere, MD, J Martin, MD, Q Hamid, MD, PhD, M Ludwig, MD, R Olivenstein, MD, P Ernst, MD, Psychology, Pneumology, MBMC, UQAM, Hôpital du Sacré-Coeur, McGill, Montreal, Quebec, Canada
Background: Though several biological factors have been suggested to play a role in the development and persistence of severe asthma, those associated with psychological factors remain poorly understood. This study assessed levels of psychological distress and a range of disease-relevant emotional and behavioural coping styles in patients with severe versus moderate asthma. Methods: 84 patients (50% female, M age 46 yrs) with severe (n=42) and moderate (n=42) asthma were recruited. Severe asthma was defined according to the ATS criteria. Patients underwent demographic and medical history interviews, pulmonary function and allergy testing. Patients also completed questionnaires measuring asthma symptoms and the Million Behavioural Medicine Diagnostic Inventory (MBMDI), which assesses psychological distress and emotional/behavioural coping factors that influence disease progression and treatment. Summary of results: Patients with severe vs. moderate asthma reported experiencing more psychological distress (higher anxiety-tension [F=4.02, p<0.05] and cognitive dysfunction [F=6.72, p<0.01]), worse emotional coping with their disease (higher illness apprehension [F=9.57, p<0.01], pain sensitivity [F=10.65, p<0.01], future pessimism [F=8.53, p<0.01], and interventional fragility[F=7.18, p<0.01]), and worse behavioural coping with their disease (more functional deficits [F=5.48, p<0.05] and problematic compliance [F=4.32, p<0.05]), independent of covariates including smoking pack-years, body mass index, asthma duration, and number of asthma exacerbations in the last year. Findings suggest that patients with severe asthma have more psychological distress and difficulty coping with their disease both emotionally and behaviorally relative to moderate asthmatics. Future treatment studies should focus on helping severe asthma patients manage distress and cope more effectively with their illness, which may improve outcomes in these high-risk patients.
Abstract 1336
DIFFERENTIAL IMPACT OF MOOD AND ANXIETY DISORDERS ON RISK FOR COPD EXACERBATIONS
Kim L. Lavoie, PhD, C Laurin, PhD, M Labrecque, MD, S L. Bacon, PhD, Psychology, Pneumology, Exercise Science, MBMC, UQAM, Hôpital du Sacré-Cœur, Concordia, Montreal, Quebec, Canada

Background: We previously reported a high prevalence of mood (18%) and anxiety (46%) disorders in patients with chronic obstructive pulmonary disease (COPD), as well as an increased risk in exacerbations in patients with any psychiatric comorbidity. However, the differential impact of mood versus anxiety disorders on COPD exacerbation risk remains unknown. The present study assessed the relative impact of mood and anxiety disorders on exacerbation risk in stable sample of COPD patients. Methods: 116 stable COPD patients (53% female, M age 68 yrs) underwent a sociodemographic and medical history interview, a structured psychiatric interview (ADIS-IV), completed a battery of psychosocial questionnaires, and underwent standard spirometry at baseline. Patients were followed for a M of 2.2 yrs, and the total number and type of exacerbation (in vs. outpatient-treated) were assessed via monthly telephone interviews and verified by chart review. Cox proportional hazards regression analyses controlling for a-priori defined covariates were conducted to estimate the relative risk (RR) (95% CI) of exacerbation associated with mood or anxiety disorder. Summary of Results: Anxiety disorders were associated with a covariate-adjusted RR of 1.78 (95% CI = 1.14-2.78, p<.01) of having ANY exacerbation (in or outpatient treated), and a RR of 2.09 (95% CI = 1.33-3.34, p<.01) of having an outpatient-treated exacerbation. Anxiety disorders were not associated with an increased risk of inpatient treated exacerbations. Mood disorders were not associated with an increased risk of ANY exacerbation (p = .13-.52). Results indicate that COPD patients with anxiety disorders (but not mood disorders) are at greater risk of having a 1st exacerbation, which is primarily driven by a two-fold increase risk out (vs. inpatient)-treated exacerbations. Future studies should assess the mechanisms by which anxiety disorders may confer increased risk for outpatient-treated exacerbations in COPD patients.

Paper Session 6 – Health Behaviors

Abstract 1747
THE POWER OF EXERCISE: BUFFERING THE EFFECT OF CHRONIC STRESS ON TELOMERE LENGTH
Eli Putterman, PhD, Aoife O’Donovan, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Aleksandra Kuznemourska, Biology, Harvard University, Boston, Massachusetts, Nancy Adler, Center for Health and Community, Jue Liu, Biochemistry, Elissa Epel, PhD, Psychiatry, Elizabeth Blackburn, PhD, Biochemistry, University of California, San Francisco, San Francisco, CA

INTRODUCTION: Chronic psychological stress can have a detrimental impact on physical health, even after adjusting for its impact on behaviors. A pathway through which chronic stress may impact health is accelerated cell aging, evidenced in the length of the telomere “caps” at the end of DNA. Short telomeres are linked to an array of health problems and to chronic stress. Yet, not all people under stress develop health problems, and likely, do not have distinctly short telomeres. While stress and health behaviors are often considered as opposing independent predictors of disease, physical activity may moderate the impact of stress on health. We predicted that chronic stress would be related to short telomere length, but only in inactive individuals. METHODS: 64 post-menopausal healthy women (age 50 to 80; 34 caregivers for spouses/parents with dementia, 30 matched controls) underwent a fasting blood draw in the morning. Within one week, participants completed the Perceived Stress Scale (Cohen et al., 1983), and reported daily minutes of vigorous activity for three days, defined as “increased heart rate and/or sweating”. Participants were split into two groups, based CDC standards of physical activity. DNA was analyzed for telomere length (TL) with qPCR. RESULTS: Likelihood of being short versus long (lowest (N=21) and highest (N=43) quartiles predicted as extremes) was compared using t-tests. Covarying age, education, and BMI, logistic regression analyses revealed a significant moderation effect. For those who exercised less than the recommended amount, a one unit increase in the perceived stress scale was related to a 94% increase in the odds of having short telomeres (p < .05). On the other hand, perceived stress was unrelated to telomere category (short versus long) in those who exercised the recommended amount over a three day period (b = .55, SE = .77, p = .47). DISCUSSION: As hypothesized, vigorous physical activity can protect those experiencing stress by buffering its relationship with TL. We propose various pathways through which physical activity acts as a buffer of stress. Implications for future studies and clinical application will be discussed.

Abstract 1613
THE PERCEPTION OF THE BENEFITS OF EXERCISE AND THE BARRIERS TO EXERCISE IS HERITABLE, BUT CHANGING THESE ATTITUDES CAN CHANGE EXERCISE BEHAVIOR
Eco de Geus, PhD, Iris Jansen, BSc, Marleen de Moor, PhD, Biological Psychology, VU University, Amsterdam, Netherlands

Based on a large body of research in social psychology the Health Belief Model proposes that individual differences in leisure time exercise behavior are strongly determined by the perceived benefits to and barriers against exercise behavior. A pathways through which chronic stress may moderate the impact of stress on health. Implications for future studies and clinical application will be discussed.

Abstract 1336
OBJECTIVELY ASSESSED SECOND HAND SMOKE EXPOSURE AND MENTAL HEALTH IN ADULTS: CROSS-SECTIONAL AND PROSPECTIVE EVIDENCE FROM THE SCOTTISH HEALTH SURVEY
Mark Hamer, PhD, Emmanuel Stamatakis, PhD, Epidemiology and Public Health, University College London, London, London, United Kingdom, David Batty, PhD, Centre for Cognitive Ageing & Cognitive Epidemiology, University of Edinburgh, Edinburgh, Edinburgh, United Kingdom

Second hand smoke (SHS) exposure has been related to various somatic health outcomes, although very little is known about the association between SHS exposure and mental health. Smoking is often used as a method of coping with distress but animal data also indicate that tobacco can induce negative mood. We examined the cross-sectional and longitudinal associations between mental health and SHS exposure, which was objectively assessed using salivary cotinine as a circulating biochemical marker. A representative sample of 5,560 non-smoking adults (55 +/- 13 yrs old, 45.5% men) and 2,689 smokers (48.4 +/- 15.8 yrs old, 50.2% men) without history of mental illness were drawn from the 1998 and 2003 Scottish Health Survey. A priori, study participants with cotinine values >15 ng/mL were assumed to be smokers and recategorised as such in all analyses. Psychological distress, which was defined as a score greater than 3 on the 12-item General Health Questionnaire, was apparent in 14.5% of the sample. In logistic regression analyses, log cotinine was dose-dependently associated with a higher odds of psychological distress (odds ratio per unit increase = 1.12, 95% CI, 1.09-1.15) after adjustments for age, sex, social status, body mass index, chronic illness, physical activity, and alcohol. In prospective analyses, the risk of a psychiatric hospital
admission over 6 years of follow-up was related to high (>0.7<15 ng/ml cotinine) SHS exposure (multivariate adjusted hazard ratio= 2.84, 95% CI 1.07-7.59) and smoking (3.74, 95% CI 1.55-8.98). In conclusion, SHS exposure is associated with psychological distress and risk of future psychiatric illness in healthy adults. These concordant findings using two different research designs emphasize the importance of reducing SHS exposure at a population level for not only physical health but, for the first time, also mental health.

Abstract 1514

FITNESS TRAINING REDUCES THE ACUTE EXERCISE MATRIX METALLOPROTEINASE (MMP) RESPONSE IN HYPERTENSION

Kate M. Edwards, Ph.D., Bassem M. Shoucri, B.S., Barbara G. Woods, B.S., Psychiatry, Geert W. Schmid-Schonbein, Ph.D., Bioengineering, Paul J. Mills, Ph.D., Psychiatry, University of California. San Diego, La Jolla, CA

Purpose of study: MMPs are potent proteases which play a key role in vascular remodelling, breaking down extracellular matrix (ECM). Elevated blood pressure (BP) is associated with increased MMP levels and stiffening of the vessel walls caused by increased ECM deposits. The aim of the study was to examine how exercise affects MMP levels. The different remaining MMP substrates are a recognition within our study design. To understand how MMPs affect cell surface molecules, we investigated the role of these eating habits on patients awaiting heart transplantation (HTx).

