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

**Wednesday, March 12**
- 9:00-4:30 Full Day Preconference Workshop
- 1:30-4:30 Half Day Preconference Workshops
- 5:00-6:00 Welcome and Announcements; Data Blitz; Awards
- 6:00-6:30 Special Presentation
- 6:30-8:00 Citation Poster Session (p. A14 – A25) and Reception (7:00 – 8:00 pm)

**Thursday, March 13**
- 7:00-8:00 Breakfast Roundtables
- 8:15-9:45 President Award’s Lecture and Herbert Weiner Early Career Award Lecture
- 10:00-11:30 Invited Plenary Symposium: Of Mice and Men: Translational Research Linking Animal Models with Human PNI
- 11:30-12:45 Lunch on your own/Roundtable Lunches
- 12:45-2:15 Invited Symposium: Bridging the Gap Between Cardiology and Psychology
- 2:30-4:00 Paper Session: From Cell to Syndrome (p. A1 – A3)
- 4:15-5:15 Paper Session: From Cell to Syndrome (p. A1 – A3)
- 6:00-6:30 Citation Poster Session (p. A25 – A49)

**Friday, March 14**
- 7:00-8:00 Breakfast Roundtables
- 8:00-9:45 President’s Address and Patricia R. Barchas Award Lecture

**Saturday, March 15**
- 8:00-9:00 Breakfast Roundtables
- 9:00-10:00 Business Meeting
- 10:00-10:45 Alvin P. Shapiro Award Lecture
- 11:00-12:30 Invited Symposium: Recent Advances in PTSD
- 12:30-1:45 Lunch on your own/Roundtable Lunches
- 1:45-3:15 Invited Symposium: New Research in Health Disparities
- 3:30-5:00 Symposium 1291: From Socioeconomic Status to Health (p. A8 – A12)
- 5:00-6:15 Poster Session 3 (p. A73 – A79)
- 7:00 Dinner and Entertainment
**SYMPOSIUM**

**Symposium 1207**

**Inflammation and Neuroimaging**

Mary-Frances O’Connor, PhD, Mary-Frances O’Connor, PhD, Cousins Center for PNI, UCLA, Los Angeles, CA, Neil Harrison, MD, Institute of Cognitive Neuroscience, University College London, London, London, UK, Anna Maaeisland, PhD, Psychology, Univ of Pittsburgh, Pittsburgh, PA.

Emerging research indicates that inflammation plays an important role in critical mental functions such as mood and memory, such that greater inflammation is associated with negative mood and poorer memory. Simultaneously, psychosomatic research has come to a greater understanding of the role of inflammation underlying many disease states. The proposed symposium explores the relationship between peripheral pro-inflammatory cytokines and brain function/structure that affect these mental functions. The first presentation will report on the relationship between pro-inflammatory activity measured in saliva and brain activity in the subgenual anterior cingulate cortex (sACC) in a population undergoing chronic stress (e.g., bereavement). The second presentation will demonstrate the relationship between inflammation in circulation and sACC through an experimental paradigm where participants received vaccine or placebo administration in a within-subject design, inflammation-induced mood changes predicted sACC activity. The third presentation will show a positive relationship between hippocampal volume and peripheral inflammation using structural neuroimaging in a healthy volunteer sample. Together the symposium presents an increasingly clear picture of the neural systems affected by peripheral inflammation. The research presented will shed light on the connection between different disciplines (e.g., immunology, neurosciences, and psychology) that is required in order to discover emergent findings in psychosomatic research.

**Individual Abstract Number: 1208**

**PRO-INFLAMMATORY CYTOKINES ASSOCIATED WITH SUBGENUAL ANTERIOR CINGULATE ACTIVITY DURING GRIEF ELICITATION**

Mary-Frances O’Connor, PhD, Cousins Center for PNI, UCLA, Los Angeles, CA

David K. Wellisch, Michael R. Irwin, aPsychiatry, UCLA, bCousins Center for PNI Inflammation has been documented as a response to chronic stressful life events, such as bereavement. Bereavement often comprises symptoms of social withdrawal, decreased appetite and poor concentration. These symptoms have been described as “sickness behaviors”, and peripheral inflammation is known to lead to these mood-related symptoms. However, a better understanding of how the peripheral pro-inflammatory cytokines act on the brain to induce this change in mood symptoms is needed. The present study examined the association between regional brain activity in those individuals suffering bereavement and their levels of peripheral inflammation. Twenty-one women who had experienced the death of a mother or sister (but were screened against major depression) participated. Saliva samples were collected before and after completing a grief-eliciting task in an imaging scanner, and interleukin-1 receptor agonist (IL-1ra) and tumor necrosis factor-receptor II (TNF-RII) were measured. Activity in the subgenual anterior cingulate cortex (sACC), an area associated with mood regulation, was positively correlated with IL-1ra (r=3.76, p<.001) and TNF-RII (r=3.08, p=.001). Converging evidence of the importance of the sACC region in sickness behavior should lead to longitudinal research examining reduction in regional activity in the period following stressful life events.

**Individual Abstract Number: 1210**

**SICKNESS AND INFLAMMATION CAUSE MOOD CHANGES THROUGH ALTERATIONS IN SUBGENUAL CINGULATE ACTIVITY AND MESOLIMBIC CONNECTIVITY**

Neil J. Harrison, MD, Institute of Cognitive Neuroscience, University College London, London, London, UK, Lena Brydona, Cicely Walkera, Marcus Gray, Raymond J. Dolan, Andrew Septo, and Hugo D. Critchley, Epidemiology and Public Health, University College London, Brighton and Sussex Medical School, Wellcome Trust Centre for Neuroimaging, University College London

Inflammation-induced mood changes can be understood as the pathophysiology of depression. In rodents, cytokines induce depression-like behavior, in humans, therapeutic IFN-alpha induces depression in up to 50%. The study objectives were to determine the neurobiological basis of inflammation-induced mood change and modulatory effects on circuits involved in mood homeostasis and affective processing. In a double blind, randomized crossover study, 16 healthy male volunteers received injection of Salmonella typhi vaccine or saline in 2 sessions. Mood questionnaires were completed at 0, 2 and 3 hours. 2 hours after injection, subjects performed an implicit emotional face perception task during fMRI. Analyses focused on neurobiological correlates of inflammation-induced mood change in regions responsive to emotional facial expressions and implicated in the etiology of depression. Typhoid, but not placebo produced a robust inflammatory response indexed by increased IL-6 (t(15)=2.84, p<0.01) and significant mood reduction at 3 hours (t(15)=1.86, p=0.04). Inflammation-induced mood change correlated with enhanced activity within subgenual anterior cingulate (sACC, Cg25, a region implicated in the etiology of depression) and modulated activity in amygdala, superior temporal sulci and fusiform cortex, regions engaged in processing emotional signals from faces (FWE p<0.05). Inflammation-induced mood change was also predicted by changes in functional connectivity between sACC and nucleus accumbens. Change in sACC activity and connectivity predict inflammation induced mood change and suggest a common pathophysiological basis for major depressive disorder and sickness-associated depression.

**Individual Abstract Number: 1211**

**INTERLEUKIN-6 COVARIATES INVERSELY WITH HIPPOCAMPAL GREY MATTER VOLUME IN MIDDLE-AGED ADULTS**

Anna L. Marsland, PhD, Psychology, Univ of Pittsburgh, Pittsburgh, PA

Converging animal findings suggest that systemic inflammation are associated with activation of central inflammatory mechanisms that result in hippocampal neurodegeneration and related impairment of memory function. Consistent with animal findings, we have recently shown an inverse association between peripheral levels of interleukin-6 (IL-6), a relatively stable marker of systemic inflammation, and memory function in mid-life adults. In the current study, we extend this work to examine the relationship between peripheral inflammation is associated with degenerative-like processes in the hippocampus. For this purpose, we used a computational structural neuroimaging method (voxel-based morphometry) to evaluate the relationship between plasma IL-6 levels and hippocampal grey matter volume in a sample of 76 relatively healthy community volunteers aged 30-54. Peripheral levels of IL-6 covaried inversely with bilateral hippocampal grey matter volume. This relationship was more robust in the left hemisphere, accounting for 19% of the variance in hippocampal grey matter volume and withstanding family wise error rate correction and adjustment for demographic and health factors, including age, sex, race, years of education, BMI, blood pressure, smoking, physical activity, hours of sleep, alcohol use, and total grey matter volume (b = - .34, p = .003). To our knowledge, this is the first report of a relationship between a peripheral marker of low grade systemic inflammation and hippocampal grey matter volume, raising the possibility that IL-6 represents a biomarker of changes in hippocampal morphology, particularly in the left hemisphere, that could plausibly presage subclinical cognitive decline.

**Symposium 1237**

**Pathways Linking Mindfulness and Health Outcomes**

J. David Creswell, PhD, J. David Creswell, PhD, Cousins Center for Psychoneuroimmunology, University of California, Los Angeles, Los Angeles, CA, Sara Lazar, PhD, Psychiatry, Massachusetts General Hospital, Charlestown, MA, Kirk W. Brown, PhD, Psychology, Virginia Commonwealth University, Richmond, VA, Margaret E. Kemeny, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA

There has been a great deal of recent interest in understanding the health benefits of mindfulness and mindfulness meditation. Many advances have been made in understanding health outcomes associated with mindfulness, but little work has considered underlying pathways linking mindfulness with these health outcomes. The present symposium focuses on presenting emerging research examining the neural, behavioral, and physiological effects of mindfulness and
mindfulness meditation training. The first presentation will describe associations between a dispositional measure of mindfulness and (1) neural decreases in a sample of healthy community adults. Together, these neural responses during a social exclusion stressor while undergoing fMRI. The second presentation considers autonomic (i.e., breathing rate) and neural mechanisms during meditation in advanced mindfulness meditation practitioners. The third presentation describes how a novel mindfulness meditation and emotion regulation training program influences affect regulation and physiological stress response pathways in a sample of healthy community adults. Together, these presentations offer promising new evidence for understanding how mindfulness may affect neural, behavioral, and physiological pathways in improving health in various patient populations.

Indoor Abstract Number: 1239
NEURAL AND BEHAVIORAL CORRELATES OF DISPOSITIONAL MINDFULNESS DURING STRESS

J. David Creswell, PhD, Cousins Center for Psychoneuroimmunology, Naomi I. Eisenberger, PhD, Shelley E. Taylor, PhD, Psychology, Teresa E. Seeman, PhD, Medicine-Geriatrics, University of California, Los Angeles, Los Angeles, CA

A growing body of evidence indicates that mindfulness and mindfulness-enhancing interventions are associated with positive health outcomes in a variety of patient populations. Together, these presentations offer promising new evidence for understanding how mindfulness may affect neural, behavioral, and physiological pathways in improving health in various patient populations.

Indoor Abstract Number: 1304
NEURAL CORRELATES OF RESPIRATORY CONTROL DURING MINDFULNESS MEDITATION: BEHAVIORAL INFLUENCES ON RESPIRATION

Sara W. Lazar, PhD, Psychiatry, Massachusetts General Hospital, Charlestown, MA

One of the most consistent autonomic effects of meditation observed in previous research is a reduction in breathing rate (BR) during meditation states. Studies of respiratory biofeedback, which ask participants to lower their BR without any other meditative instructions, have reported subjective effects similar to meditation in some cases. Neuroimaging studies of the neural correlates of spontaneous fluctuations in BR and autonomic control through biofeedback have demonstrated activation in brain regions similar to those engaged by mindfulness meditation. Such relationships between respiratory control and meditation raise the possibility that meditation is simply the subjective and neural response to voluntarily lowered BR, and that meditation may be completely analogous to respiratory biofeedback. However, scholars of mindfulness meditation suggest that respiratory control is only a part of a more global shift in mental and physical states underlying practice. In order to test whether the neural processes engaged during mindfulness meditation that result in respiratory decreases are similar to those engaged during biofeedback, thirteen long-term mindfulness meditation practitioners were scanned using functional magnetic resonance imaging (fMRI), while various respiratory parameters were recorded. Participants completed two conditions: breath awareness meditation and a paced breathing task in which they were cued to inhale and exhale in patterns matching one of their own meditation breathing patterns. For both conditions, BR was used to predict behavioral responses, allowing us to identify neural correlates of reduced BR during each condition. Although some regions were engaged by both tasks, several additional regions were uniquely identified during the meditative state, suggesting that mindfulness meditation comprises a more complex neural network than biofeedback, consistent with theoretical accounts of each state.

Indoor Abstract Number: 1574
IMPACT OF A MEDITATION/EMOTION REGULATION TRAINING PROGRAM ON PSYCHOBIOLOGICAL RESPONSES TO EMOTIONAL AND SOCIAL CHALLENGE

Margaret E. Kemeny, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, James Cavanagh, B.A., Psychology, University of Arizona, Tucson, AZ, Carol Foltz, PhD, Health Psychology, Paul Ekman, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Patricia Jennings, PhD, Child and Adolescent Development, San Francisco State University, San Francisco, CA, B A. Wallace, PhD, Santa Barbara Institute, Santa Barbara, CA

Evidence suggests that mindfulness-based training programs can enhance various mental and physical health indices. However, these training programs have not incorporated information and techniques derived from the scientific study of emotion that may facilitate affective improvement and enhance health benefits. Also, little is known about the physiological, behavioral, and psychological correlates of these health effects, as well as their longer term consequences. One important unanswered question is whether or not mindfulness training can impact psychological and physiological responses to real-life emotional and social challenges. This presentation will: 1) describe a newly developed 8 week (42 hour) training program that integrates various forms of meditation and mindfulness practice with information and techniques derived from emotion research; and 2) report on the findings of a pilot study and a two arm randomized, controlled trial of a healthy community sample (n=82) testing the efficacy of this training compared to a wait list control condition. Assessments were conducted at baseline, post-training and 5 months following completion of the training, and emphasized changes in emotional behavior and physiological responding to emotionally provocative challenges. Findings demonstrated strong and prolonged effects on self-report trait measures of affective and related cognitive processes. Behavioral and implicit measures suggest increases in emotional awareness as well as alterations in physiological responses to experimental social threat (the Trier Social Stress Task) in the training group relative to the control group, including changes in sympathetic and parasympathetic reactivity and cortisol responses. Implications of these findings for models of affect regulation and health will be discussed.
neurotransmission is a moderator of risk for both depression and CAD. The next study presents confirmatory data for a model of vascular depression in cardiac patients. Previously, a single nucleotide polymorphism within the von Willebrand Factor (VWF) gene was identified as a predictor of depressive symptoms among cardiac patients. In this study, the same SNP is associated with subcortical lacunar infarction volume in an independent sample of cardiac patients, suggesting that VWF may also predict subcortical vascular disease. The third study discusses how genes moderate the relationship between depression and C reactive protein. The association between depression and the inflammatory biomarker CRP is as yet unresolved and it is unclear why some studies report an association between these two predictors of future CVD while others do not. Results from this study indicate that variation in the CRP gene acts as a modifier of this association. The final study uses a twin design to show the added value of using active and passive stress tasks uncovering genetic variance that otherwise remains unobserved in analysis of resting values alone. Results indicate that exposure to stress uncovers new genetic variance in cardiac vagal control and amplifies the effect of genes that already influence the resting level.

Individual Abstract Number: 1265
CHOLINERGIC MECHANISMS POTENTIALLY UNDERLY HUMAN GENETIC VULNERABILITY FOR DEPRESSION AND CORONARY ARTERY DISEASE

Serina A. Neumann, PhD, Psychiatry and Behavioral Sciences, Eastern Virginia Medical School, Norfolk, VA, Indrani Halder, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Robert E. Ferrell, PhD, Human Genetics, Stephen B. Manuck, PhD, Psychology, Univ of Pittsburgh, Pittsburgh, PA

Single Major Depression (MD), autonomic-cholinergic function (fxn) [high frequency heart rate variability (HF-HRV); and coronary artery disease (CAD) are substantially heritable, MD and CAD appear to share some genetic vulnerability, and acetylcholine (ACh) neurotransmission has been implicated in MD, then genetic variation affecting ACh may, in part, modulate risk for these factors. Our recent work shows that variation in the choline transporter gene is related to depression symptom levels, and HF-HRV. Here, we conducted investigation to other genes regulating ACh. In a sample of 1079 participants (51% women; age 30-54 yrs), depressive sx's [Beck Depression Inventory (BDI), Center for Epidemiologic Studies of Depression Scale (CES-D)], and trait negative affect (NA) using 5 commonly used scales were measured. Each participant was classified as MD or stable MD or pseudo present (current or past). HR was recorded continuously for 5 min. Spectral analyses were performed on HR intervals to estimate cholinergic fxn ([HF-HRV]: respiration rate (Hz) +/- 0.015]). Genotyping for 30 single nucleotide polymorphisms (SNPs) in ACh-related genes (CHT1, ChAT, VACHt, ACHE, CHRM2, CHRN4 and CHRNA5) was done. Discriminant function (DF) analysis with the NA and depressive sx scores on MD hx revealed one DF classified participants to their respective MD groups [p<.0001]. The NA DF scores were used to reflect dimensional liability to MD. Regressions yielded significant inverse associations with MD-related phenotypes and HF-HRV (p's <.007). Relations were also found between a ChAT SNP and NA DF (p<.07) and 2 CHT1 SNPs and depressive sx's (p's<.05). Significant associations with 12 SNPs on 5 genes and HF-HRV (p's<.05) were noted as well. Relations of these ACh-related variants to depressive sx's, dimensional liability for MD, and cholinergic fxn implicate choline transport, choline acetyltransferase, and the cholinergic muscarinic M2 and beta 4 receptors as potential neurobiologic mechanisms influencing genetic vulnerability for MD and CAD.

Individual Abstract Number: 1393
VARIATION WITHIN VWF GENE PREDICTS SUBCORTICAL DISEASE AMONG CARDIAC PATIENTS

Jeanne M. McCaffrey, Ph.D., Psychiatry, The Miriam Hospital, Brown Medical School, Providence, RI, John McGeary, Ph.D., Psychiatry, Providence VA Medical Center, Brown Medical School, Providence, RI, David F. Tate, Ph.D., Psychiatry, Brigham & Women's Hospital, Harvard Medical School, Boston, MA, Beth Jerskey, Ph.D., Psychiatry, Brown Medical School, Providence, RI, Ron Cohen, Ph.D., Psychiatry, The Miriam Hospital and Brown Medical School, Providence, RI, Indrani Halder, PhD, Psychiatry, Vrije Universiteit, Amsterdam, Netherlands, Luis Moya-Albiol, PhD, Department of Psychobiology, Universidad de València, Valencia, Spain, Rosa Hoekstra, PhD, Tineke Polderman, PhD, Dorret Boomsma, PhD, Meike Bartels, PhD, Department of Biological Psychology, Vrije Universiteit, Amsterdam, NH, Netherlands

Vascular depression or depression with vascular symptoms may be associated with cardiovascular disease (CAD) or depressive symptoms associated with subcortical vascular disease. In this study, we examined the association between genetic markers within VWF and subcortical vascular disease among 27 cardiac patients who underwent magnetic resonance imaging. The two SNPs selected were located in different regions of this large gene and were not significantly co-inherited in the sample (p = 0.36). For SNP1, 18 participants with no risk alleles and 7 with at least one risk allele were successfully genotyped. After controlling for age, participants with one or more risk alleles had greater subcortical lacunar infarction volume (p = 0.01) and subcortical lacunar infarction volume ratio (p = 0.03). Similarly for SNP2 (N = 11 for low risk allele, N=16 for at least one high risk allele), associations were seen for subcortical lacunar infarction volume (p = 0.001) and subcortical lacunar infarction volume ratio (p = 0.01) after controlling for age. These results suggest a role of VWF in subcortical vascular disease and support a model in which VWF contributes to vascular depression through effects on subcortical disease among cardiac patients.

Individual Abstract Number: 1368
VARIATION IN THE CRP GENE MODIFIES THE ASSOCIATION BETWEEN DEPRESSION AND CIRCULATING CRP

Indrani Halder, PhD, Psychiatry, Robert E. Ferrell, PhD, Human Genetics, Anna Marsland, PhD, Psychology, Matthew F. Muldoon, MD, Medicine, Stephen B. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Depressive symptomatology has been found associated with elevated levels of C-reactive protein (CRP), but findings remain mixed. Because polymorphic variation in the CRP gene also affects circulating CRP levels, we examined whether an association of depressive symptomatology with CRP might vary as a function of CRP-related genotypes. Subjects were 889 European American community volunteers (50% female, 30 - 54 years). Depressive symptoms were assessed with the Center for Epidemiologic Studies - Depression (CES-D) scale, and circulating CRP concentrations were determined from blood samples following an overnight fast. Subjects were genotyped for 3 polymorphisms in the CRP gene [rs1417938 (A/T) in Intron 1, rs1800947 (C/G) in Exon 2, and rs1205 (G/A) in the 3' UTR] and four CRP haplotypes were estimated using PHASE software. Main effects of haplotype and CESD scores on plasma CRP concentration and haplotype by CESD interactions were evaluated by hierarchical linear regression. After covariate adjustment for age, sex, BMI, and use of statin medications, presence of two of four CRP haplotypes were found to be associated with circulating CRP (G-C-A: B =0.089, p=0.003; A-C-T: B=-0.068, p=0.023), but no main effect of CESD scores on CRP was observed. However, depressive symptomatology did interact significantly with the A-C-T haplotype in predicting CRP levels (B = 0.573, p <0.0001). Specifically, higher CRP scores were associated with higher CRP levels among carriers of the A-C-T haplotype (B=0.092, p=0.029), but were unrelated to CRP levels among subjects lacking this haplotype (B=-0.02, p=0.506). These findings suggest that depressive symptomatology covaries with circulating CRP only in the context of certain CRP-related genetic variation and, hence, relationship of depression with this inflammatory marker may be obscured in studies of phenotypic associations alone.