Methods: This randomized controlled trial was conducted with 58 female and 260 male (51±1 and 53±5 years of age) new HTx candidates enrolled at 17 German-speaking hospitals. Interventions reduced resting BP in both groups (SBP/DBP: pre=143/85 mmHg, post=133/77 mmHg) (p<0.001). MMP levels in plasma were determined at baseline and following 20-min treadmill exercise (65-70%VO2peak) prior to and following the intervention. Summary of results: Plasma levels of all three MMPs increased significantly post-exercise (MMP-2: p<0.05, eta-squared=0.162; MMP-8: p=0.001, eta-squared=0.556; MMP-9) also showed a significant intervention by acute exercise interaction (p=0.037, eta-squared=0.163) such that the change from baseline to post-exercise was reduced after 12-weeks exercise or exercise & diet intervention (pre-intervention change=1.64pg/ml; post-intervention change=0.99pg/ml). Discussion: Exercise or exercise & diet 12-week intervention.

Abstract 1549

EATING HABITS PREDICT OUTCOMES IN PATIENTS AWAITING HEART TRANSPLANTATION: THE WAITING FOR A NEW HEART STORY

Heike Spaderna, PhD, Johanna Pretsch, MSc, Daniela Zahn, PhD, Psychology, Johannes Gutenberg-Universität, Mainz, Germany, Jacqueline M. Smits, PhD, MD, Thoracic Advisory Committee, Eurotransplant International Foundation, Leiden, The Netherlands, Gerald Weiné, PhD, Biology, San Francisco State University, Tiburon, CA

Purpose of the study. For patients with heart failure a diet rich in polyunsaturated fatty acids, foods high in salt, and alcohol intake predicted death/deterioration and high-urgency HTx. Summary. After 2 years (median = 338 days, range 13-1394 days) 54 patients died, 15 were delisted due to deterioration, and 110 received urgent HTx. Independent from age, sex, body mass index, and disease severity, frequent consumption of foods rich in polyunsaturated foods was associated with a lower risk for death/deterioration (hazard ratio [HR] = 0.45, 95% confidence interval [CI] 0.23-0.89, p<0.05). A positive effect of alcohol consumption for this outcome emerged only in men (HR = 0.28, 95% CI 0.12-0.68, p<0.01, interaction with gender p<0.05). Consumption of salty foods did not affect death/deterioration, but was associated with a shorter time till high-urgency HTx (HR = 2.62, 95% CI 1.45-4.73, p<0.01). Conclusion. Eating habits of HTx candidates appear to influence their prognosis while waiting for a new heart. This finding suggests that this patient group may benefit from dietary interventions that contribute to stabilization of patients' health.

Paper Session 7 – Cardiac Disease Risk

Abstract 1624

STRESS MANAGEMENT Prolongs Life for CHD Patients: A Randomized Clinical Trial Assessing the Effects of Group Intervention on All Cause Mortality, Recurrent Cardiovascular Disease, and Quality of Life

Gunilla K. Burell, Ph.D., Kurt Svardsudd, M.D., Mats Gulliksson, M.D., Public Health, Uppsala University, Uppsala, Sweden

Psychosocial factors are independently associated with increased risk of cardiovascular disease (CVD) morbidity and mortality, but the outcome effect of intervention on these factors on endpoints has so far been uncertain. 362 men and women, aged 75 or less, discharged from hospital after a coronary heart disease (CHD) event within the past 12 months, were randomized to cognitive behavioral therapy (CBT) focused on stress management during one year (n=192), or to usual care (n=170). Median follow-up was 6.7 years (1.0-11.4 years). In a Cox analysis the intervention program was 85%, Risk factor and quality of life data were measured at baseline and after 6, 12, 18, 24 months. Hospital admission data and survival data were obtained from national registers. During 8 years of follow-up the intervention group had 41% less fatal and non-fatal first recurrent CVD rate (HR 0.59, 95%CI 0.42-0.83, p=0.003), and 45% less recurrent acute myocardial infarction (AMI) rate (HR 0.55, 95%CI 0.36-0.85, p=0.007) than the reference group. Moreover, there was a non-significant all cause mortality group difference (HR 0.72, 95%CI 0.40-1.30). There was a strong dose-response relationship between intervention group attendance and outcome. During the first 2 years of follow-up there were no significant group differences in quality of life, but the intervention group had a significantly stronger optimism about the future. The CBT stress intervention decreased the risk of recurrent CVD and recurrent AMI, with no difference between intervention and usual care treatment on all cause mortality.

Abstract 1365

HOSTILITY, ANGER, AND ANGER EXPRESSION AS PREDICTORS OF CARDIOVASCULAR DISEASE

Ari Haukka, PhD, Hanna Konttinen, MSc, Social Psychology, University of Helsinki, Helsinki, Finland, Antti Utela, Department of Lifestyle and Participation, National Institute for Health and Welfare, Helsinki, Finland

The purpose of the study is to examine whether different hostility measures, including Cynical Distrust, Trait Anger, Anger Out, Anger In, and Anger Control, are related to cardiovascular disease (CVD) and ischemic heart disease (IHD) in a prospective setting. The participants were 25-74 years old Finnish men (N=3850) and women (N=4083), who were followed-up after 10-15 years. Trait Anger, Anger Out, Anger In, and Anger Control were assessed with the Spielberger State-Trait Anger Expression Inventory and Cynical Hostility with the eight-item Cynical Distrust Scale. Incident CVD and IHD were derived from hospital records/death certificates. Subjects with a history of CVD or polynsaturated fatty acids, foods high in salt, and alcohol intake predicted death/deterioration and high-urgency HTx. Summary. After 2 years (median = 338 days, range 13-1394 days) 54 patients died, 15 were delisted due to deterioration, and 110 received urgent HTx. Independent from age, sex, body mass index, and disease severity, frequent consumption of foods rich in polyunsaturated foods was associated with a lower risk for death/deterioration (hazard ratio [HR] = 0.45, 95% confidence interval [CI] 0.23-0.89, p<0.05). A positive effect of alcohol consumption for this outcome emerged only in men (HR = 0.28, 95% CI 0.12-0.68, p<0.01, interaction with gender p<0.05). Consumption of salty foods did not affect death/deterioration, but was associated with a shorter time till high-urgency HTx (HR = 2.62, 95% CI 1.45-4.73, p<0.01). Conclusion. Eating habits of HTx candidates appear to influence their prognosis while waiting for a new heart. This finding suggests that this patient group may benefit from dietary interventions that contribute to stabilization of patients' health.

Abstract 1365

HOSTILITY, ANGER, AND ANGER EXPRESSION AS PREDICTORS OF CARDIOVASCULAR DISEASE

Ari Haukka, PhD, Hanna Konttinen, MSc, Social Psychology, University of Helsinki, Helsinki, Finland, Antti Utela, Department of Lifestyle and Participation, National Institute for Health and Welfare, Helsinki, Finland

The purpose of the study is to examine whether different hostility measures, including Cynical Distrust, Trait Anger, Anger Out, Anger In, and Anger Control, are related to cardiovascular disease (CVD) and ischemic heart disease (IHD) in a prospective setting. The participants were 25-74 years old Finnish men (N=3850) and women (N=4083), who were followed-up after 10-15 years. Trait Anger, Anger Out, Anger In, and Anger Control were assessed with the Spielberger State-Trait Anger Expression Inventory and Cynical Hostility with the eight-item Cynical Distrust Scale. Incident CVD and IHD were derived from hospital records/death certificates. Subjects with a history of CVD or polyunsaturated fatty acids, foods high in salt, and alcohol intake predicted death/deterioration and high-urgency HTx. Summary. After 2 years (median = 338 days, range 13-1394 days) 54 patients died, 15 were delisted due to deterioration, and 110 received urgent HTx. Independent from age, sex, body mass index, and disease severity, frequent consumption of foods rich in polyunsaturated foods was associated with a lower risk for death/deterioration (hazard ratio [HR] = 0.45, 95% confidence interval [CI] 0.23-0.89, p<0.05). A positive effect of alcohol consumption for this outcome emerged only in men (HR = 0.28, 95% CI 0.12-0.68, p<0.01, interaction with gender p<0.05). Consumption of salty foods did not affect death/deterioration, but was associated with a shorter time till high-urgency HTx (HR = 2.62, 95% CI 1.45-4.73, p<0.01). Conclusion. Eating habits of HTx candidates appear to influence their prognosis while waiting for a new heart. This finding suggests that this patient group may benefit from dietary interventions that contribute to stabilization of patients' health.
IHD at the baseline were excluded. The high Trait Anger scores were related to the high Anger Out scores but Anger Control correlated negatively with these two constructs. Anger In and Cynical Distress were unrelated to Anger Out and had only small correlations with Anger Control and Trait Anger. Subjects in the lowest Anger Control tertile had a higher risk of first non-fatal and fatal CVD incidence (RR 1.35 95% CI 1.06-1.73) compared to subjects in the highest tertile, after adjustment for age, gender, education, marital status, smoking, body mass index, blood pressure, cholesterol, alcohol consumption, and depressive symptoms. Higher Cynical Distress scores predicted non-fatal and fatal CVD events (RR 1.31; 95% CI 1.09-1.56) and IHD events (RR 1.37; 95% CI 1.08-1.74), after adjustment for age, but these associations disappeared after further adjustment for gender, education and marital status. Other hostility measures, Trait Anger, Anger Out or Anger In, were not related to CVD or IHD outcomes. To our knowledge, this is the first study to show that compared to four other hostility dimensions, low Anger Control predicts CVD events. Further studies should examine whether Anger Control is specific to anger or reflects some more general psychosocial factors.

Abstract 1194
CHILDHOOD PHYSICAL ABUSE IS ASSOCIATED WITH INCIDENT METABOLIC SYNDROME IN MIDLIFE WOMEN
Aimee J. Midei, M.S., Psychology, Karen A. Matthews, Ph.D., Psychiatry and Psychology, Joyce T. Bromberger, Ph.D., Epidemiology and Psychiatry, University of Pittsburgh, Pittsburgh, PA
Recent research has suggested that childhood abuse is associated with cardiovascular risk factors. Our objective was to examine whether childhood abuse predicted incident metabolic syndrome in midlife women. Participants were 342 (114 Black, 228 White) women from the Pittsburgh site of the Study of Women's Health Across the Nation (SWAN). SWAN included a baseline measurement of women in midlife (mean age = 45.7) and 7 follow-up visits during which women were evaluated for presence of the metabolic syndrome. Women were classified as having metabolic syndrome if they met 3 of the following criteria: waist circumference > 88 cm, triglycerides >= 150 mg/dl, HDL < 50 mg/dl, SBP >= 130 or DBP >= 85 mmHg or on blood pressure medication, and fasting glucose >= 110 mg/dl or diabetic. The Childhood Trauma Questionnaire is a standardized measure that retrospectively assessed 3 domains of abuse in childhood and adolescence: emotional, physical, and sexual abuse. Approximately 34% of the participants reported a history of abuse. Logistic regressions were used to determine if each type of abuse was related to presence of metabolic syndrome at baseline or incidence of metabolic syndrome during follow-up visits, adjusted for race, age at baseline, menopausal status at baseline, and adulthood SES (education). Results showed that abuse was not associated with the metabolic syndrome at baseline, but physical abuse predicted incident metabolic syndrome over the course of 7 years (OR = 2.79, 95% CI 1,130-6,01). Emotional abuse and sexual abuse were not significantly related to incident metabolic syndrome (OR = 1.55, 95% CI 0.74-3.25 and OR = 1.63, 95% CI 0.70-3.78, respectively). This is the first study to show that a history of childhood abuse, specifically physical abuse, is related to the development of cardiovascular disease (CVD) compared to white Americans. Substantial evidence implicate excessive psychosocial stress in this health disparity. Previous studies have demonstrated that stress reduction using the Transcendental Meditation (TM) program is associated with improvements in CVD risk factors—hypoension, psychosocial stress, insulin resistance, and myocardial ischemia in high-risk subjects. The objective of the current study was to conduct a randomized controlled clinical trial of TM in the secondary prevention of CVD. This study was conducted at the King-Drew Medical Center in Los Angeles. Subjects were 197 African American men and women at high risk for CVD who were randomized to either the TM program or a health education (HE) control group. Before and after one year of intervention, subjects were tested by B mode ultrasound for carotid intima medial thickness (IMT). The results in the overall group, showed no significant change in carotid IMT. However, subgroup analyses for the following high risk groups: metabolic syndrome , hypertension (>140/90 mm Hg), and previous myocardial infarction (MI) showed the following significant differences between groups in carotid IMT after one year: metabolic syndrome (n=93) -0.013 mm TM vs +0.013 mm HE (p=0.027), hypertension (n=48) -0.022 mm TM vs +0.011 mm HE (p=0.048); previous MI (n=32) -0.035 mm TM vs +0.003 mm HE (p=0.005). During the one year intervention period, the frequency of major adverse clinical events was monitored for the whole sample. A 64% reduction was observed (14 fatal and non-fatal events in the HE control group vs 5 in the TM group)(p=.06). For major and cardiovascular events there was a 70% reduction at 1 year (p=.07). In conclusion, stress reduction using the TM program may be beneficial in regression of atherosclerotic CVD in high risk subgroups of African Americans. This may, in turn, contribute to lower morbidity and mortality rates. Future studies are warranted to determine whether the TM program might be clinically useful in the prevention of atherosclerotic CVD in this high risk minority population.

Abstract 1145
HOT FLASHES, INFLAMMATION, AND COAGULATION: A LINK TO CARDIOVASCULAR RISK?
Rebecca C. Thurston, PhD, Psychiatry, Sanar R. El Khoudary, PhD, Kaiser San Francisco, Deloraine Tyrrell, MD, Mayo Clinic, Rochester, MN, Karen A. Matthews, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Carolyn Crandall, MD, Medicine, UCLA School of Medicine, Los Angeles, CA, Barbara Sternfeld, PhD, Division of Research, Kaiser Permanente, Oakland, CA, Faith Selzer, PhD, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Ellen Gold, PhD, Department of Public Health Sciences, University of California Davis School of Medicine, Davis, CA, Karen A. Matthews, PhD, Psychology, University of California, Davis, CA, Karen A. Matthews, PhD, Psychology, University of California, Davis, CA
Hot flashes, reported by 75% of women, are thought to have quality of life, but few medical implications. However, recent findings link hot flashes to cardiovascular disease (CVD) risk. The mechanisms underlying these links are not known. Our aim was to examine the longitudinal relations between hot flashes and inflammatory/hemostatic markers, controlling for CVD risk factors and reproductive hormones. In the Study of Women’s Health Across the Nation (SWAN), 3172 women ages 42-52 at entry completed interviews (hot flashes: none, 1-5, 6+ days in past 2 weeks; affect), physical measures (BMI), and a blood draw (CRP, PAI-1, Factor VIIc, TPA-antigen, fibrinogen, estradiol (E2), follicle stimulating hormone (FSH)) at baseline and yearly for 7 years thereafter. Hot flashes were examined in relation to each inflammatory/hemostatic marker with covariates age, site, race, education, BMI, menopausal status, parity, alcohol use, smoking, diabetes, cardiovascular conditions, depression/anxiety, medication use (steroid, antidepressant, insulin, pain), and FSH or E2. Visits with hormone therapy use were excluded. Results showed that in age and site-adjusted linear mixed models, hot flashes were associated with higher CRP(log), PAI-1(log), Factor VIIc, TPA-antigen(log), and fibrinogen. With all covariates and FSH, women with hot flashes 1-5 days (b(SE)=-.04(.01), p<.0001) or 6+ days in the past 2 weeks (b(SE)=-.04(.01), p=0.0002) had higher TPA-antigen(log), and women with hot flashes 6+ days had higher CRP(log)(b(SE)=.05(.02), p=.02) and Factor VIIc(log)(b(SE)=1.77(75) p=.02), vs. no hot flashes. Findings were comparable adjusting for E2. Hot flashes were associated with higher CRP, Factor VIIc, and TPA-antigen. Inflammatory and hemostatic pathways may play a role in hot flashes physiology and in links between hot flashes and CVD risk. SWAN has support from the NIH, NHIS, through 5 of NIH grants 1R01-AI44211, AG012505, AG012535, AG012531, AG012539, AG012546.
AG012553, AG012554, AG012495). The content of this abstract is solely the responsibility of the authors and does not represent the views of the NIA, NINR, ORWH or NIH.

Paper Session 8 – Cancer

Abstract 1545

CHRONIC RESTRAINT STRESS AND SOCIAL DISRUPTION RESULT IN EARLIER DEVELOPMENT OF SPONTANEOUS TUMORS IN A TRANSGENIC MOUSE MODEL OF HER2+ BREAST CANCER

Dana H. Bovbjerg, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA; Jill D. Henning, PhD, Biology, University of Pittsburgh at Johnstown, Johnstown, PA; Dmitriy W. Gafkin, MD, PhD, Pathology, Chia-Chien Hsieh, PhD, Psychiatry, Kenneth S. McCarty, MD, PhD, Internal Medicine Oncology, Douglas M. Potter, PhD, Biostatistics, Frank J. Jenkins, PhD, Pathology, University of Pittsburgh, Pittsburgh, PA

Purpose: Effects of chronic stress on the development of human cancers have been examined in numerous studies with mixed results and considerable controversy. A major impediment of preclinical research with spontaneous mouse tumor models that can provide empirically grounded guidance for human research. We have explored the effects of chronic stress using a transgenic mouse model of human HER2+ breast cancer (FVB/N-Tg(MMTVneu)202Mul/J) in which female mice over express ErbB2 (HER2-neu) in their mammary glands and stochastically develop primary tumors by age 6-12 months. Sample and Methods: Mice (Jackson Labs, n=89), aged 4-5 weeks, were group housed (e.g., 4/cage) in a controlled room and assigned to one of four conditions in a factorial design (maintained for the course of the study): 1) Restraint stress (RS) 90 min - 1x/wk; 2) Social disruption stress (SD) (via cage mate reorganization) 2x/wk; 3) RS and SD; 4) home cage control (HC). Mice were visually inspected and palpated for tumor development 1x/wk. Tumors were histologically confirmed (4x50) and palpated with blinded H&E sections. Results: Animals subjected to the combined stressors (RS&SD) developed tumors at a significantly (p<.002, Cox regression) younger age (29.8 +/- 0.7 wk) than the controls (HC) (34.4 +/- 0.8 wk). The single chronic stress groups developed tumors at an intermediate rate (RS = 32.0 +/- 0.8; SD = 32.3 +/- 0.8 wk) that did not reach significance, consistent with an additive pattern of stress response. No differences were seen in body weight across groups indicating that the differences in tumor formation were not due to a failure to thrive. Conclusion and Discussion: Chronic stress is a risk factor for early tumor development in this transgenic model of HER2+ breast cancer. These initial findings suggest productive avenues for future research to investigate mechanisms at the cellular and molecular levels that can interface with ongoing investigations in the broader oncology literature on this well-established transgenic model.

Abstract 1730

INFLAMMATORY PROCESSES AND DEPRESSIVE-LIKE BEHAVIOR IN A SYNGENEIC MODEL OF OVARIAN CANCER: A PRELIMINARY REPORT

Donald M. Lamkin, M.A., Psychology, Susan K. Lutgendorf, Ph.D., Psychology, Holden Comprehensive Cancer Center, University of Iowa, Iowa City, Iowa; Anil K. Sood, M.D., Gynecologic Oncology, Cancer Biology, University of Texas M.D. Anderson Cancer Center, Houston, Texas; Alan Kim Johnson, Ph.D., Psychology, Pharmacology, University of Iowa, Iowa City, Iowa