Individual Abstract Number: 1370
PASSIVE AND ACTIVE COPING BOTH INCREASE GENETIC VARIANCE OF CARDIAC VAGAL CONTROL

Eco de Geus, PhD, Biological Psychology, Vrije Universiteit, Amsterdam, NH, The Netherlands, Luis Moya-Albiol, PhD, Departamento de Psicobiologia, Universitat de València, Valencia, Spain, Rosa Hoekstra, PhD, Tineke Polderman, PhD, Dorret Boomsma, PhD, Meike Bartels, PhD, Department of Biological Psychology, Vrije Universiteit, Amsterdam, NH, Netherlands

We previously showed that genetic variance in cardiovascular regulation increases during tasks that require active coping (de Geus et al., Psychosomatic Medicine, 2007;69(4):356-64). Here we aimed to replicate the previous findings in an independent sample of adolescent twins and their singleton siblings. Furthermore, we extended the previous paradigm, that was limited to mental tasks, by adding a more...
engaging active coping condition, a physical examination, and a passive coping condition consisting of a blood draw (4 tubes). Reactivity to these stressors was defined relative to the average level of 4 periods of quiet sitting at rest. To test the genetic contribution to vagal reactivity to active and passive stress, heart rate (HR) and respiratory sinus arrhythmia (RSA) were measured in 178 monozygotic (MZ), 175 dizygotic (DZ) twins and 82 of their singleton siblings (mean age: 18.2 ± 2.2). Active coping increased HR (+9.2 bpm) with parallel decreases in RSA (-20.8 msec) suggesting decreased cardiac vagal control. Passive coping decreased HR (-6.8 bpm) with parallel increases in RSA (+11.3 msec) suggesting increased cardiac vagal control. HR and RSA reactivity showed significant heritability to active (HR h²: 38%); RSA h²: 13%) as well as passive (HR h²: 25%; RSA h²: 34%) coping. Correction for individual differences in respiration rate did not change these outcomes. Both stressors uncovered genetic variation in cardiac vagal control that was not apparent from resting levels alone, i.e. they provide evidence of gene-by-stress interaction. To detect genes for vagal control that emerge only when exposed to environmental risk factors like stress, designs are needed that fully appreciate this interaction.

Symposium 1588

Up or down? Disentangling Acute and Chronic Stress Effects on Immunity and Potential Health Implications

Suzi Hong, Ph.D., Suzi Hong, Ph.D., Psychiatry, University of California San Diego, La Jolla, California. Anna L. Marsland, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA. Adam W. Carrico, Ph.D., Psychology, University of California - San Francisco, San Francisco, CA. Christopher L. Coe, PhD, Psychology, University of Wisconsin, Madison, WI

The links between mind and body, especially the effects of "stress" on physiological processes and health have been extensively investigated in psychosomatic medicine. Yet, the distinction between acute vs. chronic alterations remains unclear, and most models do not attempt to integrate the two sets of observations. Indeed, little progress has been made since Selye first proposed the 3-stage model of the stress response, and suggested there might be different reactions to tolerable and intolerable threats (i.e., sympatho vs. catatonic). These concepts are important to resolve, especially since the short-term reactions are often adaptive and beneficial, whereas the chronic changes become maladaptive. Through the review of acute vs. chronic stress-induced changes in immune responses in healthy individuals and patients, this symposium will advance the dialogue about the temporal aspects of the adaptation to challenge and adversity. First, the immune correlates of chronic pain will be discussed, in fibromyalgia and neuropathic pain patients, the former representing tolerable and the latter exemplifying real tissue trauma. Next, we will review how chronic stress affect immune responses in HIV-infected persons, an infection that transitions from latent to invasive, and consider the efficacy of psychological interventions for modulating stress and disease activity. To highlight the unique aspects of the acute alterations, third speaker will present recent findings showing that short-term challenges can actually augment immune responses to an antigenic challenge. Lastly, the results of studies on hormone and immune changes associated with the demands of acute exercise vs. those seen after more sustained physical training will be reviewed. The overarching goal of this symposium is to bridge the gap between the short- and long-term changes in immunity, which can be hypoactive-enhancing or suppressing depending upon the duration and intensity of the challenge/stress.

Individual Abstract Number: 1609

IMMUNE PRESENTATION OF CHRONIC PAIN

Christopher L. Coe, PhD, Psychology, Miroslav Backonja, MD, Neurology, Daniel Muller, MD, Medicine, University of Wisconsin, Madison, WI

Background. The immune alterations seen in chronic pain patients provide one means to gauge the toll on the body as well as reveal new pathways contributing to the induction and perpetuation of symptoms. For fibromyalgia (FM) the unrelenting pain is more immunosuppressive and the immune imbalance associated with depression and fatigue, whereas for neuropathic pain (NP) patients, an activation of inflammatory processes appears to be linked to pain sensitization. Methods. Immune profiles were determined in patients with either FM (N=64) or painful neuropathies (N=15), and healthy controls (N=48). The measures included proinflammatory cytokines in circulation, immunophenotyping of lymphocyte and monocyte (Mo) subsets, and in vitro cytolytic responses against target cells. Cerebrospinal fluid (CSF) cytokine levels were also compared between NP patients and controls (N=6). Results. Immune responses of women with long-standing FM were indicative of a dampened state of activity. Cytokine responses from stimulated cell cultures were below healthy controls (p<.05). No signs of inflammation were seen either in their circulating cytokines or by cellular activation markers. In contrast, NP patients evinced several signs of immune activation, including elevated shedding of soluble receptors for Tumor Necrosis Factor in blood and CSF (p<.05), and significantly more Mo expressing activation and adhesion markers (p<.05). Both the NP patients, as well as FM patients, had significantly reduced levels of Interleukin-10, an anti-inflammatory cytokine, as compared to controls, but probably for different reasons. Conclusion. A dysregulation of immunity is associated with chronic pain, but for FM it appears to be suppressed and reminiscent of an adaptation to a sustained stress state, whereas there is evidence in NP for an activation of inflammatory processes, which could aggravate the sensory transmission of pain signals.

Individual Abstract Number: 1607

IMPROVEMENTS IN PSYCHOLOGICAL ADJUSTMENT ARE A KEY MEDIATOR OF THE EFFECTS OF STRESS MANAGEMENT INTERVENTIONS ON IMMUNE STATUS IN HIV-POSITIVE PERSONS

Adam W. Carrico, Ph.D., Psychiatry, University of California - San Francisco, San Francisco, CA. Michael H. Antoni, Ph.D., Psychology and Psychiatry, University of Miami, Coral Gables, FL. HIV infection presents with challenges that may overwhelm their coping resources and impair psychological adjustment to the ongoing demands of managing this chronic illness. Interventions designed to improve psychological adjustment may modulate stress physiology and slow HIV progression, but findings from randomized controlled trials (RCTs) are mixed. We summarize findings from two well-controlled RCTs of cognitive behavioral stress management (CBSM) and CBSM with medication adherence training (CBSM+MAT) on HIV-positive gay men. Results highlight that reductions in depressed mood during the intervention mediate the sustained effects of these treatments on measures of cellular and anti-viral immunity. Decreases in depressed mood during CBSM parallel concurrent reductions in herpes simplex virus type-II antibody titers and mediate increases in transitional naive T-cells through a 6-12 month follow-up. In addition, a recent trial of CBSM+MAT (versus CBSM+MAT only) observed clinically important reductions in HIV viral load (.56 log10) through a 15-month follow-up in a secondary analysis of men with detectable levels at baseline. Decreases in depressed mood during the 10-week intervention period mediated the sustained effects of CBSM+MAT on HIV viral load after controlling for self-reported adherence to anti-retroviral therapy. Taken together, results of these RCTs highlight that improvements in psychological adjustment are a key determinant of intervention effects on immune status. Drawing upon these findings, we will provide recommendations to inform future RCTs of psychological interventions for individuals managing a chronic medical illness. Further efficacy trials are needed to isolate the active element(s) of these treatments to inform the development of interventions with potentially superior efficacy. Effectiveness trials of promising treatments with more representative samples are also needed to provide information on clinical utility and potential cost-effectiveness.

Individual Abstract Number: 1600

AUTONOMIC RESPONSES TO ACUTE LABORATORY STRESS COVARY WITH INFLAMMATORY COMPETENCE

Anna L. Marsland, Ph.D., Arie A. Prather, MS, Kevin McDade, MS, Jackie Fury, BS, Diana Ross, BSN, Psychology, University of Pittsburgh, Pittsburgh, PA

Considerable evidence shows that activation of the autonomic nervous system in response to acute psychological stress down-regulates aspects of cellular immune function in human beings. Recent evidence suggests that exposure to acute stress also up-regulates inflammatory competence; however, the mechanism of this effect remains unclear. In this cross-sectional study, we examine the possibility that stress-induced changes in the balance of sympathetic to parasympathetic activation...
regulate the production of proinflammatory cytokines by activated monocytes/macrophages. For this purpose, 47 healthy mid-life volunteers (mean age = 50; 50% male) performed an acute stress protocol, consisting of a 30-min baseline period, a 5-min evaluative speech task, and a 30-min recovery period. Blood was drawn at the end of each period for the assessment of lipopolysaccharide-induced production of the proinflammatory cytokines interleukin (IL)-1β, IL-6, and TNF-α. Heart rate variability was recorded throughout the protocol as an indirect measure of autonomic control over variations in heart rate. After controlling for baseline levels of cytokine production, repeated measures ANOVAs revealed main effects of period on analysis of IL-1β, IL-6, and TNF-α, with increases in stimulated production of all 3 cytokines occurring 30 minutes after the task when compared with both baseline and task levels. Higher derived estimates of sympathovagal balance in response to the task were associated with greater baseline-to-recovery increases in production of TNF-α and IL-1β (r’s = .40 & .45; p’s = .01 & .005, respectively). These data provide initial human evidence that autonomic responses to acute stress may increase inflammatory competence. Although this response may be an adaptive short-term response to the threat of infection, it may be maladaptive under conditions of chronic or recurrent naturalistic stress, leading to increased susceptibility to inflammation.

Individual Abstract Number: 1599
ACUTAL IMMUNE ACTIVATION VS. ADAPTATIONS TO ACUTE EXERCISE CHALLENGE AND CHRONIC EXERCISE TRAINING
Suzi Hong, Ph.D., Paul J. Mills, PhD, Psychiatry, University of California San Diego, La Jolla, California

Physical stress or an acute bout of exercise increases sympathetic tone and immune activation. Exercise training is associated with changes in various immune parameters. In contrast to immunosuppressive effects of chronic exposure to psychological stressors, chronic exercise leads to adaptations in the neuroendocrine and immune systems. We investigated these acute vs. chronic exercise effects on immune cell trafficking. First, we examined T cell demargination responded to a 15-min speech or bicycle exercise stressor in 48 healthy men and women (35 ± 13 years). Blood was drawn at baseline, 5-min post-stress, and 15 min after exercise. Both stressors led to significant increases in naïve and memory CD4+ and CD8+ lymphocytes (p’s< 0.05), which returned to the baseline values after 15 minutes. However, individuals who reported high regular physical activity levels exhibited attenuated CD8+ T cell demargination responses to the speech stressor (p< 0.05), accompanied by smaller epithepine and norepinepherine responses (p’s< 0.05). In a follow-up investigation, we examined T cell demargination and CD62L expression and immune cell adhesion to human umbilical vein endothelial cells (HUVECs) in vitro in response to 20-min moderate treadmill exercise. The exercise challenge led to significant increases in both CD4+ and CD8+ lymphocyte demargination (p’s< 0.05), however individuals with high cardiovascular fitness (assessed by VO2peak test) showed attenuated CD8+ cell demargination and CD62L expression (p’s< 0.05). Also, high fit individuals showed a smaller percentage of isolated peripheral blood mononuclear cells adhered to the HUVECs after exercise. These findings show that acute exercise leads to transient yet significant cellular immune activation while chronic exercise training is associated with blunted responses potentially through the attenuated catecholamine responses. Clear distinction between acute vs. chronic changes of cellular immunity in the context of stress through this exercise paradigm will lead to a better understanding of the body's responses and adaptations to stressful stimuli in the healthy and ill.

Symposium 1496
Brains under Pressure: The Relation of Blood Pressure to Brain and Cognitive Function
Shari R. Waldstein, Ph.D., Psychology, University of Maryland, Baltimore County, Baltimore, MD, Michael A. Robbins, PhD, Merrill F. Elias, Ph.D., Psychology, University of Maine, Orono, ME, J. Richard Jennings, PhD, Psychiatry and Psychology, University of Pittsburgh, Pittsburgh, PA, Marcus Gray, PhD, Medicine, University of Sussex, Brighton, East Sussex, UK
High blood pressure, arterial stiffening, and hypertension are risk factors for stroke and dementia. Prior to these clinical manifestations, blood pressure-related changes in the brain have been noted by neurocognitive assessment and neuroimaging. Further understanding of the relations of blood pressure to cognitive function, and brain structure and function, is critical to postulating the potential of lowering blood pressure as a treatment target of cognitive decline, dementia, and stroke. In this symposium, we seek to examine relations of blood pressure, arterial stiffening, hypertension, and its treatment to cognitive performance, brain morphology assessed by magnetic resonance imaging (MRI), and brain function measured by positron emission tomography (PET) or functional MRI (fMRI). All presentations offer new and unpublished data. The first presentation will focus on the relations of pulse wave velocity - a measure of arterial stiffness - to cognitive function. The second presentation will examine the association of blood pressure and pulse pressure - an indirect index of arterial stiffness - to silent cerebrovascular disease on MRI. The third presentation will describe relations of hypertension and antihypertensive therapy to PET-assessed cerebral perfusion. The fourth presentation will examine neural correlates of blood pressure control using an fMRI paradigm. The discussant will integrate the findings and consider future directions for research.

Individual Abstract Number: 1504
PULSE WAVE VELOCITY AND COGNITION: THE MAINE-SYRACUSE LONGITUDINAL STUDY
Michael A. Robbins, PhD, Psychology, University of Maine; Orono, ME, Marc M. Budge, MD, Geriatric Medicine, Australian National University Medical School, Red Hill, ACT, Australia, Merrill F. Elias, PhD, Psychology, University of Maine, Orono, ME, Gregory A. Dore, MD, Penelope K. Elias, PhD, Psychology, University of Maine, Orono, Maine
Aortic pulse wave velocity (PWV) indexes central arterial stiffness. It is the principal cause of hypertension due to increasing systolic pressure with aging and is an important independent risk factor for cardiovascular morbidity. Pathophysiologically microcirculatory changes in small cerebral arterioles and capillaries associated with arterial stiffness may be a major basis of relations between hypertension and cognitive functioning. However, few studies have examined associations of aortic PWV and performance across a range of cognitive domains. We examined cross-sectional associations of aortic PWV and cognitive performance via multivariate regression models. We hypothesized that higher aortic PWV would be related to poorer performance in multiple cognitive domains with adjustment for demographic variables (age, education, gender), mean arterial blood pressure and anti-hypertensive medication treatment, heart rate, and other cardiovascular disease risk factors. Participants were 274 stroke- and dementia-free community dwelling adults (age 24 to 96 years; 64 percent women), for whom aortic PWV was measured at wave 7 of the Maine-Syracuse Study (2005 to 2007). Cognitive performance was assessed by an extensive neuropsychological test battery. Arterial PWV was inversely related to multiple cognitive domains with adjustment for demographic variables (p value range from .05 to .001). Associations were attenuated but persisted with adjustment for mean arterial blood pressure, heart rate, and other covariates (p value range from .05 to .01). Robust associations across covariate models were observed for tests of abstract reasoning, visual-spatial memory and organization, and scanning and tracking. These results indicate the need for studies designed to determine whether reducing central arterial stiffness will contribute to preservation of optimal cognitive functioning with advancing age.

Individual Abstract Number: 1502
BLOOD PRESSURE AND SILENT CEREBROVASCULAR DISEASE IN OLDER ADULTS
Shari R. Waldstein, Ph.D., Psychology, University of Maryland, Baltimore County, Baltimore, MD, David M. Lefkowitz, M.D., Radiology, University of Maryland School of Medicine, Baltimore, MD, Eliot L. Siegel, M.D., Radiology, Baltimore VA Medical Center, Baltimore, MD, William F. Rosenberger, Ph.D., Statistics, George Mason University, Fairfax, VA, Abraham M. Obuchowski, M.D., Radiology, University of Maryland School of Medicine, Baltimore, MD, Robert J. Spencer, M.S., Psychology, University of Maryland, Baltimore County, Baltimore, MD, Zorayr Manukyan, Ph.D., Statistics, George Mason University, Fairfax, VA, Evie R. Gerber, M.A., Psychology, University of Maryland, Baltimore County, Baltimore, MD, Leslie I. Katz, M.D., Ph.D., Medicine, University of Maryland School of Medicine, Baltimore, MD
High blood pressure is a major risk factor for stroke. Here we examined relations of blood pressure to magnetic resonance imaging (MRI)
ratings of silent cerebrovascular disease in 113 stroke and dementia free older adults [mean age = 66.3, 63% male]. Systolic and diastolic blood pressure and pulse pressure (PP) were assessed on 2-3 occasions and pulse pressure was computed. Brain MRIs, conducted on a 1.5 Tesla Philips scanner, were rated by neuroradiologists for periventricular and deep white matter hyperintensities (PWMH, DWMH), ventricular enlargement (VE), sulcal widening (SW), and silent brain infarctions (SBI). Principal components analysis of MRI ratings yielded a two component solution - (1) PWMH, DWMH, SBI; and (2) VE, SW. Multiple regression analyses, adjusted for age, sex, fasting glucose, and antihypertensives, revealed significant interactions of SBP, DBP, and PP (modeled separately) with age (p's < .05). Higher SBP and PP were associated with greater white matter disease and brain infarction particularly at younger ages (<63 years), and higher SBP and DBP were related to greater brain atrophy at younger ages. Thus, higher blood pressure and PP are associated with silent cerebrovascular disease most prominently in the "young old." Treatment of hypertension and arterial stiffening may be critical to the preservation of brain structure in older age.

Individual Abstract Number: 1524
TAKING THE PRESSURE OFF: WHAT A CROSS-SECTIONAL AND A LONGITUDINAL STUDY TELL US ABOUT HOW HYPERTENSION ALTERS THE BRAIN
J. Richard Jennings, PhD, Psychiatry and Psychology, University of Pittsburgh, Pittsburgh, PA
The brain is a direct target for hypertension, rather than a modest symptom of the disease. Substantial cross-sectional and longitudinal work shows that high blood pressure exerts small, but consistently detectable decrements in cognitive function, most particularly working memory and certain executive processes. The magnitude of these changes permits a reasonable labeling of these as 'side-effects' of the disease. Our work suggests, however, that hypertension is associated with a substantial reorganization of the cerebrovascular support for cognitive processing. We have assessed the regional cerebral blood flow (rCBF) response during working memory performance--comparing hypertensives with controls and comparing hypertensives before and after intervention with effective pharmacotherapies. Quantitative measurement of rCBF flow was derived from changes in positron emission tomography (PET) measures using the radiotracer 15O. Hypertensives, relative to normotensives, mounted a less robust increase to increasing working memory load in thalamic, posterior parietal, and prefrontal rCBF. Of equal significance, however, hypertensives showed a greater extent of activation and a higher correlation among activated areas than normotensives, in our initial study (preclinical to parallel rCBF, normotensives, n=59, r=.78 hypertensives n=38). Seemingly, the cerebrovascular support for processing was reorganized in association with the disease. Treating hypertensives for one year was expected to reverse this reorganization, but the correlation among activated areas significantly increased (r=.62 to r=.94 for 28 hypertensives). Nonetheless, cognitive performance was maintained or improved with treatment. Hypertension and its treatment may result in a cerebrovascularatere that responds more globally during cognitive processing, losing the specificity associated with different forms of cognitive processing. The adaptation may preserve cognitive function, but may have a cost that has not yet been determined.

Individual Abstract Number: 1694
NEURAL INTEGRATION OF BAROREFLEX AND COGNITIVE/SENSORY PROCESSING SHAPES CENTRAL REGULATION OF BEAT-TO-BEAT BLOOD PRESSURE
Marcus Gray, PhD, Medicine, University of Sussex, Brighton, East Sussex, UK, Karin Rylander, PhD, Institute of Clinical Neurosciences, Mikael Elam, PhD, Institute for Clinical Neuroscience, Sahlgren University Hospital, Sahlgrenska, Gothenburg, Sweden, Neil Harrison, MRCP MRCPSych, Institute of Cognitive Neuroscience, University College London, London, London, UK, Gunnar Wallin, MD, Institute for Clinical Neuroscience, Sahlgren University Hospital, Sahlgrenska, Gothenburg, Sweden, Hugo Critchley, DPhil MRCPSych, CISC, Brighton Sussex Medical School, University of Sussex, Brighton, East Sussex, UK
The presentation of a strong, unexpected sensory stimulus (shock / loud noise) 200-400ms after the ECG R-wave transiently attenuates muscle sympathetic nerve activity (MSNA) and blood phobia (Wallin 2006). Potential overlap in SNPs that are significantly associated with clinical depression and one or more of these endpoints will be highlighted by the discussant (McCaffery) since this supports the idea that shared genetic vulnerabilities could be (partly) responsible for the link between depression and cardiovascular disease. In October 2007 large scale genome-wide data were released through the GAIN program from the NIH. In this symposium we will present results of genome-wide analyses (GWA) based on data from the Netherlands Study of Depression and Anxiety (NEDSA) and the Netherlands Twin Register (NTR) in which a total of 3760 persons (half with and half without depression) were genotyped using the 600K Affymetrix chip assessing 430,000 validated SNPs per person. Phenotypes on which data was collected in these subjects included clinical depression, indices of HPA-axis function, blood pressure regulation, sympathovagal balance, and glycemic control. In the symposium GWA results will be presented for depression (Sullivan), respiratory sinus arrhythmia (de Geus), cortical blood pressure (Snieder), and glucose (Willemsen). Potential overlap in SNPs that are significantly associated with clinical depression and one or more of these endpoints will be highlighted by the discussant (McCaffery) since this supports the idea that shared genetic vulnerabilities underlie both depression and cardiovascular risks.
depression. Current candidate gene based association studies have uncovered only a few genes underlying this heritability. To identify the full set of genes that confer risk and protection for depression, large-scale studies are needed that can detect even very small genetic effect sizes. In the past five years, there have been exceptional advances in our knowledge of the human genome along with a precipitous drop in the cost of genotyping (from ~US$0.50 to a fraction of a cent per genotype). These informatic and technical advances directly led to the advent of genome wide association studies (GWAS) whereby large case-control samples are individually genotyped for 450,000 or more single nucleotide polymorphisms (SNPs). In 10/2006, a consortium of investigators at the Vrije Universiteit in Amsterdam and UNC-Chapel Hill was selected for GWA genotyping as one of the six Genetic Association Information Network (GAIN) studies (http://www.fnih.org/GAIN). GWA genotyping of 1,860 cases with MDD and 1,860 population-based controls as part of the GAIN initiative has been conducted by Perlegen Sciences. In this symposium, we will highlight the various steps (phenotypic selection, genotyping cleaning, SNP selection, and association tests) in this Stage 1 genome wide association study. The main genetic findings from this large-scale genome-wide analysis on major depression will be summarised.