The purpose of this study was to experimentally determine the extent to which ovarian carcinoma causes depressive-like behavior in an immunocompetent ovarian cancer mouse model and whether this effect may be mediated by cancer-induced proinflammatory cytokines. Although it has been assumed that ovarian cancer patients become depressed in reaction to the psychological stress of cancer diagnosis, it is possible that the tumor alone may contribute to depression in such patients. Elevations in proinflammatory cytokines, such as interleukin 6 (IL-6), are causally related to sickness behaviors, which overlap with the symptoms of depression, and such cytokines are generated by the ovarian cancer microenvironment. Female C57BL/6 mice were injected (i.p.) with ~5 x 10(6) ID8 murine ovarian carcinoma cells (n = 14) or with vehicle only (n = 15) for comparison of plasma IL-6 levels. A subgroup of these mice was measured for changes in sucrose intake to test for anhedonia, a core symptom of depression, as a result of tumor burden before becoming moribund. The consumption of sucrose and other highly palatable substances is a commonly used method for modeling depression in mice and is a behavior that can be significantly altered by antidepressant drugs. Mice bearing tumor in the peritoneum at 10 weeks post-injection manifested a significant correlation between tumor weight and plasma IL-6 level (r = .66, p = .02, n = 13), although the group mean was only marginally higher than the control group mean (p = .09). Of the tumor-bearing mice, those assigned to the sucrose intake experiment (n = 6) showed a marginal decrease in sucrose intake during 1 hour of access at 10 weeks post-injection in relation to mice injected with vehicle only (n = 10) (p = .054). There was no significant difference between tumor-bearing mice and control mice in weight change scores over the 10 week course (p = .64), suggesting that the effect is not confounded by anorexia. These results provide preliminary evidence that the tumor alone may contribute to the depressive symptoms found in ovarian cancer patients. Ongoing experiments will examine this effect in a larger sample and directly test for relationships between cytokine levels and depression in a well-established transgenic mouse model of ovarian cancer. The presence of cytokines in the tumor microenvironment may play a role in the symptoms of depression in ovarian cancer patients.
Abstract 1500

CIRCADIAN BIOLOGY AND CANCER PROGRESSION
Sandra E. Sephton, Ph.D., Psychological & Brain Sciences, University of Louisville, Louisville, KY

Human biology is deeply integrated with the rotation of the earth. Healthy physiology is synchronized with circadian cycles, but unhealthy states are often marked by poor circadian coordination. In certain cancers, striking dysregulation of circadian rhythms extend to endocrine, immune, metabolic and cellular function; and have been linked with higher incidence and faster tumor progression in humans and animals. Circadian rhythms are influenced by biological, psychosocial and behavioral factors. The hypothalamic SCN coordinates circadian events at the tissue and cellular level, partly via glucocorticoid rhythms. Stress-responsive hormones such as cortisol regulate genes involved in tumor growth, cell proliferation, apoptosis, immune cell trafficking, and cytotoxicity. Since we discovered that flattening of the cortisol rhythm was prognostic for early breast cancer mortality, our laboratory has been investigating a model of circadian disruption as a pathway of biobehavioral effects on cancer progression. Our recent findings support this model. Among pre-surgical breast cancer patients we have observed links between psychological distress, sleep-wake disruption, and diurnal cortisol rhythm disruption. We repeated the finding that flattened diurnal cortisol rhythms predict early cancer mortality, this time among patients with lung cancer. Recent studies from colleagues suggest that down-regulation of clock gene expression, which may be biologically or behaviorally mediated, accelerates tumor cell growth by altering the daily growth rhythms of tumor cells. Other data suggest circadian effects on tumor growth may be mediated by psychoneuroimmune pathways. Circadian endocrine disruption (reduced melatonin and increased adrenal corticosteroids, glucocorticoids, estrogens, and prolactin) is associated with suppression of functional cellular immune responses relevant to tumor defense and with overactive inflammatory responses that may promote tumor growth, angiogenesis, and metastasis. This presentation will integrate these findings with new data from clinical, systemic, cellular and molecular research that suggests the circadian clock functions as a tumor suppressor.

Paper Session 9 – Stress and Reproductive Function

Abstract 1311

DEPRESSION, ANXIETY, AND REPRODUCTIVE AGING AMONG PRE-MENOPAUSAL WOMEN
María E. Bleil, PhD, Nancy E. Adler, PhD, Psychiatry, University of California San Francisco, San Francisco, CA, Barbara Sternfeld, PhD, Division of Research, Kaiser Permanente Northern California, Oakland, CA, Renee A. Reijo-Pera, PhD, Obstetrics and Gynecology, Stanford University, Stanford, CA, Marcelle I Cedars, MD, Obstetrics, Gynecology, and Reproductive Sciences, University of California San Francisco, San Francisco, CA, Depression history has been linked prospectively to earlier onset menopause, a putative risk factor for several chronic diseases as well as all-cause mortality. To date, however, no study has examined psychosocial factors in relation to normative variability in reproductive aging among pre-menopausal women. Here, in a multi-ethnic sample of healthy, reproductive-age women, we examined symptoms of depression and anxiety in relation to the ratio of total follicle volume (TFV) to total ovarian volume (TOV) adjusted for antral follicle count (AFC), a novel marker of ovarian age which reflects increases in follicle recruitment associated with aging-related follicular-phase shortening. The sample was comprised of 360 women (ages 25-45, M=35.3[5.6]; 38.7% White) from the OVA Study, a community-based study of ovarian aging. Depression and anxiety symptoms were assessed using the total score of the Center for Epidemiological Studies Depression Scale (CES-D) and the trait scale of the Spielberger State-Trait Anxiety Inventory (STAI), respectively. TFV, TOV, and AFC were assessed by a trans-vaginal ultrasound performed on menstrual cycle days 2-4. In separate regression equations, covariates (age, SES, BMI, parity, and smoking) were entered on step 1, AFC on step 2, and depression/anxiety on step 3. Results showed that independently of anxiety and other variables, depression and anxiety symptoms were related to higher TFV to TOV ratios (B=1.48, p<0.004; B=1.30, p<0.012 respectively). Depression and anxiety symptoms accounted for an additional 2.1% and 1.6% of the variance in TFV to TOV ratios, respectively, beyond the variance explained by the covariates (7.5%) and AFC (2.6%). Findings suggest that depression and anxiety symptoms may relate to greater ovarian age among pre-menopausal women, possibly explaining previously reported associations between depression history and earlier onset menopause. Findings highlight the plausibility of intervening on relevant psychosocial factors in an effort to slow ovarian function declines, thereby lessening the disease burden associated with earlier onset menopause. NICHD/NIA R01HD048476; NIA K08AG035375

Abstract 1488

DOES ACUTE PSYCHOLOGICAL DISTRESS AFTER DIAGNOSIS OF A FETAL MALFORMATION AFFECT BLOOD FLOW VELOCITY INDICES IN THE UMBILICAL ARTERY?
Anne Helbig, MD, Anne Kaasen, MSc, Obstetrics & Gynecology, Ulrik F. Malt, MD/PhD, Neuropsychiatry & Psychosomatic Medicine, Guttorm Haugen, MD/PhD, Obstetrics & Gynecology, Oslo University Hospital, Rikshospitalet, Oslo, Norway

Purpose: Maternal anxiety and other symptoms of distress during pregnancy have been associated with low birth weight. However, the results of the few studies that have investigated the effect of anxiety on the feto-placental circulation are conflicting. We examined the correlation between maternal distress after ultrasound diagnosis of a fetal malformation and blood flow resistance indices in the umbilical artery (UA). Methods: Two groups of pregnant women were studied: Group 1 (Gr 1) after diagnosis of fetal structural malformation (n=104), ranging from minor to lethal. In Group 2 (Gr 2) ultrasound indicated a healthy fetus (n=74). All women completed the General Health Questionnaire (GHQ-28), Impact of Event Scale (IES-22), and Edinburgh Perinatal Depression Scale (EPDS) within a week after the diagnostic ultrasound. Doppler blood flow waveforms were obtained from a free loop of the UA and the pulsatility index (PI) and its Z-score were calculated accordingly. Results: In Gr 1, we observed links between psychological distress, early cancer mortality, this time among patients with lung cancer. Recent studies from colleagues suggest that down-regulation of clock gene expression, which may be biologically or behaviorally mediated, accelerates tumor cell growth by altering the daily growth rhythms of tumor cells. Other data suggest circadian effects on tumor growth may be mediated by psychoneuroimmune pathways. Circadian endocrine disruption (reduced melatonin and increased adrenal corticosteroids, glucocorticoids, estrogens, and prolactin) is associated with suppression of functional cellular immune responses relevant to tumor defense and with overactive inflammatory responses that may promote tumor growth, angiogenesis, and metastasis. This presentation will integrate these findings with new data from clinical, systemic, cellular and molecular research that suggests the circadian clock functions as a tumor suppressor.

Abstract 1394

DOES ACUTE PSYCHOLOGICAL DISTRESS AFTER DIAGNOSIS OF A FETAL MALFORMATION AFFECT BLOOD FLOW VELOCITY INDICES IN THE UTERINE ARTERIES?
Anne Helbig, MD, Anne Kaasen, MSc, Obstetrics & Gynecology, Ulrik F. Malt, MD/PhD, Neuropsychiatry & Psychosomatic Medicine, Guttorm Haugen, MD/PhD, Obstetrics & Gynecology, Oslo University Hospital, Rikshospitalet, Oslo, Norway

Purpose: Maternal anxiety and other symptoms of distress during pregnancy have been associated with low birth weight. However, the results of the few studies that have investigated the effect of anxiety on the feto-placental circulation are conflicting, possibly due to differences in gestational age (GA). We examined the correlation between maternal distress after ultrasound diagnosis of a fetal malformation and blood flow resistance indices in the uterine arteries (UA). Methods: Two groups of pregnant women were studied at 15 to 23 weeks GA: Group 1 (Gr 1) after diagnosis of a fetal structural...
malformation (n=115), ranging from minor to lethal. In Group 2 (Gr 2) ultrasound indicated a healthy fetus (n=98). All women completed the General Health Questionnaire (GHQ-28), Impact of Event Scale (IES-22), and Edinburgh Perinatal Depression Scale (EPDS) within a week after the diagnostic ultrasound. Doppler blood flow waveforms were obtained from both UtA and the pulsatility index (PI) and its Z-score were calculated according to a reference curve. We excluded fetal anomalies that could affect the Doppler measurements (23 aneuploidies, 1 fetal hydrops). Three cases had missing data, leaving 88 subjects in Gr 1 and 98 in Gr 2. Results: Gr 1 had significantly higher scores than Gr 2 on all psychometric scales including subscales, e.g., IES intrusive symptoms 21.4 (SD 9.1) vs. 9.3 (SD 6.3), respectively (p<0.001). There were no significant differences between the two groups in GA, maternal heart rate, UtA PI or PI Z-score. No significant correlations between the PI Z-score and psychometric scores were found, neither in the population as a whole, nor within the two groups. There were no significant differences in PI Z-scores in those with psychometric values above or below a clinically relevant level (GHQ-28 ≥ 26, IES sub-scales ≥ 20, EPDS ≥ 10). Conclusion: Despite high levels of acute psychological distress, we were not able to demonstrate any effect on uterine blood flow resistance indices in pregnancies between 15 and 23 weeks of GA.

Abstract 1559

CHILDHOOD SEXUAL ABUSE IN PREGNANT MOTHERS: LINKS TO CIRCADIAN CORTISOL AND NEONATAL DEVELOPMENT
Margaret D. Hanson, MA, Psychology, University of British Columbia, Vancouver, BC, Canada; Laura Stroud, PhD, Bio Med Psychiatry & Human Behavior, Brown Medical School, Providence, RI

Childhood sexual abuse (CSA) has been linked to long-term dysregulation of the HPA axis (especially elevated cortisol secretion) in non-pregnant adults. However, activity of the HPA axis and cortisol secretion is elevated during pregnancy, we know of no studies investigating effects of CSA on maternal cortisol output over pregnancy, or whether changes in maternal cortisol impact neonatal outcomes. We aimed to assess: 1) whether maternal CSA predicts cortisol secretion across pregnancy, and 2) whether cortisol secretion across pregnancy predicts infant birth size. Data was from an ongoing study of maternal stress and fetal development in a primarily low-income sample. 38 pregnant women (M(age)=27, 62% White) completed an early life stress questionnaire including 3 questions regarding CSA. 57% of participants endorsed any CSA. Salivary cortisol samples were collected at wake-up, +30 minutes, and bedtime for 3 days at 20-22, 28-30, and 36-38 weeks gestation. Daily cortisol area-under-the-curve (AUC) values were averaged at each of 3 pregnancy time points. Neonatal Ponderal index (PI) was determined at birth (3-kg/cm) based on review of medical records. Data was analyzed using HLM. Results revealed CSA as a significant predictor of cortisol AUC over pregnancy. Mothers reporting no CSA showed decreasing cortisol across pregnancy; mothers endorsing CSA displayed cortisol AUC values that remained high across pregnancy (r = 0.38, p = .01). Maternal cortisol was also a significant predictor of neonatal PI, controlling for gestational age and diabetes, with mothers with highest cortisol AUC over pregnancy having the smallest (leanest) babies (r = -0.84, p = .07). Results suggest that the experience of CSA is related to greater cortisol secretion over pregnancy, which may in turn contribute to risk factor for smaller birth size. Given known links between low birth size and long-term adverse health outcomes, results underscore the intergenerational consequences of CSA. Results also highlight fetal exposure to elevated maternal glucocorticoids as a mechanism underlying intergenerational transmission of risk.

Abstract 1018

MATERNAL PRENATAL STRESS: SETTING THE STAGE FOR NEWBORN IRON DEFICIENCY
Beth A. Fischer, Ph.D., Institutional Research, Zane State College, Zanesville, OH; Pamela J. Kling, MD, Pediatrics, Christopher L. Coe, Ph.D., Psychology, University of Wisconsin, Madison, Madison, WI

The antecedents and many illnesses and health vulnerabilities begin in infancy, and often before birth. Research has shown that maternal stress experienced during pregnancy may predispose the fetus to a number of health vulnerabilities that may set the stage for postnatal illness. The present study examined the potential influence of maternal stress on newborn iron status. 165 mothers and their term babies (92 males; 73 females) were recruited from the Meriter Hospital Birthing Center in Madison, WI, prior to hospital discharge. At birth, a sample of each infant's umbilical cord blood was collected and whole blood and reticulocyte- and heme-enriched Zinc Protoporphyrin/Heme (ZnPP/H) were examined as iron status indicators. ZnPP/H is a sensitive indicator of incomplete iron incorporation into erythrocytes and elevated levels have been found in newborns that are at risk for iron deficiency. Enrolled mothers were asked to fill out a 35-item, retrospective questionnaire to assess the stress they had experienced during their pregnancy. The questionnaire prompted mothers to respond whether or not a particular stressful event had occurred during her pregnancy and to rate the Stress Impact of the item on a scale of 1-10 (1 = did not upset me, 10 = extremely disturbing). Stress measure total score: M=46.1; SD=40.5; range:0-201. Stress measure mean: M=1.3; SD=1.2; range:0-5.74, suggesting that our sample experienced relatively low levels of stress during pregnancy. Despite reporting low levels of stress during pregnancy, hierarchical linear regressions indicated that above and beyond maternal ethnicity, diabetes, anemia, and age, higher mean scores on the maternal stress measure (Beta= .28, p<.001) predicted elevated ZnPP/H (F1,164=3.6; p=.01). Furthermore, after controlling for the most stressful items, stress scores continued to predict elevated newborn enriched ZnPP/H (F1,164=3.4; p=.01) with mean stress scores accounting for 13.4% of the variance in enriched ZnPP/H. In sum, high maternal stress was predictive of high reticulocyte- and heme-enriched ZnPP/H, suggesting that maternal stress during pregnancy may impair late iron delivery to the red cell.

Paper Session 10 – Race, Ethnicity and Health

Abstract 1571

CHRONIC STRESS, LIFESTYLE FACTORS, AND ALLOSTATIC LOAD IN MEXICAN-AMERICAN WOMEN
Jessica A. Jimenez, MA, SDSU/UCSD Joint Doctoral Program in Public Health, Paul J. Mills, PhD, Psychiatry, UC-San Diego, La Jolla, California, Smriti Shivpuri, MA, SDSU/UCSD JDP Clinical Psychology, Karla Espinosa de los Monteros, MS, Linda C. Gallo, PhD, SDSU/UCSD JDP in Clinical Psychology, San Diego State University, San Diego, California

Background: The allostatic Load (AL) model postulates that the body's response to ongoing stress can eventually cause dysregulation of multiple physiological systems. Theoretically, AL is a measure of cumulative or chronic stress and a precursor for later morbidity and mortality. However, there is limited research on the extent to which subjective stress predicts AL among Mexican-American women, we examined the relationship between multiple chronic stressors with AL, and evaluated lifestyle factors as possible mediating pathways. Methods: 211 women (mean age= 49.41 years; 71.6% born in Mexico; 28% had less than high school education) underwent a physical exam and completed measures of lifestyle factors and chronic stress in 8 domains. Stressors were dichotomously coded to compare women with versus without moderate or severe chronic stress in a given domain. A composite of 12 neuroendocrine, metabolic, cardiovascular, and inflammatory markers represented AL. A linear regression analysis simultaneously tested the relationship between all stress domains and AL, adjusting for age, menopausal status, and SES. The association between total exposure to chronic stress and AL was tested in separate model. Results: Chronic stress was predictive of higher AL (p=0.05), financial (beta=.173, p<0.05), and caregiving (beta=.193, p<0.01) domains related to higher AL scores. In aggregate, chronic stressors accounted for 10% of the variance in AL. Total stress burden showed a linear, positive relationship with AL (beta=.165, p<.01). Lifestyle factors made little contribution to the association between stress and AL. Conclusions: Chronic caregiving, financial, and work stressors are associated with physiological dysregulation in Mexican-American women, and may therefore be particularly relevant to understanding health risks in this population.
This study is among the first to examine multiple domains of chronic stress in relation to AL, and to examine the utility of the AL framework in Mexican American women.

Abstract 1672

UNFAIR TREATMENT IS BAD FOR SLEEPING, IN PART DUE TO WORRYING

Danielle L. Beatty, Ph.D., Martica H. Hall, Ph.D., Psychiatry, Thomas A. Kamarck, Ph.D., Psychology, Daniel J. Baysse, M.D., Jane F. Owens, Dr.P.H., Psychiatry, Steven E. Reis, M.D., Medicine, Elizabeth J. Mezick, M.S., Psychology, Patrick J. Strollo, M.D., Medicine, Karen A. Matthews, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA

Unfair treatment, a unique chronic stressor that unfolds within day-to-day interpersonal interactions is linked to poor health and is commonly reported by racial/ethnic minorities. However, its association with sleep remains unknown, although chronic stressors of other types are associated with sleep parameters. Also, unknown is whether perseverative cognitive processes mediate the association of unfair treatment with any health outcome, including sleep. In a sample of 221 African American and White adults (mean age = 60 ± 7.2), we examined the association between perceptions of unfair treatment and self-report and objective sleep measures; the racial/ethnic differences in these associations; and nightly worry as a mediator. Unfair treatment and sleep quality in the past month, and daytime sleepiness in the past two weeks were assessed via self-report. Daily diaries were used to assess nightly sleep quality and worry during the sleep monitoring period, in which actigraphy and in-home polysomnography (PSG) were measured across 9 nights and 2 nights, respectively. African Americans reported higher levels of unfair treatment, relative to Whites (p = .03). In the full sample, greater unfair treatment predicted poorer retrospective sleep quality (p = .005), greater daytime sleepiness (p = .006), shorter sleep duration as measured by actigraphy (p = .001) and by PSG (p = .04), and lower sleep efficiency (p = .05) as measured by PSG, and a smaller proportion of rapid eye movement (REM; p = .0004). By and large, these associations were not individual differences in anger, hostility, or depressive symptoms. Racial/ethnic differences were few. Nightly worry partially mediated the associations between greater unfair treatment and three measures: greater daytime sleepiness (p = .03), less sleep efficiency (p = .04) as measured by PSG, and a smaller proportion of REM (p = .04). In sum, unfair treatment predicts poorer sleep for both African Americans and Whites, and this association is partially explained by greater nightly worry.