Individual Abstract Number: 1345
THE GENETIC BASIS OF AUTONOMIC NERVOUS SYSTEM DYSFUNCTION: A GENOME WIDE ANALYSIS
Eco J. de Geus, PhD, Biological Psychology, VU University, Amsterdam, NH, Netherlands,Licht C, van Dyck R, Heutink P, Sullivan P, Willemsen G, Boomsma D, Penninx B. VU University, Amsterdam, The Netherlands and UNC Chapel Hill NC

Autonomic nervous system dysfunction have been implicated in depression and anxiety. It is partly hypothesized to partly explain the adverse cardiovascular health outcomes among depressed persons. We conducted a genome-wide analysis on RMSSD and respiratory sinus arrhythmia (RSA), often used indices of vagal cardiac control, that are known to be lower in subjects at risk for cardiac disease. Resting RMSSD and RSA were measured in 1680 MDD patients and 200 healthy controls participating in the Dutch NESDA and NTR studies for whom genome-wide data (430,000 validated SNPs/person) were available. The genotype data were released in October 2007 and the main results from the stratified stage 1 genome-wide analysis will be presented at the APS meeting. It will be explicitly discussed whether the genetic basis of heart rate variability could implicate a shared underlying genetic vulnerability that links depression to cardiovascular disease risk.

Individual Abstract Number: 1346
THE GENETIC BASIS OF HPA-AXIS DYSFUNCTION: A GENOME WIDE ANALYSIS
Berend Verhoeff, MD, Psychiatry, VU University Medical Center, Amsterdam, NH, Netherlands, Hoogendijk W, Heutink P, Sullivan P, Zitman F, van Pelt H, de Rijk R, van Dyck R, Penninx B. NESDA research consortium, VU University Amsterdam and Leiden University Medical Center, Leiden, the Netherlands

Hyperactivity of the HPA-axis has been implicated in depression and has been hypothesized to partly explain the adverse cardiovascular health outcomes among depressed persons. In the GAIN-MDD study sponsored through the US fNIH, we were able to conduct a genome-wide analysis to further examine the genetic basis of HPA-axis dysfunction. HPA-axis function was determined using the various cortisol samples over the day, including four control samples to determine the morning-awakening rise and a dexamethasone suppression test (DST). We conducted a genome-wide analysis on measures derived from the Cortisol Awakening Response (CAR) and DST response. Cortisol AUC and DST response were measured in 1500 MDD patients and 130 healthy controls participating in the Dutch NESDA study for whom genome-wide data (430,000 validated SNPs/person) were available. The genotype data were released in October 2007 and the main results from the stage 1 genome-wide analysis will be presented at the APS meeting. It will be explicitly discussed whether the genetic basis of HPA-axis functioning could implicate a shared underlying genetic vulnerability that links depression to cardiovascular disease risk.

Individual Abstract Number: 1349
THE GENETIC BASIS OF INSULIN AND GLUCOSE: A GENOME WIDE ANALYSIS
Gonneke Willemse, PhD, Biological Psychology, VU University, Amsterdam, NH, Netherlands, de Geus E, Heutink P, Sullivan P, Smit J, Boomsma D, Penninx B. VU University, Amsterdam and UNC Chapel Hill NC

Depression has been associated with insulin resistance and diabetes, which could partly help explain the adverse cardiovascular health outcomes among depressed persons. In the GAIN-MDD study sponsored through the US fNIH, we were able to conduct a genome-wide analysis to further examine the genetic basis of high insulin and glucose levels. We conducted a genome-wide analysis on insulin and glucose serum levels. Insulin and glucose levels were measured in blood drawn after an overnight fast and were available for 1821 MDD patients and 1822 healthy controls participating in the Dutch NESDA and NTR studies for whom genome-wide data (430,000 validated SNPs/person) were available. The genotype data were released in October 2007 and the main results from the stage 1 genome-wide analysis will be presented at the APS meeting. It will be explicitly discussed whether the genetic basis of glycemic control could implicate a shared underlying genetic vulnerability that links depression to cardiovascular disease risk.

Individual Abstract Number: 1350
A GENOME WIDE ANALYSIS SCAN OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURE
Vasiliki Lagou, PhD, Epidemiology, University Medical Center Groningen, Groningen, GR, Netherlands, Hartman CA, Penninx BW, de Geus EJ, Snieder H. University Medical Center Groningen, Groningen and VU University, Amsterdam, Netherlands

Hypertension refers to a clinically significant increase in blood pressure and constitutes an important risk factor for cardiovascular disease. However, identification of risk alleles for hypertension or blood pressure has been notoriously difficult even though the influence of genetic factors has been well-described with heritabilities for systolic (SBP) and diastolic blood pressure (DBP) ranging from 40–60%. As part of the GAIN initiation of the Genes, Environment and Multifactorial Atherosclerosis (GEM) initiative, a genome-wide scan quality control check s were included in analyses for main genetic effects. Blood pressure was measured with an OMRON device. SBP and DBP values for subjects on antihypertensive medication were corrected based on their average effects as determined in randomized clinical trials. In addition to testing main genetic effects, we test the hypothesis that some susceptibility genes for (high) blood pressure only come to expression in stressful environments, building on our Gene-Environment Interaction Model of Stress-Induced Hypertension. One cumulative stress-index based on six questionnaire-based measures of both exposure to (childhood trauma, stressful life events, daily hassles, job stress, neighbourhood stress) and protection against stress (social support) was used to assess the effect of gene-stress interaction on SBP and DBP. The genotype data were released in October 2007 and the main results from the stage 1 genome-wide analysis will be presented at the APS meeting. It will be explicitly discussed whether the genetic basis of hypertension could implicate a shared underlying genetic vulnerability that links depression to cardiovascular disease risk.

Symposium 1514
Stress, Cytokines, Mood And Pain In Rheumatoid Arthritis: Integrating Naturalistic, Laboratory-Based And Intervention Research
Sarosh J. Motivala, Ph.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA, Howard Tennen, Ph.D., Community Medicine and Health Care, University of Connecticut, Farmington, CT, Alex J. Zautra, Ph.D., Psychology, Arizona State University, Tempe, AZ, Sarosh J. Motivala, Ph.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA

Rheumatoid arthritis is a chronic autoimmune disorder characterized by increased expression of pro-inflammatory cytokines, called cytokines, that promote inflammation, greater pain and over time, bone and cartilage
important comprehensive model for studying how stress affects the mind. Mindfulness meditation with cognitive therapy will be presented, disease progression in RA. Lastly, intervention research comparing pain in RA. In the next presentation, data from a laboratory-based acute stress study will show that short-term stress upregulates tumor necrosis factor (TNF), a central inflammatory mediator promoting pain and disease progression in RA. Lastly, intervention research comparing mindfulness meditation with cognitive therapy will be presented, examining intervention effects on mood and pain. RA provides an important comprehensive model for studying how stress affects the patient; by integrating naturalistic, lab-based and intervention studies, we are beginning to identify psychosocial and cognitive pathways that affect pain and disease progression in this population.

Individual Abstract Number: 1515

DAILY PROCESS AND EXPERIMENTAL EVIDENCE LINKING DEPRESSION HISTORY, EMOTIONAL REACTIONS TO PAIN, AND STRESS REACTIVE PAIN IN RHEUMATOID ARTHRITIS

Howard Tenen, Ph.D., Community Medicine and Health Care, University of Connecticut, Farmington, CT

Little is known about the consequences of a major depressive episode that has long since resolved. This presentation describes evidence from recent daily process and experimental studies demonstrating that lifetime depression affects how individuals with RA experience and cope with their chronic pain. The daily process findings reveal that on higher pain days, RA patients with a past depressive episode show steeper declines in mood, cope by venting emotions, and experience declines in perceived control over their pain, compared with individuals without a depression history. The greater contingency observed between pain and emotion-related experiences revealed in the daily lives of individuals with RA and depression history may reflect a hidden vulnerability for the formerly depressed. The ability to regulate emotions and maintain stability in one's emotional life in the face of changing circumstances is especially important when people are managing chronic physical pain. Yet, individuals with a history of depression appear less able to maintain their well-being from their challenging physical state. The experimental findings demonstrate that for RA patients with a history of recurrent depression, acute increases in perceived stress are associated with increases in both bodily pain and joint pain, associations that are not evident among patients with one or no past episodes. These relationships reveal a heightened vulnerability to stress, which could provide one mechanism for individual differences in pain among RA patients. Taken together, these findings across daily process and experimental methods are consistent with both the scar and the kindling hypotheses. The distinction between a single lifetime depressive episode and recurrent episodes, demonstrated in the experimental findings, will be discussed along with novel approaches to enhancing recall of lifetime depressive episodes.

Individual Abstract Number: 1680

CYTOKINE PRODUCTION FOLLOWING ACUTE STRESS IN RHEUMATOID ARTHRITIS PATIENTS VS. HEALTHY CONTROLS

Sarosh J. Motivala, Ph.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA, Dinesh Khanna, M.D., John M. FitzGerald, M.D., Semel Institute, Los Angeles, CA, Michael R. Irwin, M.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA

Purpose: The biological pathways linking stress to disease activity in rheumatoid arthritis (RA) likely involve signalling molecules called inflammatory cytokines. Tumor necrosis factor (TNF) is a major cytokine involved in promoting joint inflammation and pain, with medications that block TNF being highly efficacious in RA. No study to date has examined the effect of acute stress on TNF production in RA patients. The goal of this study was to compare changes in stress-induced TNF production in RA patients vs. healthy control subjects and to determine whether TNF antagonist medication use would have any effect on TNF-stress response. Subject Sample and Method: RA patients not taking TNF antagonists (n=11), RA patients taking these medications (n=10) and healthy controls (n=20) underwent the Trier Social Stress Test, a laboratory-based public speaking stress task. Lipopolysaccharide stimulated monocyte production of inflammatory cytokines was assessed using intracellular staining and flow cytometry. Supernumerary stress, cardiovagal activity, and levels of ACTH and cortisol. The task also induced a significant increase in TNF production in RA patients not taking TNF antagonists, 60 min after stress (p < .05). However, TNF production did not change following stress in RA patients using TNF antagonist medications or in healthy controls. Conclusions: Stress may impact disease activity in RA by increasing monocyte production of TNF; however this relationship is abrogated in patients using TNF antagonist medications, indicating the importance of taking medication use into account. Future work examining subgroups of RA patients, such as those with a current depression or a history of depression, will be an important next step to examine whether these groups are particularly prone to respond to stress with increases in TNF production.

Individual Abstract Number: 1597

EFFECTS OF COGNITIVE-BehaviorAL AND MINDFULNESS MEDITATION INTERVENTIONS COMPARED TO CONTROLS ON ADAPTATION TO RHEUMATOID ARTHRITIS

Alex J. Zautra, Ph.D., Mary C. Davis, Ph.D., Patrick Finn, M.S., John W. Reich, Ph.D., Psychology, Arizona State University, Tempe, AZ

Purpose: There have been no randomized clinical trials examining the value of mindfulness and related emotion-regulation interventions in comparison to other active therapies. This research examines whether compared to behavior therapy and relaxation, mindfulness meditation group sessions showed the greatest improvement in coping efficacy than the attention placebo control. A multimethod approach was taken, employing daily diary and laboratory assessment of pain and IL-6, and physician ratings of joint tenderness and swelling. Summary of Results: Participants receiving P showed the greatest improvement in self-reported pain control; both groups showed more improvement in coping efficacy than the education group. The relative value of the treatments varied as a function of depression history. RA patients with recurrent depression benefited most from M across several measures including negative and positive affect (p's < .01), and physician-ratings of joint tenderness and swelling (p's < .01). Levels of IL-6, stimulated by LPS, were lower pre to post labs only for those receiving pain management (p < .05). History of depression also played a role. Conclusions: Those patients with recurrent episodes of major depression showed elevations in IL-6 pre to post (p < .01), as well as elevations at pre-test (p < .01). The findings suggest that the emotion-regulation aspects of mindfulness-based methods of treatment were beneficial to those with chronic depression, and that cognitive-behavioral approaches may assist in lowering inflammatory processes. Depression history appears to be a key factor in the adaptation capacity of RA patients.

Symposium 1291

From Socioeconomic Status to Health: Novel Genetic, Neural, Environmental, and Sleep-Related Pathways

Brooks B. Gump, PhD, Psychology, State University of New York at Oswego, Oswego, New York, Sheldon Cohen, PhD, Psychology, Carnegie Mellon University, Pittsburgh, Pennsylvania, Brooks B. Gump, PhD, Psychology, State University of New York at Oswego, Oswego, New York, Karen A. Matthews, PhD, Peter Gianaros, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Edith Chen, Ph.D., Psychology, University of British Columbia, Vancouver, BC, Canada

The negative association between socioeconomic status (SES) and health has been recognized and documented for many years. This association does not seem to be simply due to income or wealth. Moreover, a number of potential pathways such as access to adequate

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health care do not seem to fully account for this association. Therefore, a further understanding of the pathways linking SES and ill health requires a "challenge of the gradient" (Amer Psychol 2004;59:15-24). Evidence will be presented within the general framework that SES affects health through many potentially overlapping pathways. The symposium will focus on the presentation of SES-health research that includes relatively novel measures or mechanisms. The first presenter will describe recent work showing that children with asthma from a low SES background showed overexpression of genes regulating inflammatory processes, including those involved in chemokine activity, stress responses, and wound responses. She will also describe work suggesting that this SES-related overexpression may be mediated by molecular transcription control pathways known to regulate catecholamine and inflammatory signaling in immune cells. The second speaker will present replicated evidence that lower social ladder rankings (an index of subjective social status) vary with decreased grey matter volume in a corticolimbic brain area involved in emotion and physiological stress reactivity, the anterior cingulate cortex (ACC). This work suggests a putative neuroanatomical pathway by which perceived social standing may relate to mental and physical health. The third speaker will present evidence of a negative association between SES and salivary cortisol levels in response to acute psychological stress, and the heavy metal environmental toxicant lead (Pb) was found to be a significant mediator for this association. The final speaker will present evidence of SES-sleep associations found in SleepSCORE, a cross-sectional study of nocturnal physiology and CVD risk. In this study, individuals of lower income and education showed longer sleep latencies, a greater number of minutes awake after initial sleep onset, and poorer self-reports of sleep quality. As a discussant, Sheldon Cohen will put this collection of novel findings in context and will identify important areas for future multidisciplinary research on SES and health.

**Individual Abstract Number: 1407**

**SOCIOECONOMIC STATUS AND GENOME-WIDE TRANSCRIPTIONAL PROFILING OF INFLAMMATORY PROCESSES IN ASTHMA**

Edith Chen, Ph.D., Psychology, University of British Columbia, Vancouver, BC, Canada, Steve W. Cole, PhD, Medicine, UCLA, Los Angeles

Low socioeconomic status (SES) is one of the most robust social factors associated with disease. However, our understanding of the biological processes that explain this link is limited. In this study, we tested whether the social environment could get "under the skin" and alter molecular mechanisms involved in inflammation. Children physician diagnosed with asthma were recruited who came from either low SES (n=16) or high SES (n=15) families. Blood samples were drawn and T lymphocytes were isolated, given the prominent role they play in asthma inflammation. Genome-wide transcriptional profiles were then conducted, and differentially expressed genes were identified as those showing >30% difference in mean expression levels between low SES and high SES children. Bioinformatic analyses were then used to identify commonalities among differentially expressed genes. Results revealed that children from a low SES background showed overexpression of genes regulating inflammatory processes, including those involved in chemokine activity, stress responses, and wound responses. Further bioinformatic analyses were conducted to identify the molecular transcription control pathways that might underlie this differential gene expression. These bioinformatic analyses suggested that decreased activity of CREB (p=0.05) and NF-Y (p=0.026), as well as increased NF-κB (p=0.05) transcriptional signaling mediated these effects. These pathways are known to regulate catecholamine and inflammatory signaling in immune cells. This study provides the first evidence in a clinical patient population that the larger social environment can affect processes at the genomic level. Specifically, gene transcription control pathways that regulate inflammation and catecholamine signaling were found to vary by SES. Because these pathways are the primary targets of the many asthma medications, these findings suggest that the larger social environment may alter molecular mechanisms that would have implications for the efficacy of asthma therapeutics.

**Individual Abstract Number: 1398**

**SUBJECTIVE SOCIAL STATUS Varies WITH GREY MATTER VOLUME IN THE ANTERIOR CINGULATE CORTEX IN OLDER WOMEN**

Peter Gianaros, PhD, Lei Sheu, PhD, Howard Alznerstein, MD, Megan Nable, BS, JR Jennings, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Sheldon Cohen, PhD, Jeffery Horenstein, MS, Psychology, Carnegie Mellon University, Pittsburgh, PA, Karen Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

The perception of holding a low standing in a social hierarchy, termed low subjective social status, is a putative source of life stress that may be reciprocally associated with psychological distress and risk for ill health. Recent findings in middle-aged adults also suggest that low subjective social status is associated with reduced grey matter volume in the rostral anterior cingulate cortex (rACC), a paralimbic area that shows stress-related plasticity in animal models of chronic stress and regulates emotion-related processes (Soc Cogn Affect Neurosci 2007;2:161-73). We attempted to replicate and extend these findings in 40 older women (65-71 yrs) recruited from the longitudinal Healthy Women Study. In 2000-2002 and in 2004-2006, women completed the MacArthur Subjective Social Status Scale, a 9-point pictorial 'social ladder' on which women placed an 'X' on the rung commensurate with where they felt they stood in terms of conventional socioeconomic indicators (income, educational attainment, and occupational prestige). In 2005-2006, their rACC grey matter volume was quantified by an automated computational neuroanatomy procedure (Neuroepidemiology 2005;24:221-29). In replication, lower social ladder rankings correlated with reduced rACC grey matter volume (r=-0.40, p<.01). Moreover, this relationship persisted in a hierarchical regression accounting for age, total grey matter, income, years of education, verbal IQ, use of hormone therapy, alcohol consumption, depressive symptoms, and dispositional indicators of negative affect, optimism, and neuroticism (R2change=-11, F[1,25]=7.5, p<.01). Reduced rACC grey matter volume appears to be a structural neural correlate of subjective social status that could plausibly represent a pathway by which perceived social standing relates to mental and physical health in adulthood and later life.

**Individual Abstract Number: 1313**

**BLOOD LEAD (Pb) LEVELS: FURTHER EVIDENCE FOR AN ENVIRONMENTAL MECHANISM EXPLAINING THE ASSOCIATION BETWEEN SOCIOECONOMIC STATUS AND PSYCHOPHYSIOLOGICAL DYSREGULATION IN CHILDREN**

Brooks B. Gump, PhD, Jacki Reihman, PhD, Paul Stewart, PhD, Edward Lonky, PhD, Psychology, State University of New York at Oswego, Oswego, New York, Patrick J. Parsons, PhD, Wadsworth Center, New York State Department of Health, Albany, New York, Douglas A. Granger, PhD, Biobehavioral Health, The Pennsylvania State University, University Park, Pennsylvania

The negative association between socioeconomic status (SES) and ill health is well established. The mechanisms explaining this association however are less well understood. We recently demonstrated that exposure to an important environmental toxin, lead (Pb), was a significant mediator of the association between SES and cardiovascular responses to acute stress in children (Health Psych 2007;26:296-304). In the present study, we consider if Pb also mediates an association between SES and adrenocortical responses to acute stress in children. Participants were 9.5 year old children (N = 109) with established early exposure to an important environmental toxicant, lead (Pb), was a significant mediator of the association between SES and cardiovascular responses to acute stress in children. Participants were 9.5 year old children (N = 109) with established early childhood blood Pb levels, SES assessed using the Hollingshead index (a measure based on mother and father's occupation and education), and assayed salivary cortisol in response to acute psychological stress tasks. Children from lower SES families exhibited significantly greater salivary cortisol responses to acute stress relative to children from higher SES families, F(1, 105) = 4.53, p < .05). In addition, lower SES was associated with greater exposure to Pb (p < .05). A mediation analysis confirmed that blood Pb was a significant mediator for this SES-adrenocortical reactivity association (z = 2.47, p < .05, using Sobel's test). These results suggest the continued importance of considering the chemical environment as well as social and psychological environment when evaluating SES-health associations.

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Individual Abstract Number: 1335
SLEEP AS A POTENTIAL PATHWAY CONNECTING SOCIOECONOMIC STATUS AND CARDIOVASCULAR DISEASES
Karen A. Matthews, PhD, Psychiatry, Elizabeth J. Mezick, MA, Psychology, Martica Hall, PhD, Psychiatry, Thomas W. Kamarck, PhD, Psychology, Jane F. Owens, DrPH, Daniel J. Buysse, MD, Psychiatry, Patrick J. Strollo, MD, Pulmonology, Steven E. Reis, MD, Cardiology, University of Pittsburgh, Pittsburgh, PA
Socioeconomic status (SES) is strongly linked to risk for cardiovascular diseases (CVD). This paper presents evidence concerning sleep as a potential pathway connecting SES and CVD. Risk for CVD is related to several dimensions of sleep, namely self-reported sleep duration and sleep disordered breathing. There are few data on sleep continuity, architecture, and quality in nonclinical samples. However, sleep deprivation experiments show negative effects on metabolic factors, inflammation, and blood pressure. Low SES is related to self-reported poor sleep quality. Few studies have measured SES and behavioral or physiological measures of sleep, such as actigraphy or polysomnography (PSG). We evaluated the effects of SES, independent of race, on sleep in SleepSCORE, a cross-sectional study of nocturnal physiology and CVD risk. In nearly 200 African American and Caucasian participants, we measured sleep duration, continuity, architecture, and quality using our measures of actigraphy, PSG, and sleep diaries, and self-report measures. We found that the lower a composite index of SES based on income and education the longer it took to get to sleep (actigraphy), p = .03, the greater the number of minutes awake after initial sleep onset (PSG), p = .02, and the poorer the self-reported sleep quality, p = .04. Sleep disordered breathing was unrelated to SES in this sample. Lower SES participants also reported more negative affect, physical symptoms, and that noise outside the home and room temperature disturbed their sleep, p < .05. We conclude with a discussion of the possible bi-directional effects of sleep on CVD and vice versa. Supported by HL076369 and Pennsylvania Department of Health (contract ME-02-384).