Abstract 1679

RACIAL/ETHNIC DISPARITIES IN HOSPITALIZATION THREATS: EVIDENCE FOR A HISPANIC RECOVERY ADVANTAGE

John M. Ruiz, Ph.D., Psychology, University of North Texas, Denton, Texas, Noel O. Santini, MD, Adult Medicine, Parkland Health & Hospital System, Dallas, Texas, Sean Lewis, BA, Erin E. Kaufman, BA, Courtney C. Prather, BA, Lauren M. Smith, MA, Psychology, University of North Texas, Denton, Texas

The Hispanic Mortality Paradox refers to the phenomenon whereby Hispanics live longer than non-Hispanic (NH) Whites despite lower socioeconomic status and greater health risk profile. Although the finding appears robust, it is unclear whether this advantage is limited to mortality or reflective of broader health resilience. The current aim was to test the hypothesis that Hispanic medical patients recover faster and with fewer complications relative to NH patients. The multietnic sample included 22,842 patients (7739 NH White, 7991 NH Black, 7112 Hispanic) admitted to a community safety-net hospital (Parkland Hospital, Dallas) in 2008. Hispanic patients were younger (44.1 years) than NH Blacks and Whites (49.4 and 48.0 years, respectively) and more likely to be married (2721 vs. 1294 and 2090, respectively). Controlling for age and sex, a main effect of race/ethnicity on length of stay (LOS) following first 2008 admission was found, F(2, 22834) = 16.92, p < .001. Contrasts revealed that Hispanics had significantly shorter LOS (6.16 days) compared to both NH Blacks and Whites (6.51 and 7.17 days, respectively). On average, Hispanics were readmitted more frequently than NH Whites (1.39 vs. 1.32 admits, p < .02) but less frequently than NH Blacks (1.45 admits, p < .02). Collapsing across all admissions per patient, Hispanic were hospitalized significantly fewer total days (8.77 days) relative to both NH Blacks and Whites (9.70 and 9.41 days). The difference between NH Blacks and NH Whites in total hospitalization time was non-significant. A Cox Regression analysis of acute mortality during initial 2008 hospitalization (N = 275) revealed significantly increased risk among NH Whites (hazard ratio = 1.56, p = .003, 95% CI = 1.16 - 2.10) compared to NH blacks and Hispanics, after controlling for age, sex, and marital status. NH blacks and Hispanics did not differ in risk (hazard ratio = .884, p = .460, 95% CI = .637 - 1.224). These findings suggest a Hispanic survival and recovery advantage in the context of hospitalization and broaden the scope of health resilience associated with Hispanic ethnicity.

Abstract 1362

SUPPORT FOR DISEASE MANAGEMENT AMONG LATINOS WITH TYPE 2 DIABETES

Addele L. Brewer, MS, Linda C. Gallo, PhD, Joint Doctoral Program in Clinical Psychology, SDSU/UCSD, San Diego, CA, Athena L. Phills-Townsend, MD, Scripps Whittier Diabetes Institute, Scripps Whittier Diabetes Institute, San Diego, CA

Although active diabetes management is required to achieve glycemic control, adherence is poor among ethnic minorities, especially Latinos. Research shows that individuals who report greater social-environmental support related to illness manage their diabetes more effectively than those with less support. Natural support systems may play an especially important role in disease-management among Latinos, due to the cultural value placed on personal relationships (i.e., 'personalismo') and family (i.e., 'familismo'). Path analysis was conducted to identify possible pathways through which support for disease-management (SDM) influences hemoglobin A1c (HbA1c) among Latinos with Type 2 diabetes. We hypothesized that the relationship between SDM and HbA1c would be mediated by adherence to a diabetes self-care regimen and/or depression. Two hundred seven participants recruited from low-income serving community clinics in San Diego County to participate in a self-management intervention completed a baseline visit to assess SDM, adherence, depression, and HbA1c. They ranged in age from 20 to 75 years (M = 50.49, SD = 10.97); 70% were female, and 87% were born in Mexico. Participants who perceived greater SDM from their neighborhood/community, family/friends, and self (i.e., personal SDM) reported better adherence (B = .40, p < .001) and less depressive symptomatology (B = .16, p = .02). In turn, better adherence and less depression were both associated with tighter glycemic control (HbA1c; B = -.15, p = .03 and B = .15, p = .04, respectively); however, only the indirect effect via adherence was statistically significant (-.07, p = .02). The mediated model fit the data well [X2(1) = .55, p = .46; RMSEA < .05, RMRM = .009], and the addition of a gender term (male vs. female) did not significantly improve model fit. These findings demonstrate the important influence that SDM can have on emotional well-being, adherence, and health outcomes among Latinos. Thus, programs targeting diabetes self-management and glycemic control should assume a social-ecological perspective that considers culturally-relevant, multi-level influences on health.

Abstract 1432

EVERYDAY DISCRIMINATION AND NOCTURNAL BLOOD PRESSURE DIPPING IN BLACK AND WHITE AMERICANS

Lianne M. Tomfohr, B.A., Denise C. Cooper, Ph.D., Paul J. Mills, Ph.D., Richard A. Nelsen, Ph.D., Joel E. Dimsdale, MD, Psychiatry, University of California, San Diego, La Jolla, CA, Paul J. Mills, Ph.D., Richard A. Nelsen, Ph.D., Joel E. Dimsdale, MD, Psychiatry, University of California, San Diego, La Jolla, CA

Purpose: Attenuated nocturnal blood pressure (BP) dipping is closely linked to cardiovascular morbidity and mortality. Self-reported experiences of everyday discrimination have also been associated with negative cardiovascular health outcomes. This study investigated the potential association between experiences of everyday discrimination and BP dipping in a biracial sample of Black and White adults. Methods: Seventy-eight hypertensive and normotensive women and men (30 Black and 48 White; mean age = 35.0 years) reported on their
experiences of everyday discrimination (the Everyday Discrimination Scale) and underwent two separate 24-hour ambulatory blood pressure monitoring (ABPM) sessions approximately one week apart. Information about age, gender, body mass index (BMI), current socioeconomic status (SES), daily smoking, average number of alcoholic drinks per week, marital status and hostility was collected.

Results: Correlation analysis revealed that higher endorsement of everyday discrimination was significantly associated with less diastolic blood pressure (DBP) and systolic blood pressure (SBP) dipping (p < 0.05). Subsequent hierarchical regression analyses indicated that everyday discrimination explained 10-11% of the variance in SBP(B=-3.51, p < .01) and DBP (B=-3.00, p < .01) and predicted above and beyond aforementioned covariates. Further, everyday discrimination mediated the relationship between race and BP dipping (Bootstrapped, bias-correct and accelerated 95% confidence intervals for the meditational effect of everyday discrimination on DBP were .09 to 2.68 and on SBP were .06 to 2.85). The relationship between discrimination and dips was significantly stronger on the second night of monitoring.

Conclusion: Results suggest that experiences of everyday discrimination are associated with less nocturnal SBP and DBP dipping above and beyond the effect of known covariates, this relationship may help to explain racial differences in BP dipping. The use of multiple ABPM sessions could help facilitate the detection of relationships between psychological variables and BP dipping.

Paper Session 11 – Aging

Abstract 1541

AGING BELIEFS AND AGE STEREOTYPE PRIMING PREDICT OLDER ADULTS’ STRESS REACTIVITY TO MEMORY TESTS

Kath L. Heffner, Ph.D., Rochester Center for Mind-Body Research, Psychiatry, University of Rochester, Rochester, NY, Julie A. Suhr, Ph.D., Huey M. Ng, M.S., Petya Demireva, M.S., Christopher R.France, Ph.D., Psychology, Ohio University, Athens, OH, Gailen D. Marshall, MD, Ph.D., Medicine/Clinical Immunology and Allergy, University of Mississippi Medical Center, Jackson, MS

Negative perceptions of one's own aging, in part a function of cultural aging stereotypes, are associated with reduced longevity. We suggest that these self-perceptions are linked to health through their effects on stress responses to hassles stereotypically associated with aging (for example, memory failures). Indeed, priming negative aging stereotypes acutely impairs cognitive performance and may also affect physiological reactivity during cognitive tasks. We examined whether individual differences in aging self-perceptions and situational priming of aging stereotypes related to physiological stress responses to tests of memory. Adults 50 and older (N=82) reported their aging self-perceptions, sat for a rest period, and were randomly assigned to a negative or positive aging stereotype priming group, or a no priming control. After the priming, participants completed memory tests and sat for a 1-hour recovery period. We measured peripheral resistance (TPR), salivary cortisol, and plasma levels of the inflammatory cytokine interleukin-6 (IL-6) at rest and in response to the tests. Multivariate models indicated effects of priming on reactivity after covariate (age, BMI) adjustment. TPR reactivity across the memory task and IL-6 increases during recovery were greatest among older adults exposed to the negative priming; older adults exposed to the positive prime were least responsive (condition x time: TPR: p<0.05, IL-6: p<0.01). Individual differences in aging self-perceptions also related to stress reactivity: more negative compared to positive perceptions of one's own aging were related to significantly greater TPR (p<0.05), cortisol (p<0.01) and IL-6 (p<0.05) responses to the memory tasks after adjusting for age, BMI and depressive symptoms. Older adults with more negative aging self-perceptions had larger responses to the negative stereotype prime whereas positive priming attenuated their reactivity. In cultural contexts where negative aging stereotypes are reinforced, negative aging self-perceptions may impact older adults' coping with age-associated stress, and, ultimately, their health.

Abstract 1217

DYNAMICS OF SELF-REPORTED HEALTH IN OLDER ADULTHOOD: THE ROLE OF POSITIVE AND NEGATIVE AFFECT

Suzanne C. Segerstrom, PhD, Department of Psychology, University of Kentucky, Lexington, KY

Self-reported health (SRH) is a prospective predictor of morbidity and mortality above and beyond known health risks. Although ordinarily measured with a single-item, SRH integrates perceptions of physical health, disease, and quality of life and can be influenced by both positive (e.g., happiness) and negative affect (e.g., depression). Recent evidence suggests that recent rather than distant SRH is a stronger predictor of mortality, indicating the value of predicting the dynamics of change in SRH. The present study employed 665 longitudinal data waves from 150 older adults aged 60-94 at study entry. Participants completed measures of SRH and positive (e.g., hope, satisfaction, happiness) and negative (e.g., boredom, helplessness, worry) affect up to 6 times over 3 years. In linear mixed models, age was associated with both linear and quadratic decline in SRH; consistent with previous findings in older samples, there were no sex differences. Positive and negative affect independently contributed to SRH such that both having more positive (F(1,147) = 50.54, p < .0001) and less negative activity than others (F(1,147) = 37.37, p < .0001) and base more positive (F(1,150) = 13.37, p < .0003) and less negative affect than usual for oneself at a particular wave (F(1,150) = 28.86, p < .0001) correlated with better SRH. Affect terms together accounted for 23% of between-person variance and 5% of within-person variance in SRH. These models indicate that although people with chronically low positive and high negative affect are more likely to evaluate their health negatively over time, phasic increases and decreases in affect also accompany dynamic changes in SRH that in turn may predict morbidity and mortality. Finally, negative affectivity, but not positive affectivity, moderated the linear effect of age (F(1,508) = 8.20, p < .005). The decline in SRH with age most likely reflects the higher disease burden and increased functional limitations of older adulthood; however, older adults who are typically less depressed, bored, worried, and helpless appear to be relatively resistant to the effects of these changes on their experienced health.