Symposium 1165
Why Don't Cardiologists Care (About Depression and Anxiety)? – Identifying and Overcoming Barriers
Roy C. Ziegelstein, MD, Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, Karina W. Davidson, PhD, Medicine & Psychiatry, Columbia University Medical Center, New York, New York, Brett D. Thombs, PhD, Psychiatry, McGill University, Montreal, Quebec, Canada, Hochang B. Lee, M.D., Gina M. Magyar-Russell, PhD, Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, Heather L. Rogers, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
For more than a decade, considerable attention has been paid to the effect of depression and anxiety on morbidity and mortality in patients with established cardiovascular disease. To some extent, this attention has been unfortunate, because it has led to a search for the "Holy Grail," namely evidence that treating emotional illness improves cardiovascular disease outcomes. But the focus on whether Grail, namely evidence that treating emotional illness improves effect of depression and anxiety on morbidity and mortality in patients with cardiovascular disease and also present work that highlights the efficacy of depression and anxiety on the quality of life in patients with cardiovascular disease. In addition, workable paradigms will be discussed in which patients with depression can be efficiently and effectively identified, evaluated, triaged, and treated in cardiovascular disease settings.

Individual Abstract Number: 1198
IDENTIFYING AND ADDRESSING BARRIERS TO SCREENING FOR DEPRESSION IN CARDIOVASCULAR CARE
Brett D. Thombs, PhD, Psychiatry, McGill University, Montreal, Quebec, Canada, Mary A. Whooley, MD, Medicine, Epidemiology and Biostatistics, University of California, San Francisco, San Francisco, CA, Roy C. Ziegelstein, MD, Department of Medicine, The Johns Hopkins University School of Medicine, Baltimore, MD
ACC/AHA Guidelines recommend evaluation of psychosocial status, including depression. However, depression screening is not part of standard care. Barriers include the lack of screening tools/cutoff scores validated in multiple cardiovascular care samples and cutoff scores that are selected to maximize combined sensitivity/specificity, which results in high false positive rates (50%+) with no consideration of resources available to formally evaluate, treat or triage, and follow-up patients who screen positive. False positives depend on the cutoff score used and the prevalence of major depressive disorder (MDD) in a sample. This study used screening data from 1,016 outpatients from the Heart and Soul Study who were administered the PHQ-9 and a structured clinical interview for MDD. A cutoff score >= 6 maximized sensitivity/specificity, similar to the cutoff score reported in the only other study that used the PHQ-9 in cardiovascular care (Stafford et al., 2007; >=5). Female sex, age < 60 years, and income < $20,000 were independent risk factors for MDD based on logistic regression. The overall prevalence of MDD was 21.9%, including 11.4% in 360 patients with no risk factors, 19.9% in 413 patients with 1 risk factor, 38.3% in 206 patients with 2 risk factors, and 56.8% in 37 patients with 3 risk factors. A risk stratification method for screening patients reduced false positive rates by approximately 30% when cutoff scores were set so that 5-10% of all patients would screen positive and require further evaluation. When cutoff scores were set so that higher percentages of the total sample would screen positive, the risk stratification method did not improve meaningfully upon the standard method. Results from this study suggest that alternative screening approaches reduce the barrier of large numbers of false positives somewhat, but do not eliminate the problem. Further screening studies are needed that require confirmation of impairment from depressive symptoms for positive screens and/or that conduct screening on more than one occasion and require replication of positive screens.

Individual Abstract Number: 1204
IS POST-CABG DEPRESSION A LATE-ONSET, VASCULAR DEPRESSION?
Hochang B. Lee, M.D., Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD
The prevalence of depression after CABG is estimated to be about 25-45%. Despite significant morbidity and mortality associated with post-CABG depression, few studies have examined pre-CABG risk factors and their contribution to the pathophysiology of post-CABG depression. The "vascular depression hypothesis" provides the theoretical background to test various hypotheses that might elucidate the pathogenesis of geriatric, late-onset depression. In order to test the vascular depression hypothesis, we identified and traced 38 subjects who had pre-surgical transcranial Doppler ultrasonography (TCD) before their CABG surgery approximately three years ago. We matched 19 subjects (study group) with pre-CABG intracranial stenosis (ICS) and 19 subjects without ICS (comparison group) in age, gender, and education. Based on cognitive battery and semistructured psychiatric interview (Schedule for Clinical Assessment in Neuropsychiatry) conducted by a clinician blind to the group assignment, we compared the incidence of post-CABG depression and cognitive impairment. Our preliminary and treating suggests that the presence of pre-CABG ICS detected by TCD predicts the incidence of post-CABG depression [RR = 5.18, 95% CI (1.22, 24.1)], but not cognitive impairment. Based on our findings, the pathogenesis of post-CABG depression appears to be vascularly-mediated event.
**Individual Abstract Number: 1302**

**DEPRESSIVE SYMPTOMS AND PLATELET AGGREGATION AFTER ACUTE CORONARY SYNDROME**

Heather L. Rogers, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, Roy C. Ziegelstein, James A. Fauerbach, Gina M. Magyar-Russell, and Marlene S. Williams, Johns Hopkins University School of Medicine, Baltimore, MD

Depression at the time of an acute coronary syndrome (ACS) independently predicts subsequent cardiac death. Since some investigators have found that depressed individuals show increased platelet activation, we assessed depressive symptoms (using the Beck Depression Inventory [BDI], the Patient Health Questionnaire-9 [PHQ-9], and the Beck Hopelessness Scale [BHS]) and platelet aggregation in a pilot study of 24 patients admitted with ACS. Platelet aggregation was assessed using standard light transmission in platelet-rich plasma and results were expressed as EC50, slope, and extent of aggregation using adenosine diphosphate (ADP) and serotonin (5HT) as agonists. PHQ-9 scores were negatively correlated with ADP EC50 (r=-0.43, p<0.05). ACS patients scoring 8 or more on the PHQ exhibited enhanced platelet aggregation, as demonstrated by significantly lower EC50 to ADP vs. those with PHQ scores < 8 (p<0.01). ACS patients with BDI scores of 19 or more tended to exhibit enhanced platelet aggregation to ADP vs. those who scored <10 (p<0.10). Also, individuals scoring with BHS scores of 14 or more also tended to exhibit enhanced platelet aggregation to ADP vs. those with BHS scores < 14 (p<0.10). BDI scores tended to be associated with increased 5HT-induced platelet aggregation (r=0.41, p<0.10). ACS patients with higher BHS scores also tended to have greater 5HT-induced platelet aggregation than those with lower BHS scores (p<0.10). Results were similar after excluding individuals on antidepressant medications and/or clonipramine (n=13). These results suggest that depressive symptoms are related to enhanced platelet aggregation in individuals with ACS. In particular, both BDI and PHQ measures of depressive symptoms predicted platelet aggregation responses to ADP. Beck depressive symptoms and Beck hopelessness were associated with platelet aggregate responses to 5HT. These preliminary data suggest that platelet activation may, in part, link depression to cardiac events after ACS.

**Individual Abstract Number: 1303**

**EFFECTS OF COGNITIVE AND EMOTIONAL FACTORS ON PATIENTS WITH, OR AT HIGH RISK FOR, VENTRICULAR ARRHYTHMIAS**

Gina M. Magyar-Russell, PhD, Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD, Joseph E. Marzio, MD, Medicine, Johns Hopkins School of Medicine, Baltimore, MD, Roy C. Ziegelstein, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, and Heather L. Rogers, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD

Researchers suggest that cognitive and emotional factors are important in predicting adjustment after ICD implantation, including subsequent arrhythmia events, yet the physiological links between psychological states and arrhythmias are unknown. Participants (n=28) completed Holter monitoring, 24-hour urine collection, and psychosocial questionnaires an average of 2 weeks prior to ICD implantation and are currently being followed for one year post-implant. Thus far, 61% have completed follow-up at 3-mos post implant. The sample is 75% male, 82% White, with a mean age of 61 years. Prior to ICD implant, associations were found between anxiety and self-reported cardiac symptoms (r =.50, p<.05) and elevated catecholamines (r =.51, p<.05) and noradrenaline (r =.60, p<.01). Pre-implant depression was also linked to greater self-reported cardiac symptoms (r =.52, p<.01), adrenaline (r =.45, p<.05) and noradrenaline (r =.55, p<.05). Prior to implant, greater negative ICD appraisals were associated with experiencing non-sustained ventricular tachycardia (NSVT; r =-.45, p<.05) and NSVT tended to be linked to elevated adrenaline (r =.38, p<.11) and noradrenaline (r =.35, p<.15). Similar patterns were observed 3 mos post-implant. Using hierarchical longitudinal regression controlling for age, gender, and race, pre-implant ICD appraisals accounted for significant variance in the prediction of depression at 3-mos (change in R2=.21, p<.10), pre-implant anxiety accounted for significant variance in the prediction of NSVT at 3-mos (change in R2=.15, p<.10), and pre-implant depression accounted for significant variance in the prediction of reports of cardiac symptoms at 3-mos (change in R2=.15, p<.10). Heart rate elevation in the SNS as a link between emotion and arrhythmias will be examined via mediator analyses as more follow-up data is collected. These findings suggest that cognitive (appraisals) and emotional (anxiety and depression) factors influence perceived and actual (NSVT) cardiac symptoms, thereby adversely impacting quality of life for ICD recipients. Multidisciplinary treatment implications will be discussed.

**Symposium 1241**

**Psychosocial and Psychophysiological Factors Are Associated With Subclinical Vascular Disease**

S. Carrington Rice, MA, Psychology, University of Maryland, Baltimore County, Baltimore, MD, Andrew Steptoe, DPhil, DSc, Epidemiology and Public Health, University College London, London, UK, UK, S. Carrington Rice, MA, Psychology, University of Maryland, Baltimore County, Baltimore, MD, Susan A. Everson-Rose, PhD, Medicine, University of Minnesota, Minneapolis, MN, Thomas W. Kamarck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Tené T. Lewis, PhD, Epidemiology and Public Health, Yale University, New Haven, CT

Psychosocial factors, particularly aspects of negative emotionality, may contribute to the development and exacerbation of subclinical cardiovascular disease. The body of literature also links psychosocial factors with a range of subclinical vascular outcomes. This type of evidence highlights additional pathways through which psychosocial factors may confer risk for clinical cardiovascular endpoints. Further understanding of these associations could provide important targets for early intervention to reduce future cardiovascular disease risk. In this symposium we examine new findings of relations between psychosocial factors and subclinical vascular disease, as well as psychophysiological mechanisms of subclinical disease pathogenesis, among a heterogeneous group of samples. The first presentation will focus on the relations of different anger coping styles to carotid intimal medial thickness among HIV-infected women. The second presentation will describe the interaction of racial discrimination and socioeconomic status in the prediction of subclinical vascular disease in an urban Black sample. The third presentation will examine, in a biracial cohort of older adults, the association of multiple psychosocial factors, including symptoms of depression and anxiety, negative life events, and inadequate social support, with aortic pulse wave velocity, a marker of arterial stiffness. The fourth presentation will provide evidence linking carotid arterial stiffness with stress-induced inflammatory responses, including plasma fibrinogen and tumor necrosis factor &alpha;, among healthy middle-aged adults. Our discussant will address the implications of these findings and discuss future directions in the study of psychosocial factors, subclinical vascular disease, and associated psychophysiological mechanisms.

**Individual Abstract Number: 1245**

**ANGER COPING STYLES AND CAROTID ATHEROSCLEROSIS IN HIV+ WOMEN**

S Everson-Rose, PhD, Medicine, Univ of MN, Minneapolis, MN, Z Chen, MS, Biostatistics, Univ of MN, Ann Arbor, MI, K Weber, BSN, S Urwin, BA, Hektoen Institute, Chicago, IL, R Kaplan, PhD, Epidemiology, AECOM, Bronx, NY, H Hodis, MD, Atherosclerosis Research Unit, Keck School of Med, Los Angeles, CA

HIV+ individuals have more carotid intimal-medial thickness (CIMT) and inflammation faster CIMT than negative (CIMT+) peers. Studies of HIV+ samples indicate anger coping styles influence CIMT and cardiovascular (CV) risk, but no prior studies have examined anger in relation to CIMT in a sample with HIV or at risk for HIV. We measured trait anger and anger coping styles (anger-control, anger-in, anger-out) with the Spielberger State-Trait Anger Inventory in 128 women from the Chicago site of the Women's Intervenyr HIV Study (WIHS) who participated in the WIHS-CV sub-study, with baseline data collected. These findings suggest that cognitive (appraisals) and emotional (anxiety and depression) factors influence perceived and actual (NSVT) cardiac symptoms, thereby adversely impacting quality of life for ICD recipients. Multidisciplinary treatment implications will be discussed.
Depressive symptoms, anxiety symptoms, negative life events and inadequate emotional support were assessed and a summary psychosocial risk index was created. Arterial stiffening was measured by aortic pulse wave velocity (aPWV). In multivariate linear regression models, overall psychosocial risk was only marginally associated with aPWV (Est=0.03, p=0.09), but there was a significant race*psychosocial risk interaction (Est=0.04, p=0.04), after adjusting for age, race, gender and education. Further analyses revealed that this association was driven by the inadequate emotional support component of psychosocial risk (race*inadequate emotional support p=0.004). There were no significant main or interactive effects observed for depressive symptoms, anxiety symptoms or negative life events. In race-stratified analyses, reports of inadequate emotional support were associated with higher levels of arterial stiffness in older Blacks (Est=0.07, p=0.03), but not Whites (Est=0.02, p=0.4). Results persisted after adjusting for demographics, cardiovascular risk factors, social network characteristics and depressive symptoms. Findings suggest that older Blacks may be particularly vulnerable to the effects of inadequate emotional support on vascular health. Interventions aimed at increasing social support among this population might be beneficial in reducing their CVD risk.

Individual Abstract Number: 1244

RACIAL DISCRIMINATION, SOCIOECONOMIC STATUS, AND CAROTID INTIMAL MEDIAL THICKNESS

S. Carrington Rice, MA, Shari R. Waldstein, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD, Samer S. Najjar, MD, Michele K. Evans, MD, Alan B. Zonderman, PhD, Intramural Research Program, National Institute on Aging, Baltimore, MD

Prior literature has identified racial differences in carotid intimal medial thickness (CIMT), a finding consistent with Black-white disparities in cardiovascular health among US adults. Through racial discrimination measures and its associated psychophysiological effects may help explain such disparities, little research has examined the association between racial discrimination and CIMT. Participants, aged 30 to 64 years (M=47, SD=9), were 353 Black individuals (52% men; 71% below the 125% poverty line) enrolled in the Healthy Aging in Neighborhoods of Diversity Across the Life Span (HANDLS) Study. We asked participants if they experienced racial discrimination (yes/no) in 6 settings: at school, at work, with police/courts, and when obtaining a job, housing, and medical care. Responses were summed to create a variable assessing pervasiveness of reported discrimination (M=2.6 settings, SD=1.8). Participants also underwent high resolution B-mode ultrasonography to assess IMT of the far wall of the common carotid artery. Following adjustment for age, sex, literacy, total cholesterol, lipid-lowering medications, hypertension, cardiovascular disease, body mass index, cigarette smoking, alcohol, and illicit drugs, multiple regression analysis revealed a significant socioeconomic status (SES) by discrimination interaction predicting CIMT (r=-2.74, p=0.006). Specifically, higher SES individuals reporting high discrimination had the greatest CIMTs (M=78mm, SE=0.02) and significantly differed from higher SES individuals reporting low discrimination (M=72mm, SE=0.01), and lower SES individuals reporting high discrimination (M=69mm, SE=0.01). Our findings suggest that SES is an important effect modifier of discrimination-CIMT associations. Higher SES individuals reporting more discrimination may be at greatest risk for increased CIMT.

Individual Abstract Number: 1517

RACE, PSYCHOSOCIAL FACTORS AND ARTERIAL STIFFENING: THE HEALTH, AGING AND BODY COMPOSITION STUDY

Tené Lewis, PhD, Epidemiology & Public Health, Yale University, New Haven, CT, Kim Saton-Tyrell, DrPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Brenda Penninx, PhD, Nicole Vogelzangs, MD, Psychiatry, VU University Medical Center, Amsterdam, Netherlands, Tahmiaras Tzimas, MD, NIA, NIH, Bethesda, MD, Georgia Vaidean, MD, Preventive Medicine, University of Tennessee, Memphis, TN, Hilso Ayonayon, PhD, Epidemiology, UCSF, San Francisco, CA, Lauren Kim., NIA, NIH, Bethesda, MD, Anne Newman, MD, Epidemiology, University of Pittsburgh, Pittsburgh, PA

Numerous studies have documented an association between psychosocial factors and cardiovascular disease (CVD). Increasingly, researchers have begun to explore pathways through which psychosocial factors might influence CVD, with an emphasis on early markers. The current study examined the cross-sectional association between psychosocial factors and arterial stiffening (an early marker of CVD) in a biracial cohort of older adults. We were particularly interested in determining whether the association between psychosocial factors and arterial stiffening differed for older Blacks compared to Whites. Participants were 2,488 (40% Black, 52% female) older adults aged 70-79 from the Health, Aging and Body Composition Study.
1) Abstract 1779
IMPACT OF A PRENATAL DEPRESSION INTERVENTION ON REDUCING RISK FOR POSTPARTUM BIRTH COMPLICATIONS
Guido G. Urizar, Jr., Ph.D., Bertha Garcia, Marta Bolsewicz, B.A., Psychology, California State University, Long Beach, Long Beach, CA, Ricardo F. Muñoz, Ph.D., Psychiatry, UCSF, San Francisco, CA
Few studies have examined the efficacy of prenatal psychosocial interventions on reducing the risk for postpartum birth complications in women at high risk for depression and their infants. The purpose of this study was to examine the impact of a 12-week, prenatal mood management course (MMC), relative to two comparison groups, on several infant birth outcomes (i.e., infant gestational age, number of complications during delivery, birthweight, APGAR scores), after controlling for number of prior births (mean number of children=1.1), prenatal weight gain (mean weight gain during pregnancy=12±6 lbs), and prenatal salivary cortisol levels. Our sample was comprised of predominantly Spanish-speaking, low-income women (81%; mean age=26±4 years) in their second trimester of pregnancy (M=16±5 weeks of gestation), with no major medical or substance abuse problems. High-risk depression status was defined as having either a past history of major depression (MD), or depressive personalization on the 38-item MADRS (MMSE), or current elevated symptom on the depression criteria of the MMSE (MD) or current elevated symptoms of depression (>16 on CES-D). Those at high risk for depression were then randomized to either the MMC group (n=19) or a standard care (SC) group (n=20), while a low risk comparison (LRC) group (n=19) was comprised of women not meeting either depression criteria. Adverse prenatal and neonatal health outcomes were recorded via medical record review following delivery. ANCOVA analyses indicated: (a) lower gestational age for female infants of mothers in the SC group, relative to the MMC and LRC groups, as well as for mothers with high prenatal cortisol levels (F=3.4, p=0.01), and (b) a higher number of complications during delivery for mothers with less children and high prenatal cortisol levels (F=4.4, p<0.01). These findings suggest that prenatal programs providing outreach to mothers at high risk for depression may be efficacious in reducing the risk for postpartum birth complications. This study was conducted in part at the GCRC at SFGH and supported by Grant 5-M01-RR00083, Div of Research Resources, NIH.

2) Abstract 1138
PROPRANOLOL AND ASPIRIN ATTENUATE THE STRESS-INDUCED INCREASE IN THE PLASMA VON WILLEBRAND FACTOR CONCENTRATION: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY
Roland von Känel, MD, General Internal Medicine, University Hospital, Bern, Switzerland, Silja Bellingerath, Brigitte M. Kudielka, PhD, Theoretical and Clinical Psychobiology, University of Trier, Trier, Germany, Joachim E. Fischer, MD, Public Health, Social and Preventive Medicine, University of Heidelberg, Mannheim, Germany
Elevated plasma levels of the von Willebrand factor (VWF) have prospectively been associated with incident coronary artery disease in meta-analyses. The VWF mediates platelet adhesion to subendothelial structures after atherosclerotic plaque rupture, thereby playing an important role in acute coronary syndromes (ACS). Acute mental stress may trigger ACS and provokes robust increases in plasma VWF. During stress, catecholamine surge releases the VWF from endothelial storage pools via a beta-adrenergic mechanism. Beta blockers and aspirin both reduce the risk of ACS and, by virtue of mitigating VWF release and VWF-related platelet activation, respectively, might both attenuate hypercoagulability with stress. We randomized 57 healthy middle-aged subjects, double-blind, to 5-day treatment with an oral dose of either a) aspirin 100 mg plus propranolol 80 mg, b) single aspirin 100 mg, c) single propranolol 80 mg, or d) placebo medication. We hypothesized that aspirin and propranolol would attenuate increase of plasma VWF levels in response to a 13-min psychosocial stress (combined mock job interview and mental arithmetic). Plasma VWF antigen levels were determined by an ELISA in blood samples collected immediately pre- and post-stress, and 45 min post-stress. In RM ANCOVA, controlling for age, gender, body mass index, mean arterial blood pressure, smoking status, and sleep quality, there was an interaction between stress and propranolol (p=0.032, partial eta squared=0.071), as well as within-stress and aspirin (p<0.07, partial eta squared=0.071) and between stress and aspirin (p<0.07, partial eta squared=0.071) and between stress and aspirin (p<0.07, partial eta squared=0.071). By mitigating VWF increase with acute mental stress, non-specific beta blockade and aspirin might both exert some protection from the development of stress-triggered coronary thrombosis.

3) Abstract 1126
CIRCULATING LEVELS OF PRO- AND ANTI-INFLAMMATORY CYTOKINES IN SCHOOL TEACHERS WITH BURNOUT SYMPTOMS
Roland von Känel, MD, General Internal Medicine, University Hospital, Bern, Switzerland, Silja Bellingerath, Brigitte M. Kudielka, PhD, Theoretical and Clinical Psychobiology, University of Trier, Trier, Germany
The burnout syndrome has been associated with an increased risk of cardiovascular disease. The physiological mechanisms potentially involved in this link are undereported. Knowing that a chronic low-grade systemic inflammatory state contributes to atherosclerosis, we investigated circulating cytokine levels in relation to burnout symptoms. We studied 167 school teachers (median 48 years, range 23-63 years; 67% women) who completed the Maslach Burnout Inventory with its three subscales emotional exhaustion (EE), lack of accomplishment (LA), and depersonalization (DP). We measured proinflammatory cytokine tumor necrosis factor (TNF)-alpha and of the anti-inflammatory cytokines interleukin (IL)-4 and IL-10 were determined in fasting morning plasma samples. The TNF-alpha/IL-4 ratio and the TNF-alpha/IL-10 ratio were computed as two indices of increased inflammatory activity. Analyses were adjusted for demographic factors, medication, life style factors (incl. sleep quality), metabolic factors, and concurrent depression at the time of blood draw. Higher levels of total burnout symptoms aggregating the EE, LA, and PA subscales independently predicted higher TNF-alpha levels (dR2=0.023, p=0.048), lower IL-4 levels (dR2=0.021, p=0.061), and a higher TNF-alpha/IL-4 ratio (dR2=0.040, p=0.008). Higher levels of LA predicted decreased IL-4 levels (dR2=0.041, p=0.008) and a higher TNF-alpha/IL-4 ratio (dR2=0.041, p=0.007). The categorical dimensions of the various burnout scales (stress, strain, exhaustion) did not show no independent relationship with any cytokine measure. We conclude that burnout was associated with increased systemic inflammation along a continuum of symptom severity rather than categorically. The findings provide one explanation for the increased atherosclerotic risk observed in burned-out individuals.

4) Abstract 1725
TWELVE WEEKS OF TAI CHI TRAINING REDUCES DEPRESSIVE SYMPTOMS, SYMPTOM SEVERITY & FREQUENCY, AND IFN GAMMA EXPRESSION IN HEART FAILURE
Laura S. Redwine, Ph.D., Medicine, VMRF and University of California, San Diego, CA, Albert Chiu, B.S., Medicine, VMRF, San Diego, California, Dan Halpain, M.A., Medicine, VMRF, San Diego, CA, Veronica Reis, Ph.D., Psychiatry, V.A. San Diego Healthcare System, San Diego, CA, Sarah Linke, B.S., Suzi Hong, Ph.D., Psychiatry, University of California, San Diego, CA, Thomas Rutledge, Ph.D., Psychiatry, VA San Diego Healthcare Services, San Diego, CA, Paul J. Mills, Ph.D., Psychiatry, University of California, San Diego, CA
Heart Failure (HF) produces debilitating symptoms and a loss of quality of life, which can lead to depressive symptoms. Subsequently, depression can increase risk for future cardiac events and mortality in HF patients. The influence of depressive symptoms on inflammatory cytokines and subsequent cardiac remodeling may be one path for HF morbidity and mortality. The present study evaluated changes in depressive symptoms, HF symptom severity and frequency, and markers of inflammation in HF patients practicing Tai Chi versus a waitlist control group. HF patients (n = 29) ages 57-81 (mean = 68.8, S.D. = 4.2) either received Tai Chi training twice per week (n = 19) for 12 weeks or were in a waitlist control group (n = 10). At baseline and after the 12 week intervention period patients in both groups gave blood for stimulated intracellular cytokine IFN gamma and IL-4 expression in CD3+ T cells. Patients also completed the Beck Depression Inventory (BDI) and Minnesota Living with Heart Failure (MLHF) questionnaires. Repeated measures analysis of variance (ANOVA) revealed decreased BDI depressive symptom.
scores (p = 0.054), and reduced heart failure symptom frequency (p < .05) and symptom severity (p < .05) measured with the MLHQQ. Also, percentages of CD3+ cells positive for IFN gamma were reduced after 12 weeks of practicing Tai Chi (F = 9.3 p = .018). Anti-inflammatory, IL-4 expression did not change significantly. Results from this preliminary study suggest that Tai Chi training reduced depressive symptoms, HF symptom severity and frequency, and inflammatory cytokine IFN gamma expression in T cells. Future studies with a larger cohort are needed to determine mediator and moderator relationships between Tai Chi associated reductions in depressive symptoms and inflammatory markers.

5) Abstract 1601
URBAN DISORDER AND VIOLENCE: POSSIBLE ORIGINS OF HYPERTENSION IN VULNERABLE YOUTH?
Nina Stoeckel, Diplom, Marta Kadziolska, BA, Mi Ditmar, BA, Gavin Elder, BA, Craig Ewart, Ph.D., Psychology, Syracuse University, Syracuse, NY
Chronic exposure to stressful living environments is believed to increase risk for essential hypertension and coronary heart disease. We examined the relationships between adolescents' 48-hour ambulatory blood pressure (ABP) levels and their degree of exposure to urban environments characterized by neighborhood disorder and violence. Higher ABP in youth increases risk for hypertension in young adulthood, with associated risk for coronary heart disease later in life. We tested the hypothesis that hostile neighborhood environments are associated with elevated ambulatory blood pressure. We tested this hypothesis in 126 adolescents (81 females; 45 males; mean age = 15.2 ± 0.7 years) in a large urban public high school in NY State. The sample was 36% Black, 41% White, and 23% Other. Exposure to violence (EV) and neighborhood disorder (ND) were measured with the City Stress Inventory. Two months later, ABP was assessed over a 2-day period every 30 minutes during wake time and every hour during sleep time. Results disclosed that EV and ND predicted ambulatory blood pressure levels (1) in females, both during sleep (ND with systolic blood pressure (SBP); r = .29, p < .05), and during waking activities (ND with SBP: r = .27, p < .05; EV with SBP: r = .24, p < .05; EV with diastolic blood pressure (DBP): r = .28, p < .05) and (2) in males, only during waking activities (ND with DBP: r = .31, p < .05). The results identify two aspects of urban neighborhoods that may affect blood pressure early in life, yet the pattern of findings also raises the intriguing possibility that environmental influences on the developing cardiovascular system may differ in males and females. Study results also disclosed behavioral correlates of ND and EV exposure in this sample that might contribute to the observed gender differences in ABP. These findings will be discussed.

6) Abstract 1474
STRESS, AFFECT AND HEALTH: THE ROLE OF AFFECTIVE VARIABILITY IN THE NATURAL ENVIRONMENT
Maisamori Oikawa, PhD, Joshua M. Smyth, PhD, Martin J. Sliwinski, PhD, Psychology, Syracuse University, Syracuse, NY
The relation between stress, affect and health is well documented. Previous studies, however, have focused on average/mean levels of affect, neglecting the variability in affect that exists in day-to-day life. We examined both mean levels and variability of affect, using real-time data collection, to answer two questions: 1) Does stress relate to mean levels and/or variability in positive and negative affect, and 2) Does affective variability relate to disease indicators independently of mean levels of affect? Adult participants (n=116) with chronic physical illnesses (asthma or rheumatoid arthritis [RA]) carried a Palm Pilot for one week and completed a survey five times a day assessing positive affect [PA], negative affect [NA], stress experience (yes/no), stress severity, and disease symptoms. Frequency of stressful experiences was related both to mean affect levels (PA r=.23, NA r=.27; p<.05, .01) and to affective variability (varPA r=.19, varNA r=.27; p<.05, .01). Stress severity was also related both to mean affect levels (PA r=.30, NA r=.47; p<.01, .0001) and to affective variability (varPA r=.20, varNA r=.41; p<.05, .0001). Relationships between stress and affective variability remained significant even after controlling for mean affect levels. NA variability predicted interference and restrictions from disease (r=.30, .28, respectively, p<.01), and RA symptoms (pain/stiffness/swelling; r=.35, p<.06). Variability in PA signified increased ambulatory peak flow rate among asthma patients (r=.24, p<.05). Mean levels of NA were unrelated to RA symptoms and mean PA levels were unrelated to peak flow. These data provide ecologically valid evidence that: 1) Stress produces variability in PA and NA in addition to altering mean levels, and 2) Affective variability is uniquely associated with disease indicators (i.e., independently of mean affect levels). This suggests that emotional variability in response to stress may be an important - but overlooked - variable in psychosomatic medicine.

7) Abstract 1605
PROSPECTIVE ASSOCIATIONS OF FAMILY ASTHMA MANAGEMENT WITH IMMUNE MARKERS: A LONGITUDINAL STUDY OF CHILDREN WITH ASTHMA
Hope Walker, BSc, Alexandra Gaudin, B.A., Psychology, University of British Columbia, Vancouver, BC, Canada, Louise Chiu, B.A., Psychology, Stanford, Stanford, CA, Edith Chen, PhD, Psychology, University of British Columbia, Vancouver, BC, Canada
Previous research has linked asthma management techniques to morbidity outcomes in children with asthma, yet associations of such techniques with biological markers of illness are relatively unexplored. We tested whether beliefs about and management of one's illness would predict biological outcomes longitudinally in a sample of children physician diagnosed with asthma. Forty children with asthma were assessed at two different time points, one year apart. In vitro mitogen-stimulated TNF alpha (TNF alpha) and interferon gamma (IFN-g) production at baseline and follow-up were measured as indicators of asthma-relevant inflammation. Families were interviewed using the Family Asthma Management System Scale (FAMSS). The FAMSS consists of several subscales, including knowledge and assessment of symptoms, family and child response to exacerbations, and adherence to asthma medications. Higher scores in each dimension reflect better knowledge and management of one's illness (e.g. medication use and lifestyles). This study investigated the cross-sectional relationship between stress, affect and management of asthma have children whose cytokine profiles are improving over time. One possible implication from these early findings is that the declines in cytokine production could lead to better clinical outcomes over time for these children with asthma.

8) Abstract 1173
THYROID FUNCTION IN MAJOR DEPRESSION AND ANXIETY DISORDERS: FINDINGS FROM THE NETHERLANDS STUDY OF DEPRESSION AND ANXIETY
Berend Verhoeff, MD, Brenda W. Penninx, Professor, Wiete J. Hoogendijk, Professor, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands
Thyroid dysfunction has been associated with depressive and anxiety disorders as well as with somatic symptoms and diseases. For instance, both subclinical hypo- and hyperthyroidism have been associated with increased CVD and overall mortality risks. However, associations between thyroid dysfunction and psychopathology are inconsistent, probably due to study inconsistencies in psychopathology severity, small sample size and irregular correction for confounders (e.g. medication use and lifestyles). This study investigated the cross-sectional relationship between thyroid function and depressive and anxiety disorders in a large cohort (n=2981, 18-65 years) from the Netherlands Study of Depression and Anxiety (NESDA). The CIDI - lifetime version 2.1- was used to diagnose major depressive disorder (MDD) and anxiety disorders (social phobia, panic and generalized anxiety disorder). Serum levels of thyrotrphin (TSH) and free thyroxine (FT4) were determined to indicate thyroid function. The prevalence of clinical hypo- or hyperthyroidism in the sample was low (<3%). Nevertheless significant associations were found between panic disorder and FT4 levels. Panic disorder patients had higher FT4 levels (F = 4.88, p<.001) and were more likely to have FT4 levels in the highest quintile (OR=1.5, 95%C=1.2-2.0, p=.002)
after adjustment for demographics, lifestyles and antidepressive medication use. No associations were found for MDD, social phobia or generalized anxiety disorder, or between psychopathology and TSH levels. However, antidepressant medication had a strong and significant opposite effect on FT4 level: users on SSRIs, venlafaxine or a combination of two antidepressants had significantly lower FT4 levels (all p<.001). These results show that panic disorder, but not other depressive or anxiety disorders, is associated with significantly higher FT4 levels, whereas antidepressant medication is associated with lower FT4 levels.

9) Abstract 1760
TRAIT POSITIVE AFFECT B AKES THE EFFECTS OF ACUTE STRESS ON SKIN BARRIER RECOVERY
Theodore F. Robles, Ph.D., Kathryn P. Brooks, BA, Psychology, University of California, Los Angeles, Los Angeles, CA; Sarah D. Pressman, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA
Objective: This study extends previously reported findings by examining the role of self-reported trait positive affect (PA) in buffering the effects of a brief laboratory stressor on cardiovascular and cortisol responses, and skin barrier recovery after skin disruption. Design: Forty-six healthy participants (mean age 22.7) completed a self-report measure of trait PA and negative affect (NA), and were randomly assigned to a Stress (Trier Social Stress Test), or Stress + Social Support condition (support from a confederate prior to the stressor). Main Outcome Measures: Skin barrier recovery was assessed by measuring transspidermal water loss from up to 2 h after skin disruption. Cardiovascular responses were assessed by repeated measures of heart rate, systolic blood pressure, and diastolic blood pressure before and during the stressor. Cortisol responses were assessed using a saliva collection at baseline and 30 min after the stressor. Results: Multilevel modeling indicated that greater trait PA was related to faster skin barrier recovery (p < .05). To illustrate, participants 1 SD above the mean on trait PA showed 40.5% recovery 1 h after disruption, and participants 1 SD below the mean on trait PA showed 22.4% recovery. The effects of PA on skin barrier recovery were independent of levels of trait NA. Trait PA did not predict cardiovascular or cortisol responses to the stressor, and cortisol responses did not mediate the relationship between trait PA and skin barrier recovery. Conclusion: These findings suggest that dispositional factors, such as trait PA, may influence skin barrier recovery after a brief stressor. In addition, these results provide additional evidence that trait PA can positively impact objective health outcomes.

10) Abstract 1235
FUNCTIONAL ASSOCIATION OF BRAIN AND SOMATIC ACTIVITIES ACCOMPANYING REVERSAL LEARNING
Hideki Ohira, PhD, Psychology, Nagoya University, Nagoya, Aichi, Japan, Michio Nomura, PhD, Psychology, Tokai Gakuin University, Kakamigahara, Gifu, Japan, Masahiro Matsunaga, PhD, Psychology, Nagoya University, Nagoya, Aichi, Japan, Toriko Isowa, MA, Nursing, Meidai Preclinical College of Nursing, Tsu, Mie, Japan, Kenta Kiyohara, MA, Hidori Murakami, MA, Takahiro Osomi, BA, Psychology, Nagoya University, Nagoya, Aichi, Japan
Decision making in situations with uncertainty and variability is critical for survival in animals and humans. The somatic marker hypothesis addresses that feedback of bodily responses should play a key role in rapid adaptation in such situations. To elucidate neural basis of functional association between brain and body in decision making, we conducted simultaneous recording of regional cerebral blood flow by PET, EEG, and cardiovascular parameters when 20 subjects conducted a stochastic learning task with reverse of stimuli-reward/punishment contingency. In the task, subjects were presented two stimuli and asked to select one. One stimulus resulted in 70 % monetary reward and the other resulted in 30 % reward. After 120 trials, contingency between the stimuli and probabilities of reward was reversed in the following 120 trials, without any explicit instruction. As results, we observed involvement of the medial prefrontal cortex (MPFC), orbitofrontal cortex (OFC), and dorsal striatum which have been thought as important portions of the neural reward system (p < .001, uncorrected). In EEG data, P3 component of event-related potential triggered to signals of reward differently responded to signals of reward and non-reward, and reversal making in such brain areas. Furthermore, subjects’ decision making after reverse of stimuli-reward contingency was associated with activation in the orbitofrontal cortex, amplitudes of P3, and cardiovascular activity. Thus, we consider that the top-down regulation by the orbitofrontal cortex and somatic marker signals which might be represented there are key factors for an appropriate decision in variable environments.

11) Abstract 1521
DEPRESSIVE SYMPTOMS DIFFERENTIALLY PREDICT CARDIOVASCULAR RISK FACTORS AMONG AFRICAN AMERICAN MEN AND WOMEN
Denise C. Cooper, M.A., Shari R. Waldstein, Ph.D., Department of Psychology, University of Maryland Baltimore County, Baltimore, MD, Michele K. Evans, M.D., Alan B. Zonderman, Ph.D., National Institute on Aging, National Institutes of Health, Baltimore, MD
African Americans have disproportionately high rates of cardiovascular disease (CVD) that are poorly understood. Studies of this population suggest CVD and subclinical levels of depression are more prevalent among women than men. The links found between subclinical depression and the development of CVD might occur via cardiovascular risk factors that could be potentiated by depressive symptoms. Whereas data indicate the influence of depression on cardiovascular risk factors may vary by gender, little is known about these variations among African Americans. This information gap was addressed by examining depressive symptoms, as measured by the Center for Epidemiologic Studies-Depression (CES-D) scale, for interactive effects with gender on a spectrum of CVD risk factors among 734 African Americans (320 men, 414 women) during an acute sample session. The results of the Healthy Aging in Neighborhoods of Diversity Across the Life Span (HANDLS) Study. Separate multiple regressions examined CES-D x Gender as a predictor of 9 risk factors for CVD, including family mass index (BMI), waist circumference (WC), resting measures of systolic and diastolic blood pressure (SBP, DBP), as well as fasting measures of total serum cholesterol (TSC), low- and high-density lipoprotein cholesterol (LDL-C, HDL-C, respectively), and triglycerides (TG), and glucose (GLU). Regressions were adjusted for age, BMI (except in analyses of BMI as a risk factor), poverty status, smoking, alcohol, and medical comorbidities. The CES-D x Gender interaction predicted WC, SBP, DBP, LDL-C, HDL-C, and TG, with a main effect found for increasing CES-D scores on decreasing TSC (p<.05). Subsequent gender-stratified regressions showed that CES-D scores among African American women were positively related to WC (p<.05), SBP (p<.01), and DBP (p<.05), but inversely related to HDL-C (p<.01). Among African American men, however, CES-D scores were positively related to HDL-C (p<.05) and inversely related to LDL-C (p<.01) and TG (p<.05). These findings suggest that higher depressive symptoms may be more adversely related to several CVD risk factors among African American women than African American men.

12) Abstract 1196
IMPACT OF MENOPAUSE AND HORMONE THERAPY ON EXERCISE-INDUCED MYOCARDIAL ISCHEMIA AND CHEST PAIN
Nadine S. Bekkouche,, Catherine Laurin,, Kim L. Lavoie,, André Arsenault,, Blaine Ditto,, Philippe Stébene,, Bernard Meloche,, Roxanne Pelletier,, Jennifer Gordon,, Sandra Pélaez,, Simon L. Bacon,, Montreal Behavioural Medicine Center, Montreal Heart Institute, Montreal, Quebec, Canada
After menopause, women experience a dramatic increase in cardiac disease which is believed to be due to a drop in their level of circulating estrogen. In addition, menopausal status has been associated with altered pain perception. The current study assessed the effect of menopausal status, hormone therapy, and hysterectomy on chest pain among a standard nuclear medicine exercise stress test provided information about menstrual status, history of hysterectomy, and hormone therapy (HT) use. Physician-assessed myocardial ischemia and clinical chest pain during the test was also recorded. GLM analyses revealed a main effect of menopausal status on clinical pain (F=6.66, p=0.011), such that for the same amount of ischemia, post-menopausal women reported more clinical pain than pre-menopausal women (F=4.83, p=0.029), such that women with a hysterectomy had less
ischemia. These analyses were repeated controlling for current use of HT. The effect of menopausal status on clinical pain disappeared (F=2.02, p=0.158) and the effect of hysterectomy on ischemia was attenuated (F=3.81, p=0.053). There were no main effects of current use of HT on clinical pain (F=0.46, p=0.499) or ischemia (F=1.55, p=0.215). These results suggest that menopause and hysterectomy influence the presentation of CVD in women. These relationships seem to be mediated by current use of HT, despite there being no direct effect of HT on pain or ischemia. Moreover, these factors seem to be affecting CVD in a heterogeneous way, acting on either pain or ischemia, but not both at once. Further research is needed to understand how these factors interact to influence CVD in women.

13) Abstract 1339
PSYCHOTROPIC MEDICATION USE AND RISK FOR CARDIOVASCULAR EVENTS AND ALL-CAUSE MORTALITY IN WOMEN WITH SUSPECTED CORONARY ARTERY DISEASE: RESULTS FROM THE NHLBI SPONSORED WISE STUDY
D S. Krantz, PhD, J L. Francis, PhD, K S. Whittaker, BA, Medical and Clinical Psychology, Uniformed Services University, Bethesda, MD, G Barrow, M.S., C McClure, BS, Epidemiology, University of Pittsburgh, Pittsburgh, PA, D S. Sheps, MD FACC, Cardiovascular Medicine, University of Florida, Gainesville, FL; D B. Johnson, PhD, Epidemiology, University of Pittsburgh, Pittsburgh, PA, T Rutledge, PhD, Psychiatry, UCSD, San Diego, CA, K York, PhD, Cardiology, University of Florida, Gainesville, FL; C. Cornnell, PhD, Health Behavior and Health Education, University of Arkansas, Little Rock, AR; V Bittner, MD MSPH, Cardiology, University of Alabama at Birmingham, Birmingham, AL; V Vaccarino, MD PhD, Medicine, Emory University, Atlanta, GA; W Vickers, MD, FACC, University of Pittsburgh, Pittsburgh, PA; S Parasarh, MD MPH, Medicine, Emory University, Atlanta, GA; D Vido, MS, MS, Epidemiology, Allegheny General Hospital, Pittsburgh, PA, C N B. Morz, MD FACC FAHA, Medicine, Cedars-Sinai Medical Center, Los Angeles, CA.

The present study investigated the relationship between prior psychotropic medication use and adverse cardiovascular disease outcomes in women undergoing coronary angiography for diagnosis of ischemia. Women enrolled in the NHLBI Women's Ischemia Syndrome Evaluation (WISE) study were classified into 4 medication groups according to whether they were utilizing antidepressant and/or anxiolytic medications at study intake: (1) No medication (n=352); (2) Anxiolytics only (n=67); (3) Antidepressants only (n=58); and (4) Combined antidepressant and anxiolytics (n=39). Participants were followed prospectively for the development of cardiovascular events (death due to CAD, myocardial infarction, stroke, and congestive heart failure) and all-cause mortality over a median of 5.9 years. In the final regression model that included demographics, depression symptoms (measured by the Beck Depression Inventory), anxiety symptoms, and cardiovascular risk factors, women in the Combined medication group (i.e. antidepressants and anxiolytics) had elevated risk for CV events (p = .02) and all-cause mortality (p = .002). Kaplan Meier survival curves indicated there was a significant difference in mortality among the medication groups (p = .001), even after controlling for prior depression and anxiety in the model. These data suggest that women with suspected CAD and depression symptoms may not be adequately treated, and that factors related to prior psychotropic medication use are associated with adverse outcomes in women with suspected CAD. Explanation of these findings requires further research.