Abstract 1064

MINDFULNESS BASED STRESS REDUCTION FOR OLDER ADULTS: PERCEIVED STRESS, DEPRESSION, IL-6, AND GENDER

Jennifer M. Knight, MD, Benjamin P. Chapman, PhD, Nancy L. Talbott, PhD, Psychiatry, Michael S. Krasner, MD, Internal Medicine, Wan Tang, PhD, Biostatistics, Jan A. Mynihian, PhD, Psychiatry, University of Rochester Medical Center, Rochester, NY

Increases in inflammation occur during aging, and chronic stress and depression accelerate inflammation and its health consequences. We conducted a randomized control trial of Mindfulness Based Stress Reduction (MBSR) for relatively healthy older adults (men and women ≥65) and here test the hypotheses that MBSR reduces stress and depression, and that any reduction is associated with decreases in the inflammatory cytokine interleukin-6 (IL-6). 105 subjects randomized to the 8-week MBSR program and 102 wait-list controls (WLC) completed the Perceived Stress Scale (PSS) and the Center for Epidemiological Studies-Depression Scale (CES-D) at baseline and at 3 time points following MBSR: -immediately after, 3 weeks and 21 weeks following MBSR. Blood was collected at all three time points following MBSR. Prior to intervention, women reported greater perceived stress than men (p<.05). A significant reduction in PSS score was observed in women who completed MBSR (13.7 at baseline v. 11.8 following treatment, p<.001), but not in men in the treatment group. No reductions in PSS across time were observed for subjects in the WLC group and no significant post-intervention changes for CES-D were observed for either gender in either group; however, mean depression levels were not high in this population. GEE analysis of IL-6 levels suggested a significant gender x treatment group interaction (Chi-Square=4.08, p<.05). Older adult women in the MBSR group had lower IL-6 levels following intervention compared to women in the WLC group. Using the accepted cutoff of 3.19 pg/ml to define elevated IL-6, women in the MBSR group had a lower percentage of subjects...
Men in the SM group met with a clinical psychologist, discussed their fears and concerns about the upcoming surgery and were taught slow diaphragmatic breathing, guided imagery, an imaginal exposure to the day of surgery, and brief exposure to cognitive therapy and adaptive coping skills. Men in the SA group met with a clinical psychologist and discussed their fears and concerns about the upcoming surgery. Men in the SC group did not meet with a clinical psychologist prior to or after surgery. Cytotoxicity against K562 tumor targets, serum inflammatory cytokines (IL-12p70, IL-1beta, TNFalpha, IFNgamma, IL-8, IL-6, and IL-10), and lymphocyte phenotype enumeration were determined from blood. Results: Men were primarily Caucasian (78%), married (85%) and highly educated (80% some college or higher). General linear model regression analyses revealed significantly higher levels of cytotoxicity against K562 target cells in the SM group than in the SA and SC groups (SM: 30.0; SA: 26.0; SC: 21.7, p<.04). Men in the SM group had significantly higher levels of IL-12p70 (p<.05), IL-1-beta (p<.02), and TNF-alpha (p<.05) and marginally higher IL-8 (p<.06) and IFN-gamma (p=.10) levels for patients in the SM group relative to the SA group. The only group differences in lymphocyte phenotype that reached marginal significance were the percentage of T-regulatory cells (Tregs), with the SM group having the lowest levels (p=.10). Results suggest a brief pre-surgical stress management intervention is beneficial in terms of improvements of immune function after surgery.

Abstract 1396
A RANDOMIZED CONTROLLED TRIAL OF EMOTIONALLY EXPRESSIVE WRITING FOR WOMEN WITH METASTATIC BREAST CANCER
Carissa A. Low, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Annette L. Stanton, PhD, Psychology, Psychiatry, Julienne E. Bower, PhD, Lauren Gyllenhammer, BS, Psychology, UCLA, Los Angeles, CA

Objective: To test the effects of emotionally expressive writing in a randomized controlled trial of metastatic breast cancer patients and to determine whether effects are moderated by perceived social support or time since metastatic diagnosis. Design: Women (n = 62) living with Stage IV breast cancer were randomly assigned to write about cancer-related emotions (EMO; n = 31) or the facts of their diagnosis and treatment (CTL; n = 31). Participants wrote at home for four 20-minute sessions within a three-week interval. Main Outcome Measures: Self-reported depressive symptoms, cancer-related intrusive thoughts, somatic symptoms (e.g., headache, stomachache), and sleep quality at three months post-intervention. Results: No significant main effects of experimental condition were observed. A significant condition x social support interaction emerged on intrusive thoughts; compared to the CTL condition, EMO writing was associated with fewer intrusive thoughts for women with low social support (eta squared = .15, p < .003). Significant condition x time since metastatic diagnosis interactions were also observed for somatic symptoms and sleep disturbances. Relative to CTL, EMO participants who were more recently diagnosed reported fewer somatic symptoms (eta squared = .10, p = .04), whereas EMO participants with longer diagnosis duration exhibited greater sleep disturbances (eta squared = .08, p = .03). Conclusion: Although there was no main effect of expressive writing on health among the current MBC sample, expressive writing may be beneficial for a subset of metastatic patients (including women with low levels of social support or who have been recently diagnosed) and contraindicated for others (i.e., those who have been living with the diagnosis for years).

Abstract 1446
SOCIAL INFLUENCES ON STRESS, CORTISOL, ALLOSTATIC LOAD AND VEGF IN GYNECOLOGIC CANCER
Elizabeth Lush, M.S., Psychological and Brain Sciences, University of Louisville, Louisville, KY, Inka Weissbecker, Ph.D., School of Public Health, Harvard University, Boston, MA, Andrea Floyd, Ph.D., Psychology, East Tennessee State University, Johnson City, TN, Eric Deutsch, Ph.D., Duram VA Medical Center; Psychiatry & Behavioral Sci, Duke University Medical Center, Durham, NC, Emily Eismann,
Biology on malignant disease. Sources of support: DoD 0810629, NCI.

Approach to protect stressed individuals from the adverse effects of stress. Interventions to inhibit metastasis could provide a novel therapeutic approach.

Spontaneous metastasis to distant tissues from an orthotopic primary tumor may be impacted by treatment course. Illuminating social relationships were associated with greater (all R2>.132; all p<=.048), were not associated with AL or VEGF. Respectively, supportive rhythmic diurnal cortisol profiles. Social networks and relationships were not associated with AL or VEGF. Respectively, supportive and aversive social relationships were associated with greater (all R2>.132; all p<=.048), and aversive with poorer, physical and functional QOL (all R2>.080; all p<=.048). While social network size was not associated with outcomes in this sample, both supportive and aversive social relationships were associated with psychological well-being. Positive social support may impact hormonal rhythms relevant to gynecologic cancer outcomes. AL parameters may have different meanings in cancer patients in comparison to healthy samples, and social influences on VEGF may be impacted by treatment course. Illuminating social influences on stress, disease-relevant physiology, and QOL may inform gynecologic cancer treatment strategies.

**Abstract 1726**

**CHRONIC STRESS AND CANCER METASTASIS: IN VIVO OPTICAL IMAGING TO TRACK NEURAL REGULATION OF BREAST CANCER METASTASIS**

Erica K. Sloan, Ph.D., Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, Los Angeles, CA, Matthew Pimentel, Semel Institute, University of California, Los Angeles, CA, Jesusa Arevalo, B.S., Steve W. Cole, Ph.D., Hematology-Oncology, University of California Los Angeles, Los Angeles, CA.

Metastasis is responsible for much of the morbidity and mortality of breast cancer. To investigate the effect of chronic activation of the sympathetic nervous system (SNS) on distant metastasis, we used in vivo bioluminescence imaging to track the development of metastasis in mice subcutaneously injected with luciferase reporter gene, and cells were injected into the 4th mammary fat pad of T cell-deficient nude mice or immunocompetent Balb/c mice to produce a primary tumor. Appearance of distant metastases was quantified over 28 days by longitudinal imaging of luciferase activity in live animals. Stress did not affect the growth of the primary breast tumor. However, metastasis number and size increased by greater than 2-fold in chronically stressed mice compared to controls (p < .00001). Bioluminescence day 28 showed 12.8-fold increase in lung (p < .03) and 3.0-fold in distant lymph nodes (p < .0001) in stressed mice compared to controls. Stress effects were blocked by the beta-antagonist propranolol, indicating a key role for the sympathetic nervous system in stress-enhanced metastasis. Similar effects were observed in both nude and immunocompetent mice, showing that these effects did not involve anti-tumor T lymphocyte responses. Ongoing studies seek to evaluate the molecular targets of sympathetic signaling in micrometastases, and define the role of inflammation and innate immune responses in mediating these effects. These data show that chronic neural activation can enhance spontaneous metastasis to distant tissues from an orthotopic primary tumor in a model that closely mimics human breast cancer. Adrenergic interventions to inhibit metastasis could provide a novel therapeutic approach to protect stressed individuals from the adverse effects of stress biological and immunoregulatory effects. Sources of support: DoD 0810629, NCI 1R2CA138687.