14) Abstract 1746
SPousAL CONFLICT AND REJECTION IN THE CONTEXT OF CHRONIC PAIN
Mary A. Wiener, BA, Mary C. Davis., Alex J. Zautra, PhD, Morris A. Okun, Phd, Department of Psychology, Arizona State University, Tempe, AZ.

Among women with chronic pain, those perceiving higher levels of interpersonal stress also report greater pain, especially within the marital context. However, it remains unclear whether the substance of this stress is important. Drawing on the notion that negative attention is better than none at all, we distinguish between two negative interpersonal constructs: marital conflict, a high activation negative social interaction requiring personal engagement, and marital rejection, a negative social interaction whereby requests for social engagement are met by responses that signal devaluation. We examine whether daily marital conflict and daily marital rejection, considered singly and as an interaction, are differentially related to reports of pain. We recruited women with confirmed osteoarthritis, fibromyalgia, or both (n = 151) between the ages of 38 and 72 years of age. Measures included the Inventory of Small Life Events (ISLE), the positive and negative affect subscales from the Positive and Negative Affect Schedule (PANAS), and daily reports of pain. Multi-Level Modeling was utilized to test study hypotheses. Daily marital conflict was inversely related to pain (beta = -1.02, t = -2.11, p<.05); as marital conflict increased, pain decreased. Daily marital rejection (p=90) was not independently related to reports of pain. However, a significant conflict by rejection interaction was detected (beta = -3.43, t = -2.53, p <.05); such that during episodes punctuated by high spousal rejection, simultaneous reports of high conflict were associated with less pain. This interaction was sustained when including mean conflict, mean rejection, daily positive affect and daily negative affect in the model. Women who experience chronic pain are sensitive to negative interpersonal transactions. The current findings suggest that the nature of these transactions is important. In particular, marital interactions punctuated by conflict appear to protect against pain when considered alone, and in the context of marital rejection. Such a finding lends support for the notion that negative attention (conflict), is better than no attention at all (rejection).

15) Abstract 1242
THE ROLE OF DAILY AND CHRONIC FINANCIAL STRESS IN SOCIOECONOMIC PAIN DISPARITIES
Rebecca Rios, BA, Alex J. Zautra, Ph.D., Psychology, Arizona State University, Tempe, AZ.

Socioeconomic disparities have been widely documented in musculoskeletal disease. Given that pain may have its impact in ways that may influence social standing, little research has targeted pathways leading to such disparities. The current study investigated the relations between financial strain (FS), daily financial worry (DFW) and pain among a group of female pain patients. Hypotheses stated that daily and chronic measures of financial stress would lead to greater pain, and that chronic FS would moderate the daily relationship between financial worry and pain, suggesting that social standing leads to differential vulnerability to daily financial stress, thereby contributing to pain disparities. Subjects were 250 female pain patients with Fibromyalgia, osteoarthritis, or both. Level of FS and demographics were measured during an initial assessment, and daily pain and DFW were measured over 30 days using daily diaries. Multilevel modeling was used to test regression models. Results indicated significant direct effects of both DFW (p<.02; mean=1.8, sd=9, range=[1,4]) and FS (p<.01; mean=2.8, sd=1.8, range=[1,7]) on pain (mean=54.1, sd=23.6, range=[0,100]). The cross-level interaction between DFW and FS was also significant. The effect of diagnosis group on pain was statistically controlled. See table for full results. Further probes indicated differences across working status, where results were significant only among those who were not working. The study concluded that those who were not working and more financially strained experienced greater pain reactivity to daily financial worries. Integrative care for pain disease should take into consideration the effects of financial burden, particularly when evaluating costly treatments. Theories of pain may be advanced with attention to social factors along with biopsychological influences.

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16) Abstract 1628
NEONATAL DEXAMETHASONE BUT NOT DEXAMETHASONE TO PREVENT CHRONIC LUNG DISEASE WERE COMPARED TO A GROUP OF CHILDREN NEONATALLY TREATED WITH THE CLINICALLY EQUALY EFFECTIVE DRUG ALBUTEROL AS A SECONDARY PHARMACOLOGIC INTERVENTION TO PREVENT POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Ibort Kobayashi, M.S., Psychology, Kent State University, Kent, OH, William F. Fallon, M.D., Eileen Spoonster, R.N., Trauma Services, Summa Health System, Akron, OH, Douglas L. Delahanty, Ph.D., Psychology, Kent State University, Kent, OH

Studies investigating pharmacologic early interventions for posttraumatic stress disorder (PTSD) have indicated positive effects of some medications such as propranolol and hydrocortisone in preventing the development PTSD among individuals experienced a traumatic event. The present study was an exploratory analysis of data from a longitudinal study of motor vehicle accident (MVA) victims aimed at examining possible effects of albuterol, a β2-adrenergic receptor agonist, administered soon after an MVA on subsequent PTSD symptoms. Four hundred and six MVA victims completed the Clinic administered PTSD Scale (CAPS) at 6-weeks and 1-year post-MVA. Forty-seven participants received albuterol while they were in-hospital. Regression analysis showed that receiving albuterol was associated with lower total CAPS [6 weeks: Mean = 14.1 vs. 27.2, t = -3.3, p = .001; 1 year: 10.5 vs. 19.6, t = -2.2, p = .03] and reexperiencing [6 weeks: 2.1 vs. 6.9, t = -3.3, p = .001; 1 year: 1.0 vs. 4.2, t = -3.0, p = .003] and hyperarousal [6 weeks: 4.8 vs. 9.9, t = -3.8, p < .001; 1 year: 3.8 vs. 7.0, t = -2.3, p = .02] subscale scores than those who did not receive albuterol at 6-week and 1-year post-MVA. Further, after covarying for the impact of gender, ethnicity, injury severity score (ISS), and ER heart rate (HR), the albuterol group had significantly lower total CAPS (F = 12.5, p = .001), reexperiencing (F = 6.85, p = .009), and hyperarousal (F = 19.0, p < .001) scores at 6-week assessment. Similar ANCOVAs also found lower total CAPS (F = 6.62 p = .01), reexperiencing (F = 6.64, p = .009), and hyperarousal (F = 6.69, p = .009) scores in the albuterol group compared to the no albuterol group at 1-year post-MVA. These exploratory findings suggest a positive role for albuterol as a secondary pharmacologic intervention to reduce/prevent the development of subsequent PTSD symptoms.

17) Abstract 1510
GHRELIN AND LEPTIN IN PATIENTS WITH PRIMARY INSOMNIA

Sarosh J. Motivala, Ph.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA, A. Janet Tomyiama, M.S., Psychology, UCLA, Los Angeles, CA, Michael G. Ziegler, M.D., Medicine, UCSD, San Diego, California, Srikrishna Khandrika, Ph.D., Medicine, UCSD, San Diego, CA, Michael R. Irwin, M.D., Cousins Center for Psychoneuroimmunology, UCLA Semel Institute, Los Angeles, CA

Purpose: Experimental sleep deprivation studies show that sleep curtailment in healthy humans affects levels of ghrelin and leptin, two primary hormones involved in energy balance that regulate appetite and body weight. No study to date has examined levels of these hormones in a clinical population with chronic poor sleep, namely insomnia patients. Subject Sample and Methods: Healthy control subjects (n=24) and primary insomnia patients, diagnosed using DSM-IV criteria (n=14) underwent a 2-night sleep assessment including polysomnography and repeated night-time blood draws. All subjects were women, and groups did not differ in demographic or education level (p's > .05). Ghrelin and leptin were measured at 2300 h, 0200 h and 0600 h. Group differences for sleep measures were tested using one-way analysis of variance (ANOVA) and for hormone measures using repeated measures ANOVA. Results: Insomnia patients had worse sleep, with less total sleep time, less stage 1, 2 & REM sleep than controls (p's < .05). Ghrelin levels across the night were significantly lower in insomnia patients (p < .0001) than controls. Leptin was not significantly different between the groups. Conclusions: Decreased nocturnal ghrelin in insomnia patients is consistent with findings from sleep deprivation studies showing that night-time wakefulness is associated with decreased nocturnal ghrelin. Similar to insomnia patients, obese adults and night-eating disorder patients also have decreased ghrelin levels and insomnia is prospectively associated with weight gain. The current study suggests that the latter association may be related to a dysregulation of hormones related to energy balance.

18) Abstract 1344
ALBUTEROL ADMINISTERED SOON AFTER A MOTOR VEHICLE ACCIDENT MAY ALLEViate SUBSEQUENT POSTTRAUMATIC STRESS DISORDER SYMPTOMS

Ibort Kobayashi, M.S., Psychology, Kent State University, Kent, OH, William F. Fallon, M.D., Eileen Spoonster, R.N., Trauma Services, Summa Health System, Akron, OH, Douglas L. Delahanty, Ph.D., Psychology, Kent State University, Kent, OH

Studies investigating pharmacologic early interventions for posttraumatic stress disorder (PTSD) have indicated positive effects of some medications such as propranolol and hydrocortisone in preventing the development PTSD among individuals experienced a traumatic event. The present study was an exploratory analysis of data from a longitudinal study of motor vehicle accident (MVA) victims aimed at examining possible effects of albuterol, a β2-adrenergic receptor agonist, administered soon after an MVA on subsequent PTSD symptoms. Four hundred and six MVA victims completed the Clinic administered PTSD Scale (CAPS) at 6-weeks and 1-year post-MVA. Forty-seven participants received albuterol while they were in-hospital. Regression analysis showed that receiving albuterol was associated with lower total CAPS [6 weeks: Mean = 14.1 vs. 27.2, t = -3.3, p = .001; 1 year: 10.5 vs. 19.6, t = -2.2, p = .03] and reexperiencing [6 weeks: 2.1 vs. 6.9, t = -3.3, p = .001; 1 year: 1.0 vs. 4.2, t = -3.0, p = .003] and hyperarousal [6 weeks: 4.8 vs. 9.9, t = -3.8, p < .001; 1 year: 3.8 vs. 7.0, t = -2.3, p = .02] subscale scores than those who did not receive albuterol at 6-week and 1-year post-MVA. Further, after covarying for the impact of gender, ethnicity, injury severity score (ISS), and ER heart rate (HR), the albuterol group had significantly lower total CAPS (F = 12.5, p = .001), reexperiencing (F = 6.85, p = .009), and hyperarousal (F = 19.0, p < .001) scores at 6-week assessment. Similar ANCOVAs also found lower total CAPS (F = 6.62 p = .01), reexperiencing (F = 6.64, p = .009), and hyperarousal (F = 6.69, p = .009) scores in the albuterol group compared to the no albuterol group at 1-year post-MVA. These exploratory findings suggest a positive role for albuterol as a secondary pharmacologic intervention to reduce/prevent the development of subsequent PTSD symptoms.

19) Abstract 1722
THE EFFECT OF RECEPTIVE MUSIC THERAPY ON HEART RATE VARIABILITY IN HYPERTENSIVE PATIENTS

Vera Brundel,, Research Program Music Medicine, Paracelsus Medical University, Salzburg, Austria, Julian F. Thayer, PhD, Clinical Psychology Program, Ohio State University, Columbus, OH, Joachim E. Fischer,, Institute for Public Health and Preventive Medicine, University of Heidelberg, Mannheim Medical Faculty, Mannheim, Germany

Autonomic imbalance in favor of sympathetical arousal is believed to contribute to hypertension. Conversely, increasing baseline parasympathetic tone in hypertensive patients may contribute to normalization of blood pressure. People listen to music to positively alter mental states and to encourage relaxation. We hypothesized that specially designed music programs for hypertensives might alter parasympathetic tone as indexed by the high-frequency band in frequency domain based analysis of heart rate variability. This hypothesis was tested by a waiting-list randomized trial involving 32 hypertensive patients aged 30-78 years and 29 parents of insulin-may be related to a dysregulation of hormones related to energy balance.
deviations) of receptive music therapy on the parasympathetic tone in hypertensive patients.

20) Abstract 1131
PARING STYLES AND CLOSENESS DURING CHILDHOOD PREDICT OVERWEIGHT AND OBESITY IN YOUNG ADULTS
Ilene C. Siegler, Ph.D., M.P.H., Psychiatry, Charles E. Jonassaint, B.A., Psychology, Beverley H. Brummert, Ph.D., Richard S. Surwit, Ph.D., John C. Barefoot, Ph.D., Psychiatry, Allison E. Ashley-Koch, Ph.D., Medicine, Bedford B. Williams, MD, Psychiatry, Duke, Durham, NC, Thorkild A. Sorensen, DrMedSci, Preventive Medicine, Copenhagen University Hospital, Copenhagen, Copenhagen, Denmark
Lissau & Sorensen (1994, Lancet) studied the impact of parental treatment on children aged 10-20 on the development of obesity 10 years later in a population sample in Denmark. Obesity was related to lower parental support and ratings of parental neglect controlling for SES, age, sex and family composition. We used data from the Adolescent Health Study, a population study of 7-12th graders in the US to predict overweight (BMI>25), obesity (BMI>30), and extreme obesity (BMI >37) 7 years later. We first limited the sample to 3823 white children aged 10-14 at baseline for a replication sample. We then tested the same models in the full sample aged 10-22 at baseline (n=7866). We calculated GMTs for the Wisconsin strain of influenza virus and measured levels of parental support, closeness, warm interactive parenting style (IPS), and hygiene of the child at baseline. All models were controlled for baseline BMI, age, sex, parental education, income and observer ratings of housing and neighborhood conditions. High vs. low group contrasts are reported. Baseline BMI was a significant predictor in all models. Findings from the US sample only partially replicated the Danish findings. In the replication sample restricted to younger vaccines, low ratings of IPS were associated with an increased risk of being overweight (OR = 1.46, CI=1.05;2.04). However, there were no significant psychosocial predictors for obesity or extreme obesity. In the full sample, when predicting extreme obesity, lower ratings of IPS were associated with increased risk (OR = 1.77, CI=1.2;2.6). These findings suggest that parenting style and closeness controlling for socioeconomic factors during childhood play a significant role in the development of overweight and obesity in adulthood. Supported by Grants # P01HD31921 and P01HL36587

21) Abstract 1667
INCREASED INFLUENZA ANTIBODY TITERS AFTER IMMUNIZATION IN A PUTATIVE BIOTERRORISM CONTEXT
Karen S. Quigley, Ph.D., Isabella M. Rodrigues, Ph.D. War Related Illness and Injury Study Center, East Orange VA Med Ctr, East Orange, NJ, Sarah Lachiewicz, B.A., Psychology, Nova Southeastern University, Davie, FL, Stefan Gravenstein, M.D., Glennan Center, Eastern Virginia Medical School, Norfolk, VA, Kathi L. Heffner, Ph.D., Psychology, Ohio University, Athens, OH
Fifty five individuals were randomly assigned to receive 1 of 3 vaccines: placebo, usual influenza vaccine, or a vaccine described as protection from a future bioteror influenza. Blood was drawn for baseline antibody titers and individuals were told which vaccine they would receive. We recorded ECG and autonomic measures before, during, and after a computerized rating task. Participants went home with a handheld computer that prompted ratings of vaccine-related symptoms (e.g., arm soreness), non-specific symptoms (e.g., headache), and mood. 3 times/day for 10 days. Participants were debriefed 10 days post-vaccine, and returned 1 month later for post-vaccine antibody titers. Titers were determined using hemagglutination inhibition tests. Results were analyzed using three, 2 Bioterror vs. Regular Influenza Inforstr X 2 Placebo vs. Influenza vaccine Type X 2 Trait Negative Affect ANOVAs on geometric mean titer (GMT) levels for the 3 components of the trivalent influenza vaccine. Analysis of Ln GMTs for the A/Wisconsin 2506/2005 strain with baseline GMT as a covariate revealed a marginally significant interaction of Instructions X Vaccine Type (F(1,49) = 2.69, p = 0.107) and significant main effects of Vaccine Type (F = 44.9, p < .001) and Instructions (F = 5.06, p < .03). Those receiving Bioterror Influenza instructions (and the annual influenza vaccine) had greater antibody titers at 1 month post-vaccination than those receiving the Regular Influenza instructions (and the annual influenza vaccine). This study may not be more affected adversely.

22) Abstract 1254
5-HTTLPR AND GENDER MODERATE CHANGES IN NEGATIVE AFFECT RESPONSES TO TRYPTOPHAN INFUSION
The more transcriptionally efficient L allele of a functional polymorphism in the promoter region of the serotonin transporter (5HTTLPR) is associated with higher levels of depressive symptoms in chronically stressed men (Brummert et al., In Press). Within 5HTTLPR is an a/g SNP (rs25531) that modifies the activity of the insertion/deletion polymorphism. For analyses, we created a composite allele score of the 2 polymorphisms whereby alleles were categorized according to transcriptional activity (La as Hi, and G & 8 as Lo); resulting in 3 genotype groups (HiH, HiLo, & LoLo). We evaluated effects of gender & this composite genotype on acute induction of negative affect by intravenous infusion of L-tryptophan (TRP) in 35 females & 41 males. The protocol consisted of a day 1 sham saline infusion & a day 2 active TRP infusion (100 mg/kg over 25 minutes). Regression models assessed negative affect change (adjusted for race and baseline affect) in ratings of depression, anger, tension, and frustration during TRP infusion. On day 1 there were no significant changes in mood during sham infusion. On day 2 all negative affect ratings increased significantly (p<.02) during TRP infusion. The genotype X gender interaction was significant for depression (p<.01), marginally so for anger (p<.08), and nonsignificant for tension & frustration. Males in the HiHi group had significantly greater increases in negative affect during infusion, compared to all groups except LoLo females. Group means for depression change (positive scores indicate increased negative affect) were: Males (HiHi=6.4, HiLo= 1.3, LoLo=-1.9) & Females (HiHi=0.2, HiLo=1.7, LoLo=-2.4). The larger acute increase in POMS depression during TRP infusion in males with the more transcriptionally active genotypes may account for the increased depressive symptoms reported in chronically stressed men with more efficient 5HTTLPR alleles. Supported by NHLBI grant P01HL36587

23) Abstract 1256
POSITIVE AFFECT IS NEGATIVELY ASSOCIATED WITH CARDDIOVASCULAR REACTIVITY DURING EMOTIONAL RECALL TASKS: EFFECTS INDEPENDENT OF NEGATIVE AFFECT
B H. Brummert, PhD, S H. Boyle, PhD, I C. Siegler, Phd, R B. Williams, MD, Psychiatry, DUMC, Durham, NC
Numerous studies have examined the relationship between the tendency to experience negative emotions, particularly hostility, and cardiovascular reactivity (CVR) assessed during emotion recall tasks. Fewer studies, however, have looked at the associations between the tendency to experience positive emotions (e.g., positive affect) and CVR. Models were also adjusted for age, race, & gender. The factor score representing positive emotional disposition was comprised of POMS & VAS ratings of positive emotion collected during the reactivity protocol, and the NEO-PI-R facet score that assesses positive emotion. Similarly, the factor score representing negative emotional disposition was comprised of POMS and VAS ratings of negative emotion (e.g., anger, tension & frustration). Males in the HiHi group had significantly greater increases in negative affect during infusion, compared to all groups except LoLo females. Group means for depression change (positive scores indicate increased negative affect) were: Males (HiHi=6.4, HiLo= 1.3, LoLo=-1.9) & Females (HiHi=0.2, HiLo=1.7, LoLo=-2.4). The larger acute increase in POMS depression during TRP infusion in males with the more transcriptionally active genotypes may account for the increased depressive symptoms reported in chronically stressed men with more efficient 5HTTLPR alleles. Supported by NHLBI grant P01HL36587.
The positive emotional factor was significantly related to change in SBP both during the anger (p<.05) & sadness (p <.03) recall, such that increased levels of positive affect were associated with decreased SBP reactivity. There was also a tendency for positive emotions to be negatively related to DBP during the sadness recall (p=.07). Positive emotions were unrelated to HR reactivity. Thus, these data suggest that the tendency to experience positive emotions is related to CVR, independent of the effect of negative emotional tendencies—findings that have implication for important health related outcomes. Supported by NHLBI grant P01HL36587

24) Abstract 1432
GENOTYPE OF A FUNCTIONAL POLYMORPHISM OF THE MONAMINE OXIDASE-A GENE PROMOTER (MAOA_UVNTR) MODERATES THE EPINEPHRINE RESPONSE TO TRYPTOPHAN INFUSION
S H. Boyle, B H. Brunnmett, PhD, Psychiatry, C L. Muller, MS, Cent. Hum. Genet., J C. Barefoot, PhD, Psychiatry, C M. Kuhn, PhD, Pharm. & Cancer Biol, A Collins, PhD, A Ashley-Koch, PhD, Cent. Hum. Genet., R B. Williams, MD, Psychiatry, DUMC, Durham, NC

Sympathetic nervous system (SNS) activation has been hypothesized to mediate effects of stress on coronary heart disease risk. Serotonin (5-HT) provides an important role in CNS regulation of SNS activation. In humans, Tryptophan (TRYP) infusion results in a decrease in plasma norepinephrine (NE) but an increase in epinephrine (Epi) — likely the result of increased 5-HT activity at different receptor sites. Monoamine oxidase-A (MAOA) degrades 5HT and hence can influence the amount of 5HT available to affect SNS function following TRYP infusion. To the extent that the increased Epi or decreased NE levels following TRYP infusion result from stimulation of 5-HT receptors, therefore, men with less active (3 repeats) alleles of a functional polymorphism of the MAOA promoter (MAOA-UVNTR) should show increased expression of these effects compared to men with more active (3/4 repeats) alleles, in whom the increased MAOA breakdown of 5-HT would limit effects of TRYP infusion. In a sample of 34 healthy men, blood samples were collected at 15 minute intervals during the hour following a start of plasma Epi and NE concentrations. The study protocol or active TRYP infusion (100 mg/kg body weight over 25 min.) on day 2 and assayed for plasma levels of NE and Epi. General linear models, controlling for age and race, indicated a significant day X time X MAOA-UVNTR genotype interaction (p <.004) for plasma Epi and a nonsignificant interaction for NE (p >.45). TRYP infusion resulted in a 70 pg/ml increase from baseline (p=0.0011) in Epi in the total sample. The magnitude of this increase was twice as large among those participants with the 3-repeats allele (+100 pg/ml) than those with 3/4/5 repeats alleles (+50 pg/ml). Thus, it appears that the Epi response to tryptophan is mediated by a site where MAOA has a large influence on 5-HT, whereas the NE response is mediated by a different site where MAOA has less influence on 5-HT. This finding has important implications for understanding the role of 5-HT in stress-related disease. Supported by NHLBI grant P01HL36587

25) Abstract 1402
CENTRAL NERVOUS SYSTEM SEROTONIN FUNCTION, HOSTILITY AND FASTING GLUCOSE IN AFRICAN AMERICAN FEMALES
S H. Boyle, Ph.D, R S. Surwil, PhD, A Georgiades, PhD, B H. Brunnmett, PhD, J C. Barefoot, PhD, Psychiatry, C M. Kuhn, PhD, Pharm. & Cancer Biol, R B. Williams, MD, Psychiatry, DUMC, Durham, NC

Hostility has been associated with altered glucose metabolism and there is evidence to suggest that the association is particularly strong among African American women. Central nervous system (CNS) serotonin (5HT) is believed to play a role in both hostility and glucose metabolism. The purpose of the present study was to examine associations among cerebrospinal fluid (CSF) levels of 5-hydroxyindoleacetic acid (SHIAA; an index of CNS 5HT), hostility and fasting glucose in a sample of 41 African American females without diabetes (mean age = 32, SD = 8.97). Lumbar puncture was performed for determination of SHIAA, the major serotonin metabolite. A fasting blood sample was collected for determination of glucose levels. Hostility was measured by the cynicism, hostile affect and aggressive responding subscales from the Cook-Medley Hostility Scale. Body mass index (BMI) was significantly associated with CSF5HIAA (r = 32, p < .05), but not hostility (r = .21, p > .15). Partial correlations, controlling for age and BMI, revealed significant positive associations between CSF5HIAA and hostility (r = .46, p<.004), CSF5HIAA and fasting glucose (r = .51, p < .001), and hostility and fasting glucose (r = .38, p < .02). Further analyses revealed that controlling for CSF5HIAA substantially reduced the association between hostility and fasting glucose (r = .2, p >.2). The findings suggest that the association between high hostility and high fasting glucose in African American women may be the result of both them being driven by altered CNS 5HT function. Supported by NHLBI (grant P01-HL36587).