**Paper Session 13 - Depression and Health**

**Abstract 1686**

**PREDICTIVE VALUE OF DEPRESSION FOR ACUTE RENAL FAILURE AND CLINICAL KIDNEY DISEASE PROGRESSION: THE CARDIOVASCULAR HEALTH STUDY**

Willem J. Kop, Stephen L. Seliger,, Jeffery C. Fink, MD, Medicine, University of Maryland, Baltimore, MD, Ronit Katz, PhD, Biostatistics, University of Washington, Seattle, WA, Michelle Olden, PhD, Medicine, UCSF, San Francisco, CA, Linda F. Fried, MD, Medicine, VA Pittsburgh Medical Center, Pittsburgh, PA, Dena E. Rifkin, MD, Mark J. Sarnak,, Medicine, Tufts University, Boston, MA, John S. Gottlieber, MD, Medicine, University of Marland, Baltimore, MD

Purpose: Kidney disease is a major clinical and public health problem, associated with major risks of cardiovascular disease and premature mortality. Depression is a risk factor for adverse clinical outcomes and mortality in patients on dialysis. However, little is known about the predictive value of depression for new-onset chronic kidney disease (CKD) or acute renal failure in the general population. This study tests the hypothesis that depressive symptoms are associated with CKD severity and predictive of adverse long-term renal disease outcomes (incident CKD during follow-up, hospitalization for acute renal failure and development of end-stage renal disease). Participants and Methods: Participants of the Cardiovascular Health Study (N=5785, mean age 73 ± 6 yrs, 57% women) were assessed for CKD and depression at study entry and followed up for a median duration of 10.5 years. CKD was based on creatinine-based eGFR < 60 ml/min per m2 at baseline, 3, and 7 yrs of follow-up. Clinical outcomes hospitalization for acute renal failure (ARF), and development of end-stage renal disease (ESRD). Depressive symptom scores were assessed using the Centers for Epidemiological Studies Depression scale (CES-D) using continuous scores and a previously validated cut-off point for depression (CES-D ≥ 8). Logistic regression and Cox proportional hazards analyses were used to investigate the risk associated with depression, adjusting for demographic, clinical and health behaviors. Results: Depression was associated with a higher prevalence of Stage 3-4 CKD at study entry (OR=2.3, CI=1.06-4.23). Depression predicted clinical renal disease events (ARF HR=1.52, CI=1.13-2.04, and ESRD HR=1.62, CI=1.07-2.46) during follow-up. Depression did not significantly predict new-onset CKD (OR=1.24, CI=0.94-1.64). The predictive value for ARF remained significant when adjusting for baseline eGFR, demographic, clinical and health behaviors in multivariable analysis (HR=1.40, CI=1.01-1.93). These data show that depression is associated with prevalent CKD and predictive of clinical renal disease progression. Depression-related risks were independent of renal disease risk factors and depression may add to the risk stratification of patients with vulnerability for kidney disease.

**Abstract 1429**

**SHORT-TERM COURSE OF DEPRESSION AFTER ACUTE CORONARY SYNDROME**

Kenneth E. Freedland, PhD, Robert M. Carney, PhD, Brian C. Steineymer, M.S., Rebecca L. Reese, MA, Psychiatry, Washington University School of Medicine, St Louis, MO

Purpose: ENRICHD raised questions about the timing of interventions for depression after acute coronary syndrome (ACS). Some patients probably have transient depressive reactions to ACS and do not require treatment, but little is known about the short-term course of post-ACS depression. This study documented the trajectory of depression during the first 6 months after ACS; identified course pattern subgroups; and determined whether baseline characteristics differentiate these subgroups. Sample: 322 patients enrolled while hospitalized for ACS. Methods: The Beck Depression Inventory (BDI-II) was administered at enrollment, weekly for 3 months, and monthly for the next 3 months. Results: Ninety-five (30%) of the patients scored in the depressed range (BDI-II >14) at baseline. Thirty-seven patients died or became too ill to participate during the first few weeks. Of the other 58 patients, 24 (41%) remained depressed for at least 6 months; 16 (28%) improved but then relapsed; and 18 (31%) improved and remained nondepressed. Patients with sustained depression were more severely depressed at enrollment (BDI-II, 31±12) than those who improved but relapsed (22±5) and those with a sustained remission (20±7); p=0003. There
were trends but no significant differences in age (53±10 vs 57±11 vs 59±9 years; p=1.1), anxiety (Beck Anxiety Inventory, 26±14 vs 20±11 vs 17±11; p=0.06), and smoking (42% vs 36% vs 11%; p=0.09). The median time to sustained remission was 4 weeks (mean 6.2±5.6); the time to transient remission was similar (median, 3.5 weeks; mean, 5.5±4.9). In both groups, remission occurred by the 8th week in 75% of cases. Relapses tended to occur relatively soon thereafter; median time from enrollment to relapse was 10 weeks (mean, 12.5±7.0); 75% occurred by 19 weeks. Thus, most relapses occur between the 2nd and 5th month after ACS. Conclusion: The optimal timing of intervention may depend on the initial severity of depression. These results will help to inform future clinical trials.

Abstract 1182
THE ASSOCIATION BETWEEN INFLAMMATION DURING ACUTE CARDIAC EVENTS AND THE DEVELOPMENT OF SOMATIC AND AFFECTIVE SYMPTOMS OF DEPRESSION
Andrew Steptoe, DSc, Epidemiology and Public Health, University College London, London, UK, Nadine Messerli-Burgy, PhD, Clinical Psychology and Psychotherapy, University of Berne, Berne, Switzerland, Gerard J. Mollov, PhD, Psychology, University of Stirling, Stirling, Scotland, Anna Winkman, PhD, Epidemiology and Public Health, University College London, London, UK, Linda Perkins-Porras, PhD, Community Health Sciences, St. George's, University of London, London, UK
Depressive symptoms commonly emerge in response to acute cardiac events, but the symptoms that appear to be particularly cardiotoxic have special characteristics, with somatic/affective features being especially prominent. The impact of depression on prognosis is independent of indicators of underlying disease severity or the clinical severity of the event. Acute coronary syndromes (ACS) are also characterized by severe acute inflammation, and severe inflammation can induce fatigue and other somatic symptoms that may contribute to depression. This study tested the possibility that somatic depressive symptoms are related to the intensity of acute inflammation during ACS. The study involved 217 patients (183 men, 34 women) and 592 episodes of ACS, 34% of which were admitted with a documented ACS. C-reactive protein (CRP) was measured daily over the hospital admission. The Beck Depression Inventory (BDI) was completed an average 20 days after admission, and separate somatic/affective and cognitive/affective scales were derived. Peak CRP levels following ACS were very high, averaging 39.5 (SD 54.4) mg/l (range 0.20 to 313). CRP was inversely related to socioeconomic deprivation and marital status (B = -0.14, S.E. 0.06, p = 0.039). CRP did not predict somatic/affective symptoms. Both cognitive and somatic symptoms were positively related to socioeconomic deprivation. These results indicate that the inflammatory stimulus during ACS is large, and predicts later depressive symptoms independently of covariates. However, a specific link between inflammation and somatic symptoms was not identified.

Abstract 1162
STABILITY OF MENTAL STRESS-INDUCED HEMODYNAMIC AND AUTONOMIC REACTION DESPITE SUCCESSFUL TREATMENT FOR MAJOR DEPRESSION
Christoph Herrmann-Lingen, Prof. Dr. med., Psychosomatic Medicine, University of Göttingen Medical Centre, Göttingen, Niedersachsen, Germany, Jana Lomb, MS, Psychosomatic Medicine, University of Marburg, Marburg, Hessen, Germany, Tilmann Schunk, Dipl Psych, Psychology in Neurology, Hradwaldklinik I, Bad Zwesten, Hessen, Germany
Autonomic imbalance and exaggerated stress responses may mediate the effect of depression on cardiac prognosis. However, reported effects of treatment for depression on autonomic and hemodynamic functions are inconclusive. We therefore measured cardiovascular parameters during mental stress testing before and after treatment for depression. Thirty-four patients (22 f, 12 m; 45±14 years) with major depression completed self-rating scales before and after 4-6 weeks of multimodal in-patient treatment. At both time points they underwent standardized stress tests, including mental arithmetic, anger recall (AR), and resting conditions. Beat-to-beat heart rate, blood pressure (BP) and impedance cardiography were obtained using a Task Force Monitor system. In repeated measures ANOVAs performed for each time point, most hemodynamic and autonomic parameters showed the expected changes under mental stress and relaxation. There was no relevant association of baseline depression scores with any of the physiological parameters. The treatment resulted in a substantial improvement in depressive symptoms: HADS scores declined from 11.4±5.3 to 7.7±5.3 and PHQ scores from 13.8±5.1 to 8.1±5.8 (both p<0.0005). However, activation parameters showed only minimal changes from pre- to post-treatment. For example, mean arterial BP was 87.0±11.2 mmHg (pre) and 85.8±11.2 mmHg (post) at rest (p=0.19) and 97.3±13.0 mmHg (pre) and 95.2±9.4 mmHg (post) during AR (p=0.39). Hemodynamic parameters (eg, BP, heart rate, cardiac index, peripheral resistance, and pre-ejection period) showed high intraindividual stability over time (retest correlations ranging up to 0.8) and were mostly unrelated to the change in depression scores. Heart rate variability was less stable but also unaffected by reductions in depressive symptoms. In conclusion, despite marked improvements in depressive symptoms our short-term treatment for depression did not affect autonomic and hemodynamic responses to mental stress testing. Hence, even successful treatment of depression does not result in relevant short-term effects on cardiovascular and autonomic reactivity. Nevertheless, increased physical activity after improvement of depression may have beneficial physiological effects over longer time spans.

Abstract 1288
STRUCTURAL AND FUNCTIONAL NEURAL CORRELATES OF MAJOR DEPRESSION IN INDIVIDUALS WITH A HISTORY OF BLAST-RELATED CONCUSSION
Scott C. Matthews, M.D., Irina A. Strigo, Ph.D., Alan N. Simmons, Ph.D., Psychiatry, University of California San Diego, San Diego, CA
Approximately 20% of veterans of Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) have experienced mild traumatic brain injury (mTBI), i.e., concussion. Blast exposure is the most common cause of mTBI in OEF-OIF warriors. Although the mechanism is unknown, major depressive disorder (MDD) after blast-related concussion is common. The purpose of this study was to use diffusion tensor imaging (DTI) and functional magnetic resonance imaging (fMRI) to examine the structural and functional neural correlates of MDD in OEF-OIF combat veterans with a history of blast-related mTBI. We hypothesized that mTBI individuals with current MDD (mTBI +MDD) relative to mTBI individuals with no history of MDD (mTBI -MDD) would show hyperactivity of emotion processing structures such as the amygdala and disruption of white matter tracts connecting prefrontal and limbic brain regions important for adaptive emotional experience. To test these hypotheses, 11 mTBI +MDD and 11 mTBI -MDD individuals underwent DTI and performed a validated emotional face matching task during fMRI. Consistent with our hypotheses, mTBI +MDD relative to mTBI -MDD individuals showed greater fear-related activity in bilateral amygdalae and lower fractional anisotropy (FA) in the superior longitudinal fasciculus (SLF). Greater depressive symptom severity correlated negatively with FA in the SLF. These results represent the first evidence of the biological basis of MDD in OEF-OIF veterans who have experienced blast-related concussion, and may contribute to the development of treatments aimed at improving the clinical care of this unique population of wounded warriors.