26) Abstract 1260
ANXIETY LEVELS IN IMPLANTABLE DEFIBRILLATOR PATIENTS DIFFER DEPENDING ON INDICATION AND ETIOLOGY
Kris C. Van den Broek, MA, Ivan Nyklícek, PhD, Susanne S. Jepsen, PhD, Johan Denollet, PhD, CORPS - Medical Psychology, Tilburg University, Tilburg, The Netherlands

A subgroup of patients experiences anxiety following implantable cardioverter defibrillator (ICD) implantation, but little is known about the effect of etiology (ischemic cardiomyopathy (ICMP) vs. non-ICMP) and indication (primary vs. secondary prevention) on anxiety. ICMP patients (N=212, 85% men, mean age = 62+9.8, range 31-79 years) completed the STAI-Y (12 months after ICD implantation. ANOVAs for repeated measures were used to analyze data. Anxiety decreased significantly after implantation (p=.002), with mean (SD) anxiety scores being 39.1 (11.8), 36.1 (10.9), and 36.3 (11.0) at baseline, 2- and 12-months, respectively. The interaction effects for time by etiology (p=.95) and time by indication (p=.37), as well as the three-way interaction (p=.64), were not statistically significant. The significant effect of etiology was significant (p=.014), with anxiety levels being higher in ICMP patients. There was a trend for indication (p=.060), with the primary prevention patients tending to show higher levels of anxiety. The interaction of etiology by indication was also significant (p=.011). To explore this interaction effect, patients were stratified by etiology and indication. The course of anxiety was similar in the four groups (p=.88), but they differed significantly regarding levels of anxiety only) on day 24 months after ICD implantation. ANOVAs showed that secondary prevention patients with non-ICMP experienced the lowest levels of anxiety across all time points, and was significant in comparison with both ICMP groups (p<.05), and marginally significant compared to primary prevention patients with non-ICMP (p=.077). Levels of anxiety decreased within 2 months after implantation but remained stable between 2- and 12-months across all four groups. In clinical practice, it may be important to provide extra support to primary prevention patients and to secondary prevention patients with ischemic etiology.

27) Abstract 1390
POSITIVE AND NEGATIVE PSYCHOLOGICAL ATTRIBUTES ARE ASSOCIATED WITH BLOOD PRESSURE NONDIPPING: PITTSBURGH SLEEPSCORE PROJECT
Elizabeth J. Mezick, M.A., Psychology, Karen A. Matthews, Ph.D., Martica Hall, Ph.D., Psychiatry, Thomas W. Kamarchik, Ph.D., Psychology, Jane F. Owens, Dr.P.H., Daniel J. Buysse, M.D., Psychiatry, Patrick J. Strollo, M.D., Medicine, Steven E. Reis, M.D., Cardiovascular Institute, University of Pittsburgh, Pittsburgh, PA

An attenuation of the normal nighttime decline in blood pressure (BP), or nondipping, predicts cardiovascular disease and cardiovascular-related mortality, over and above diurnal BP levels. Thus, nondipping may be a marker for increased risk. We investigated whether positive and negative psychological attributes are associated with night-day BP ratios and examined the influence of sleep fragmentation on these relationships. Seventy-seven Blacks and 110 Whites (53% men) free from prevalent heart disease underwent ambulatory BP monitoring and wore a wrist actigraph for two days and nights. Self-reports of positive and negative attributes and sleep fragmentation also affect cardiovascular disease risk. We investigated whether positive and negative psychological attributes are associated with night-day BP ratios and examined the influence of sleep fragmentation on these relationships. Seventy-seven Blacks and 110 Whites (53% men) free from prevalent heart disease underwent ambulatory BP monitoring and wore a wrist actigraph for two days and nights. Self-reports of positive and negative psychological attributes were also collected. After adjustment for demographics, health factors, and sleep fragmentation, high scores on the Spielberger Trait Anxiety Inventory (ps < .03) and low scores on the Life Engagement Test (ps < .004) were associated with high SBP and DBP night-day ratios, and Cook-Medley Hostility scores were marginally associated with SBP and DBP ratios (ps < .1). When life purpose, anxiety, and hostility were included in one model, low life purpose remained the only significant predictor of higher SBP and DBP.
mechanisms for these relationships remain to be defined. Supported by Nondipping appears to be particularly likely in individuals with both high sleep fragmentation was associated with higher night-day BP ratios (SBP p < .1; DBP p < .05 for interaction). Psychological attributes are associated with BP nondipping in Black and White adults, and these relationships are independent of sleep fragmentation. Nondipping appears to be particularly likely in individuals with both high sleep fragmentation was asso ciated with higher night-day BP ratios (ps < .05). Exploratory analyses showed that low life purpose and these relationships are inde pendent of sleep fragmentation.

PARENTAL EDUCATION AND METABOLIC SYNDROME
Jennifer Phillips, M.S., Psychology, University of Pittsburgh, Pittsburgh, PA, Serina Neumann, Ph.D., Psychiatry, EYMS, Norfolk, VA, Janine Florio, Ph.D., Psychology, Queens College CUNY, Flushing, NY, Matthew Muldoon, MD, Clinical Pharmacology, Stephen Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA
Individuals' educational attainment is associated with incident cardiovascular disease and associated risk factors. Emerging evidence indicates that the educational level of one's parents also, often independently, predicts cardiovascular risk. Here, we examined whether parental education predicts presence of the metabolic syndrome and its components (elevated blood pressure, high fasting glucose, dyslipidemia, and central adiposity) in a community sample of nonpatient volunteers. Subjects were 1125 participants from the University of Pittsburgh Adult Health and Behavior project (30-54 yrs,51% female,89% non-Hispanic Caucasian/11% African-American). Prevalence of metabolic syndrome by National Cholesterol Education Program (NCEP) criteria was 22%. Parental education, defined as the highest household parental years of education (M=15.9,SD=3.1), and subjects' own education (M=15.9,SD=2.8) were significantly correlated (r=0.3,p<0.001). After entry of age, sex, race, and subjects' education into logistic regression, parental education did not predict presence of the metabolic syndrome overall, but did so in interaction with sex (p=0.02). In sex-specific analyses, a one year increase in parental education was associated with a 10% reduction in odds of meeting full metabolic syndrome (criterion in women: (OR=0.90,95%CI=0.83,0.98;p=0.021), but not in men (OR=1.01,95%CI=0.95,1.07;p=0.768). Linear regressions, excluding subjects prescribed antihypertensive, oral hypoglycemic, or dyslipidemic medications, were conducted on continuously distributed metabolic syndrome components. After entry of covariates, parental education accounted for significant variation in systolic and diastolic blood pressure and triglycerides in interaction with sex (p's<0.02). Sex-specific analyses showed parental education to predict systolic blood pressure (b=0.58,se=0.17,p<0.001), diastolic blood pressure (b=0.35,se=0.12,p=0.003) and triglycerides (b=0.03,se=0.01,p=0.001) in women, but not in men. These findings suggest that parental education may be an important predictor of cardiovascular risk in middle-aged adults, particularly women.

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29) Abstract 1250
COAGULATION ACTIVITY BEFORE AND AFTER ACUTE PSYCHOSOCIAL STRESS INCREASES WITH AGE
Petra H. Wirz, PhD, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Switzerland, Laura S. Redwine, PhD, Department of Medicine, University of California, San Diego, San Diego, San Diego (California, A. UlrikeEkhert, MD, Psychotherapy, University of Zurich, Zurich, Switzerland, Roland von Kanel, MD, Department of General Internal Medicine, University Hospital Bern, Bern, Switzerland
Background: It is known that hypercoagulation occurs in response to acute stress and that a shift in hemostasis towards a hypercoagulability state occurs with age. However, it is not yet known whether acute stress further increases hypercoagulation in older individuals, and thus may increase their risk for CVD.
Objective: To assess whether stress further increases hypercoagulation in older individuals, we investigated whether acute stress-induced changes in coagulation parameters differ with age.
Methods: 63 medication-free non-smoking men aged between 20 to 65 years (mean±SEM:36.7±1.7) underwent an acute standardized psychosocial stress task combining public speaking and mental arithmetic in front of an audience. We measured plasma clotting-factor-VII activity (FVII:C), fibrinogen, and D-dimer at rest, immediately, and 20 min after stress.
Results: Increased age predicted greater increases in fibrinogen (b=25.95,p=0.03; R²=0.05), FVII:C (b=34.9±2.9, p=0.06; R²=0.11), and D-dimer (b=46.5±0.01; R²=0.15) from rest to 20 min after stress independent of body mass index (BMI) and mean arterial blood pressure (MAP). General linear models revealed significant effects of age and stress on fibrinogen, FVII:C, and D-dimer (main effects: p<0.04), and greater D-dimer stress reactivity with older age (interaction age-by-stress: F(1,590.4)=4.36,p=0.024,F=33).
Conclusions: Our results suggest that acute stress might increase vulnerability in the elderly for hypercoagulability and subsequent hemostasis-associated diseases like CVD.
Positive affect, however, did not differ significantly in pain prediction patterns. The current findings highlight a need to carefully consider nonlinear oscillatory mechanisms when conceptualizing pain prediction and other expectancy-driven behavior among the chronically ill. Additionally, it informs the greater clinical research community of a new and largely untested method of characterizing psychosomatic data.

32) Abstract 1309
SLEEP QUALITY AND PAIN SEVERITY AMONG YOUNG ADULTS WITH AND WITHOUT CHRONIC PAIN: THE ROLE OF DEPRESSED MOOD AND BIOBEHAVIORAL FACTORS
Jennifer E. Graham, Ph.D., Katherine L. Streitel, Biobehavioral Health, Penn State University, University Park, PA
Although pain severity can disrupt sleep, a positive association between sleep quality and pain has sometimes been found but not thoroughly explained, even by depressed mood. Our goal was to evaluate biobehavioral mediators of a pain sleep association among those with and without chronic pain. A questionnaire containing well-validated measures was conducted with young adults (N = 354), some with chronic pain from diverse sources (n = 106). Using structural equation modeling, we tested the hypotheses that the association between pain and sleep would be more robust among those with chronic pain and that it would be fully mediated by depressed mood, health, and health behaviors. We found a positive association between pain severity and sleep (via the Pittsburgh Sleep Quality Index), which was stronger for the chronic pain group than the non-pain group, b = .35, p < .001 vs. b = .16, p < .01. Indicative of mediation, this association dropped to non-significance after the inclusion of depressed mood, b = .06, ns, for the non-pain group only. Measures of overall health, gender, BMI, pain medication use, and behaviors (exercise, alcohol use) and cognitive function, and these were then added to the model on the basis of theoretical considerations to test mediation. The association between pain severity and sleep was reduced but remained significant for those reporting chronic pain, b = .12, p < .05 even in this final model, which was an excellent fit to the data overall, CFI = 1.0, RMSEA = 0.0, X2(68) = 55.7, p = .86. Results suggest that there is a bidirectional, robust association between pain severity and cognitive function independently of central adiposity and associated risk factors. Physical activity level is an important consideration for studies investigating the relationship between obesity and cognitive function.

34) Abstract 1671
BRIEF SCREENING FOR DEPRESSION WITH TWO QUESTIONS IN PATIENTS WITH CHRONIC HEPATITIS C
Peter Berger, MD, Ingrid Shizib, MD, Marion Freidl, MD, Andrea Topitz, MD, Psychiatry and Psychotherapy, Katharina Stauffer, MD, Internal Medicine III, Division of Gastroenterology, Medical University of Vienna, Vienna, Austria, Heinz Katschkin, Professor of Psychiatry, Social Psychiatry, Ludwig Boltzmann-Institute for Social Psychiatry, Vienna, Austria
Depression is a common adverse reaction to treatment of chronic hepatitis C with interferon alpha. Thus, reliably screening for depression in those patients is crucial for treatment and care. In this paper we analyzed the value of two questions of the Patient Health Questionnaire (PHQ) for the core symptoms of depression questions as a simple screening instrument for depression in patients with hepatitis C. Methods: Patients suffering from chronic hepatitis C (before antiviral treatment was started) were divided into two groups: chronic pain group (n = 106) and non-pain group (n = 138). For patients suffering from chronic hepatitis C a screening questionnaire adapted from the PHQ and was assessed by doctors of the department of gastroenterology with a brief structured interview (the TRIPS) for anxiety-, mood-, and alcohol related disorders according to ICD-10. Within a week, all 114 patients were re-assessed face-to-face by psychiatrists of the department of psychiatry with a structured psychiatric interview - the Composite International Diagnostic Interview (CIDI). Results: As assessed by the psychiatrists with the CIDI 44 out of the 114 patients (39%) got any diagnosis of mood disorder according to ICD-10. Of these 44 patients six had dysthymia and 38 patients had a depressive episode. The two questions of the PHQ for core symptoms of depression, "little interest or pleasure in doing things" and "feeling down, depressed, or hopeless" had the best sensitivity (93% and 84%) and acceptable specificity (73% and 76%) (respectively) in detection of any disorder, which is not fully explained by either depressed mood or biobehavioral factors. The extent to which certain chronic pain sufferers self-medicate for pain via sleep or bed-rest will be an important area for future research, particularly as these behavioral patterns are typically viewed by clinicians as unhealthful.

33) Abstract 1315
CENTRAL ADIPOSITY, PHYSICAL ACTIVITY, AND COGNITIVE FUNCTION: THE MAINE-SYRACUSE STUDY
Gregory A. Dore, BA, Merrill F. Elias, PhD, MPH, Michael A. Robbins, PhD, Penelope K. Elias, PhD, Psychology, University of Maine, Orono, ME
Few studies have adjusted for cardiovascular risk factors and disease when investigating the relationship between central adiposity and cognitive function, and none have also adjusted for physical activity level. Our aim was to investigate the association between measures of central adiposity (waist circumference and waist/hip ratio) and cognitive functioning with adjustment for cardiovascular disease risk factors and physical activity. We hypothesized that physical activity would be related to cognitive function and adjustment for physical activity would attenuate the relationship between central adiposity and cognitive function. Participants were 917 stroke-case subjects with chronic pain which is not fully explained by either depressed mood or biobehavioral factors. The extent to which certain chronic pain sufferers self-medicate for pain via sleep or bed-rest will be an important area for future research, particularly as these behavioral patterns are typically viewed by clinicians as unhealthful.

35) Abstract 1776
AGONISTIC AND TRANSCENDENT STRIVINGS PREDICT AMBULATORY BLOOD PRESSURE DURING SOCIAL INTERACTIONS IN URBAN ADOLESCENTS
Gavin J. Elder, BSc, Nina J. Stoeckel., Marta J. Kadiola., Mi Ditmar., Randal Jorgensen, PhD, Craig Ewart, PhD, Psychology, Syracuse University, Syracuse, NY
In a prior study of low income urban youth at increased hypertension risk, we found that adolescents’ social goals and strategies predicted their blood pressure levels whenonia-free conditions were present (TSP) and during everyday social interactions (AS), or trying to control or dominate others, was correlated with higher ambulatory blood pressure (ABP), whereas Transcendence striving (TS), or focusing on self-improvement goals, was correlated with lower ABP. The current study sought to replicate these findings in a different urban sample, and to extend them by examining ABP during naturally occurring social interactions. Participants were 90 female and 89 male students (43% White, 40% Black, 17% Other) in a public high school in NY State. AS and TS were assessed by observer ratings of participants’ behavior during the Social Competence Interview (SCI). Two months later, ABP was recorded over 2 successive days (48 hours), while participants recorded their social interactions on electronic diaries. Results replicated some of our earlier findings. In females, AS predicted higher ABP during waking activities (DBP, r = -.30, p = .05). However, with further adjustment for physical activity level, only waist circumference remained significantly associated with performance on the Similitudes test (p < .01). We conclude that central adiposity appears to be related to cognitive function independently of other cardiovascular risk factors. However,
findings emerged from the analysis of social interactions. AS in females predicted higher ABP during social encounters (DBP, r = .36, p < .05) whereas TS predicted lower ABP, (DBP, r = -.44, p < .01). In males, TS predicted lower ABP during social interactions (SBP, r = -.30, p < .01). Our results support the health importance of AS and TS goals and strategies, and suggest they may affect adolescents’ social interactions in ways that might raise or lower ABP, thus increasing or lowering cardiovascular risk. Present gender differences suggest interesting new directions for research.

36) Abstract 1729
UNFAIR TREATMENT AND SOURCES OF DISCRIMINATION: A LONGITUDINAL STUDY IN BLACK AND WHITE ADOLESCENTS
Danielle L. Beatty, Ph.D., Karen A. Matthews, Ph.D., Department of Psychiatry, University of Pittsburgh, Pittsburgh, PA
This study of adolescents assessed racial/ethnic differences in reports of unfair treatment and the specific sources of discrimination (i.e., age, gender, what you wear, other physical appearance, weight, who you hang out with, and income) on two occasions (i.e., T1 and T2), three years apart (Mean age at T2 17.8 years). At T2, the Cook-Medley Cynicism, CES-D Depression, Spielberger Trait Anger and Anxiety, and the Multigroup Ethnic Identity measures were administered. Results showed that Whites declined in reporting unfair treatment overtime (T1 M = 21.54 vs. T2 M = 19.70, p = .002), whereas there was no change overtime among Blacks, p = .48. In contrast, Blacks increased in the number of sources of discrimination overtime relative to Whites. The only psychosocial score associated with unfair treatment due to race/ethnicity discrimination overtime, p = .01. In the full sample, T2, the higher the unfair treatment scores and the more sources of unfair treatment the greater the Cook-Medley Cynicism, Trait Anger and Anxiety, and CES-D Depression scores, all ps < .05. Separate analyses in Blacks and Whites showed that Trait Anger scores were only increased in the non-Blacks and CES-D Depression scores increased in Whites. The only psychosocial score associated with unfair treatment due to race/ethnicity was ethnic identity, p < .001. In conclusion, Whites reported less overall unfair treatment, while Blacks reported more sources of discrimination and more race/ethnicity discrimination overtime. However, in both groups greater unfair treatment and more sources of discrimination were associated with negative emotions. Implications for physical health will be discussed. This publication was supported by The Pittsburgh Mind-Body Center (PMBC, NIH grants HL 076852/076858) and NIH grant HL 007560.

37) Abstract 1396
MODERATE USE OF CAFFEINE AND ALCOHOL IS ASSOCIATED WITH REDUCED INFLAMMATION IN THE HEALTHY OLD
Michele L. Okun, Ph.D., Charles F. Reynolds III, MD, Martica Hall, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA
Successful aging is equated with the avoidance of disease and maintenance of physical and mental health; unsuccessful aging, on the other hand, is associated with increased sleep disturbances and medical morbidity. Good health practices are associated with improved sleep and decreased morbidity; while poor health practices are associated with diminished sleep quality, increased sleep latency and increased morbidity. Few investigations have examined the role that various health behaviors play in successful aging. In the present study, we evaluated relationships among health behaviors, sleep and circulating proinflammatory cytokines (IL-6 and TNF-alpha) in a group of elders without significant sleep complaints or medical morbidity (N = 40, 79.7 ± 3.4 yrs). Positive or negative endorsement of health behaviors, sleep diary and the Pittsburgh Sleep Quality Index. Morning blood draws were conducted in conjunction with sleep studies. Health behaviors that have been associated with beneficial health outcomes were evident among this group of elders: over 71% consumed caffeinated beverages, 64% consumed small to moderate amounts of alcohol, 73% exercised regularly, and 79% took multi-vitamins. Two indices of sleep quality: sleep efficiency and quality scores were improved. Indicators of sleep quality and sleep efficiency were improved. Indicators of sleep quality and sleep efficiency were improved (R2=.10, p<.01) in response to the stressor. Individuals high in Openness also evidenced no increase in negative affect (p>.05), but did demonstrate increased ratings of Excited (r=.474, p<.001) on the PA scale of the PANAS in association with the stressor. Openness was also associated with increased Averting on the ANT (p<.01), which in turn was associated with less SBP reactivity (p<.01). These results demonstrate that Openness is associated with increased resilience to stress that include active engagement, positive affect, and consumption of caffeine and alcohol were associated with lower levels of circulating IL-6 (r = -.38, p = .02 and r = -.36, p = .02, respectively). Our findings challenge the hypothesis that aging is synonymous with diminished sleep quality and increased inflammation. Our findings corroborate previous literature that health behaviors, such as moderate use of caffeine and alcohol, are associated with a reduction in circulating inflammatory markers. Further evaluation of the bi-directional relationships between health behaviors, sleep, inflammation and medical morbidity are warranted in the healthy old.

38) Abstract 1338
CAFFEINE DISRUPTS GLUCOSE METABOLISM IN TYPE 2 DIABETES
J.D. Lane, PhD, Psychiatry, M.N. Feingols, MD, Medicine, R.S. Surwit, PhD, Psychiatry, Duke University Medical Center, Durham, NC
Caffeine can disrupt glucose metabolism in healthy young men, prediabetic adults, and patients with type 2 diabetes. This study examined caffeine's postprandial effects in a larger sample of type 2 diabetic coffee drinkers to confirm caffeine effects and explore factors that could moderate them. A cross-over design tested caffeine's effects on fasting and postprandial glucose and insulin in 52 adult (31 F, age=56±13 yr) coffee drinkers (16oz or more daily) with a history of type 2 diabetes. Mixed-meal tolerance tests were conducted with administration of caffeine (375mg) or placebo. Fasting plasma glucose and insulin were measured before and 60min after drug, and 3hr glucose and insulin responses were measured after a liquid meal providing 75gm of carbohydrate. Postprandial responses were calculated as the area under the 3-hr concentration-time curve. In the group, caffeine increased (p=.02) the insulin response by 11% and decreased values for measures of hepatic and whole-body insulin sensitivity, HOMA (p=.03, ISI = p=.02). A 26% increase in glucose AUC was not significant, due to large variability in the effect of caffeine. Caffeine's effect on postprandial glucose was not moderated by age, sex, duration of diabetes, or HbA1c. However, participants on beta-blocking drugs (N=5) differed (p=.02) from the majority. Caffeine boosted postprandial glucose (p=.05) only in those not taking beta-blockers. Results confirm that caffeine disrupts postprandial glucose metabolism, shown by decreased sensitivity to insulin and a larger insulin response to the meal. The beta-blocker effect suggests that caffeine's disruption of glucose metabolism is mediated by adrenergic mechanisms. Present results add to evidence that daily consumption of caffeinated beverages may be detrimental to type 2 diabetic patients. Research supported by R01 DK067486
less physiological reactivity. Underlying cognitive tendencies toward attentional alerting may play a role in the manner in which individuals high in Openness respond to stressful events.

40) Abstract 1767

DO DHEAS AND DHEA INCREASE IN RESPONSE TO ACUTE LAB STRESS?
Nicole Maninger, PhD, Wendy Wolfsön, MA, Owen Wolkowitz, MD, Elissa Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA

Most studies on the stress responsiveness of the hypothalamic-pituitary-adrenal (HPA) axis have focused on cortisol secretion, while little research has been done on dehydroepiandrosterone-sulfate (DHEAS). DHEAS is the most abundant steroid in the human body. Like cortisol, DHEAS is secreted from the adrenal cortex in response to ACTH stimulation. The purpose of this study was to examine how DHEAS, DHEA, and cortisol change in response to an acute laboratory stressor, the Trier Social Stress Test (TSST). Participants were 24 women (mean age = 56.92 years; range: 36-79). Between 1300-1500 h, participants completed the speech and math tasks of the TSST. Blood samples were taken prior to the start of the TSST (baseline), and 30, 50 and 90 minutes after baseline. Serum concentrations of DHEAS increased by 11%, DHEA by 50%, and cortisol by 44% in response to the TSST and all were significantly higher at 50 min compared to baseline (p<.05). All three hormones decreased from 30 to 50 min post baseline (p<.05); DHEAS decreased by 5%, DHEA by 26%, and cortisol by 16%. Cortisol and DHEA further decreased from 50 to 90 min (p<.05), while DHEAS concentrations did not change significantly from 50 to 90 min (p>.05). These are the first data to show an increase in DHEAS and DHEA in response to an acute laboratory stressor in a non-elderly sample of women. Because DHEAS and DHEA counter many of the effects of glucocorticoids, DHEA(S) may buffer some of the effects of stress induced cortisol increases. The relationship of psychological measures to DHEAS, DHEA and cortisol will be discussed.

41) Abstract 1240

EARLY-LIFE SOCIOECONOMIC CONDITIONS PREDICT IMMUNE CELL FUNCTION IN ADULTHOOD
Erin F. Nicholls, B.Sc., Hope A. Walker, B.Sc., Jasmen Sze, B.Sc., Psychology, Alexandra K. Fok, B.Sc., Michael S. Kobor, PhD, Medical Genetics, Gregory E. Miller, PhD, Edith Chen, PhD, Psychology, University of British Columbia, Vancouver, BC, Canada

Previous studies have demonstrated a link between low socioeconomic status (SES) in the early years of life and poor health outcomes later in life. Recently, researchers have begun elucidating the biological mechanisms underlying this association. One question that remains, however, is whether the effects of SES on biological processes are most likely to occur during certain time periods of life. In this study, we tested whether SES early in life or currently predicted immune responses. In particular, we focused on a class of receptors expressed by immune cells known as Toll-like receptors (TLRs). When TLRs sense a pathogen, they activate a variety of cellular mechanisms that result in the release of inflammatory molecules, such as cytokines. We recruited forty healthy volunteers, aged 25-40, who fell into one of four SES categories: (L-L) low SES in early-life and currently; (L-H) low SES in early-life, high SES currently; (H-L) high SES in early-life, low SES currently; and (H-H) high SES in early-life and currently. Peripheral blood mononuclear cells were isolated from these volunteers and stimulated with a series of TLR ligands. Amounts of the proinflammatory cytokine interleukin (IL)-6 released by these cells were then quantified using ELISA. Cells from L/L participants produced greater quantities of IL-6 in response to stimulation by the bacterial product flagellin (a known TLR5 ligand) than did cells from any of the other SES groups: L/H (p=.087), H/L (p=.043) and H/H (p=.028). These results indicate that individuals from low SES households exhibit more exaggerated inflammatory responses to certain stimuli, and that those most at risk for this type of inflammatory response are those who were low SES both early in life and currently. To the extent that this immune response becomes prolonged or excessive, it may increase risk for certain inflammatory diseases.

42) Abstract 1690

REPLICATED RCBF CORRELATES OF OPENNESS TO EXPERIENCE: COMMON AND SEX-SPECIFIC FINDINGS
Angelina R. Satin, Ph.D., Lori L. Beacons-Held, Ph.D., Susan M. Resnick, Ph.D., Paul T. Costa, Ph.D., National Institute on Aging, National Institutes of Health, Baltimore, MD

Openness to experience is a stable personality trait related to attention to feelings, cognitive flexibility, creativity, and preference for novelty. Although there has been considerable interest in identifying the neural substrate of personality, little work has focused specifically on this trait. To identify replicable neural correlates of Openness, we investigated relationships between Openness and resting-state PET regional cerebral blood flow (rCBF) using data from 160 older participants (46% female, mean age at year 1 = 71.4) in the Baltimore Longitudinal Study of Aging (BLSA) neuroimaging study. Cross-sectional associations between rCBF and Openness scores from the NEO-PI-R measured at Year 1 and Year 3 of the neuroimaging study were determined. Conjunction analyses were performed separately for men and women to determine replicable regions of associations between Openness and rCBF over time. The results showed that Openness was associated with brain activity in the orbitofrontal cortex (OFC) in both men and women and that this relation was consistent over time. Sex differences also emerged: Openness was associated with activity in the anterior cingulate cortex (ACC) in men and with activity in the ventromedial prefrontal cortex (vMPFC) in women. Previous research had implicated the OFC in the processing of emotional information and sensitivity to reward contingencies. Our data suggest that individual differences in this region may contribute to differences in Openness to experience, and are consistent with evidence that shows that damage to the OFC is associated with lower Openness scores. Our findings also indicate that individual differences in the proclivity to understand and appreciate activity in brain regions associated not only with the processing of emotional information, but also to PFC activity linked to cognitive flexibility in women and to ACC activity linked to monitoring processes in men. Thus, these findings further demonstrate both similarities and differences between men and women in the neural correlates of Openness.

43) Abstract 1692

SPECIFIC BRAIN REGIONS AND THEIR CONNECTIVITY ARE RELATED TO TASK-DRIVEN VARIATIONS IN RESPIRATORY SINUS ARRHYTHMIA
Israel C. Christie, PhD, Peter J. Gianaros, PhD, Matthew J. Robinson,, Matthew F. Muldoon, Julie C. Price,, J. Richard Jennings,, University of Pittsburgh, Pittsburgh, PA

Respiratory sinus arrhythmia (RSA) is a widely used non-invasive index of cardiac vagal control, but we have minimal knowledge of brain areas that modify vagal control through their responsivity to psychological variables. The goal of the present study is to expand current knowledge using an atypically large sample and preliminary connectivity analyses. Subjects (n=111, mean age=56, 64% Male) were enrolled in one of two studies relating hypertension to regional cerebral blood flow (rCBF). Subjects completed multiple blocks of two sensory-motor control tasks and a working memory task (2-back) while rCBF was assessed by PET using [15O]H2O radiotracer; ECG was continuously recorded. RSA was quantified as high frequency (15–50Hz) variability via autoregressive modeling of interbeat intervals. RSA and rCBF were related using random effects analysis and statistical parametric mapping. Within-subject voxel-by-voxel regression coefficients relating rCBF and RSA across 5 task blocks were passed to a second level group analysis. RSA decreased with greater cognitive load. Concomitant decreases in rCBF activation were observed in: ventral anterior cingulate (AC) and medial frontal gyri; occipital lobe and anterior cerebellum; parahippocampal gyrus (PHG); left fusiform and superior temporal gyri; and ventral posterior cingulate (PC). Concomitant increases in rCBF decreases in RSA were observed in: thalamus and subthalamic nuclei; insular cortices; putamen; dorsal AC; dorsolateral prefrontal cortex (dPFC); superior parietal cortex; and frontopolar areas (p<.01). Connectivity analyses revealed discernable networks positively (left pons; medial frontal gyri; ventral PC; right PHG) and negatively (precentral gyrus; dorsal AC; superior parietal cortices; left dPFC; left frontopolar area) associated with a ventral AC seed (p<.001). Task activation associated with cognitive load appears to engage cerebral areas associated with cognitive performance and RSA reduction. In contrast, relationships between RSA and rCBF appear to relate areas more uniquely related to autonomic control.
44) Abstract 1602
AUTONOMIC INFLUENCES ON HEART RATE REACTIVITY TO ACUTE STRESS FOLLOWING EMOTIONAL DISCLOSURE

Kathi L. Heffner, Ph.D., Lynne M. Rochette, M.S., Psychology, Ohio University, Athens, OH

The hallmark of emotionally supportive relations is the opportunity for self-disclosure about emotionally evocative events. While emotional disclosure has benefits for health, the psychophysiological mechanisms linking disclosure to health have yet to be explicated. Guided by the reactivity hypothesis, the current study examined whether varying disclosure opportunities after emotional arousal would affect cardiac reactivity to a novel stressor. Fifty-six women viewed, alone, fear and disgust-eliciting film clips. They were then (a) afforded an opportunity to discuss with a friend their thoughts and feelings regarding the film, or (b) were told to refrain from discussing the film with their friend, but had to interact with her nonetheless. The women then performed a 5-minute serial subtraction task without the friend present. Impedance cardiography methods provided continuous assessment of heart rate (HR), sympathetically-mediated pre-ejection period (PEP), and parasympathetically-mediated respiratory sinus-arrhythmia (RSA). Repeated measures analyses indicated that, after controlling for baseline values, women who emotionally disclosed prior to the math task showed significantly lower HR and RSA compared to the task condition for the women without emotional disclosure opportunities; there were no differences in PEP between the groups. These findings suggest that constraints on emotional disclosure have autonomic consequences during subsequent, novel stress, and that effects on cardiac performance may be primarily due to greater parasympathetic withdrawal during subsequent stress.

45) Abstract 1705
INCREASED MYOCARDIAL FIBROSIS IN DEPRESSION: RESULTS FROM THE CARDIOVASCULAR HEALTH STUDY

Emily A. Kuhl, Ph.D., Willem J. Kop, Ph.D., Cardiology, University of Maryland Baltimore, Baltimore, MD, Eddy Barasch, M.D., Cardiovascular Medicine, State University of New York at Stony Brook, Roslyn, NY; Russell P. Tracy, Ph.D., Pathology and Laboratory Medicine, University of Vermont, Burlington, VT, John S. Gottdiener, M.D., Cardiology, University of Maryland Baltimore, Baltimore, MD

Myocardial fibrosis exacerabtes cardiac dysfunction and is associated with increased left ventricular hypertrophy. Inflammatory processes promote fibrosis and heart failure (HF) progression. These inflammatory markers are also known correlates of depression, which is a well-established predictor of poor HF outcomes. The association of depression with fibrosis and the role of inflammatory processes are unknown. We examined whether depression is associated with increased levels of fibrosis markers, and whether elevated inflammatory markers in depression play a mediational role. We examined a sample of community-dwelling adults (Cardiovascular Health Study, N = 870, mean age = 79±6 years; 423 (49%) women; HF = 315), with fibrosis markers assessed in a case-control design based on HF status. Depression was assessed using the Center for Epidemiological Studies-Dépression (CES-D) scale (10-item version). Fibrosis markers included procollagen type I (P1P), procollagen type III (PIIINP), and type I collagen (ICTP). CESD scores were correlated with ICTP (p < 0.01) and P1P (p = 0.04), and marginally with PIIINP (p = 0.07). Participants with high CESD scores indicative of current depression (CESD > 8) had higher ICTP levels than non-depressed (CESD ≤ 8) individuals (1.52±0.04 vs. 1.42±0.02; p < 0.02). The role of inflammation was examined using multiple regression analysis on patients with fibrosis markers and concomitant C-reactive protein markers of inflammation (n = 628). CRP added significantly to the prediction of ICTP (R² = 0.02, F = 7.87, p < 0.01), and was a stronger predictor (B = 0.13, p = 0.01) than depression (B = 0.07, p = 0.08). CRP significantly mediated the relationship between depression and ICTP (sohel z = 2.05, p = 0.04). In conclusion, depression is significantly associated with fibrosis markers, and this relationship is mediated by inflammation. Type I collagen deposition is largely responsible for stiffening in the extracellular matrix of the myocardium and resultant cardiac remodeling. The biobehavioral pathways linking depression to HF progression may be mediated in part by fibrotic processes.

46) Abstract 1417
IS TYPE D PERSONALITY MODIFIABLE: PRELIMINARY RESULTS FROM THE MIND-IT STUDY

Peter de Jonge, Ph.D., Psychiatry, University of Groningen, Groningen, Netherlands; Joost P. van Melle, Ph.D., Cardiology, University Medical Centre Groningen, Groningen, Netherlands, Johan Ormel, Ph.D., Psychiatric Epidemiology, University of Groningen, Groningen, Netherlands, Johan Denollet, Ph.D., Medical Psychology, Tilburg University, Tilburg, Netherlands

Following Myocardial Infarction (MI) several psychosocial risk factors have been associated with the progression of cardiac disease, including depression and Type D personality. We recently have shown that these risk factors constitute quite different aspects of psychological dysfunction. Although in several trials researchers have attempted to treat depression, it remains unknown whether Type D is a treatable risk factor. In the MIND-IT study 331 post-MI depressed patients were randomized to usual care or a psychiatric intervention arm, which mainly consisted of antidepressant medication. At 12 months post-MI, 223 patients (67%) filled in the DS14 to assess the prevalence of Type D (CESD ≥ 8) and the role of inflammatory processes were examined using multiple regression analysis. The prevalence of Type D in the intervention arm was 36% compared to 49% in the care as usual arm (P=0.04). Logistic regression revealed that intervention was associated with a reduced risk of Type D personality (OR 0.58; 95% CI 0.33-1.00) which largely remained after controlling for age, sex, comorbidity and severity of depression (OR 0.59; 95% CI 0.36-1.00). The effects were similar across the depression subscales of the DS14. These findings give support for the modification of Type D personality by antidepressant medication. However, they should be considered preliminary as we did not have a Type D baseline assessment.

47) Abstract 1415
POST-MYOCARDIAL INFARCTION DEPRESSION AND CARDIAC PROGNOSIS: ARE THE EFFECTS DUE TO UNDERUSE OF BETABLOCKERS?

Peter de Jonge, Ph.D., Psychiatry, University of Groningen, Groningen, Netherlands; Joost P. van Melle, Ph.D., Cardiology, University Medical Centre Groningen, Groningen, Netherlands, Johan Ormel, Ph.D., Psychiatric Epidemiology, University of Groningen, Groningen, Netherlands

Depression following Myocardial Infarction (MI) is a prevalent and strong risk factor for the progression of cardiac disease, including cardiovascular mortality. Several mechanism(s) underlying this association have been suggested, including both physiological and behavioral mechanisms, but much remains unclear. An intriguing alternative explanation might be reduced quality of cardiac aftercare for depressed individuals. Beta-blocker use is an evidence-based treatment for depressed MI patients. However, they should be considered preliminary as we did not have a Type D baseline assessment.
48) Abstract 1364

TYPE D PERSONALITY IS RELATED TO INCREASED OXIDATIVE STRESS IN CHRONIC HEART FAILURE

Nina Kapper, PhD, Yori Gidron, PhD, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands, Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands, Herbert Hooijkaas, PhD, Immunology Department, Erasmus MC, Rotterdam, Zuid-Holland, The Netherlands, Eric H. Hendriks, MSc, Jos Widdershoven, PhD, Dept of Cardiology, TweeSteden hospital, Tilburg, Tilburg, Noord-Brabant, The Netherlands.

Objective To examine whether markers of oxidative stress differ as a function of Type D (distressed) personality and etiology in patients with chronic heart failure (CHF). Background Type D personality, the tendency to experience and not express emotional distress, is related to poor cardiac prognosis. Since CHF patients are characterized by increased oxidative stress, this may be a candidate mechanism responsible for the adverse prognosis in Type D CHF patients. However, no prior study has examined the relation between oxidative and emotional stress in CHF. Methods Serum levels of xanthine oxidase (XO), inducible heat shock protein (Hsp70) and DNA damage marker 8-OHdG were measured in 122 CHF patients. The influence of Type D and etiology were assessed. Results Type D and non-Type D CHF patients did not differ in demographic and clinical parameters, except for psychotropic medication, nor was there an effect of age or sex on Type D status. Type D CHF patients had lower levels of XO (13.57 ng/ml vs. 7.87 ng/ml, p=0.04, d=0.26), and depending on etiology, higher levels of XO (13.57 ng/ml vs. 7.87 ng/ml, p=0.01, d=0.98). The ratio of XO to Hsp70 was significantly higher in Type D CHF patients as compared to non-Type D patients (6.14 vs. 2.83, p=0.03, d=0.39), independent of etiology class. Conclusions CHF patients with Type D personality are characterized by an increased oxidative stress burden, apparent in the decreased antioxidant levels and an increased oxidative stress ratio.

49) Abstract 1366

TYPE-D PERSONALITY AND CHRONIC KIDNEY DISEASE AS PREDICTORS OF PRO- AND ANTI-INFLAMMATORY CYTOKINE LEVELS IN HEART FAILURE

Nina Kapper, Angelique A. Schiffer, MSc, Martijn Kwaajaidt, PhD, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands, Herbert Hooijkaas, PhD, Immunology Department, Erasmus MC, Rotterdam, Zuid-Holland, The Netherlands, Eric H. Hendriks, MSc, Jos Widdershoven, PhD, Dept of Cardiology, TweeSteden hospital, Tilburg, Tilburg, Noord-Brabant, The Netherlands, Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands.

Background Interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-alpha) and soluble TNF-alpha receptors 1(sTNFR1) and 2(sTNFR2) are powerful predictors of mortality in chronic heart failure (CHF). However, little is known about (i) the origins of pro-inflammatory cytokine production and (ii) the determinants of substantial interpatient variability in immune activation. We prospectively examined Type D personality (tendency to experience and inhibit emotional distress) and chronic kidney disease (CKD) as predictors of cytokine production in patients with CHF. Methods At baseline, 125 CHF patients were assessed for Type D personality. At 1-year follow-up, we measured serum levels of IL-6, TNF-alpha, sTNFR1, sTNFR2, and the anti-inflammatory cytokines interleukin-10 (IL-10) and interleukin-1 receptor antagonist (IL-1ra). Results At 1-year follow-up, Type D patients had significantly elevated levels of sTNFR1 (p=0.008), sTNFR2 (p=0.001), and decreased levels of IL-10 (p=0.006) as compared to patients without Type D or CKD. Patients with CKD also had elevated levels of sTNFR1 and sTNFR2 (p<0.0001), but their level of IL-10 was not decreased. Type D personality and CKD predicted increased sTNFR1/IL-10 and sTNFR2/IL-10 ratios (all p<0.007). Type D also predicted an increased IL-6/IL-10 ratio (p=0.013). Spironolactone and older age were also associated with elevated pro-anti-inflammatory cytokine ratios. Adjusting for these variables, the odds to have elevated ratios (highest 20%) was still increased in Type D patients (OR=3.92, 19.88 and 3.12, respectively). Conclusion Type D personality and CKD independently predict unfavorable cytokine profiles, and play a role in the interpatient variability in immune activation among patients with CHF.

50) Abstract 1186

TYPE D PERSONALITY AND DISEASE SEVERITY INDEPENDENTLY PREDICT CLINICAL EVENTS AFTER MYOCARDIAL INFARCTION

Elisabeth J. Martens, PhD, Floortje Mols, PhD, Medical Psychology and Neuropsychology, Tilburg University, Tilburg, Brabant, the Netherlands, Matthew M. Burg, PhD, Cardiovascular Medicine, Yale University School of Medicine, New Haven, CT, Johan Denollet, PhD, Medical Psychology and Neuropsychology,Tilburg University, Tilburg, Brabant, the Netherlands.

Background We investigated the effect Type D personality on cardiac death and/or recurrent myocardial infarction (MI) at 1.8 years in acute MI patients, after adjustment for disease severity. We also explored the differential effect of Type D on early (<6 months) and late (>6 months) events, separately. Patients (n=374) were assessed on demographic and clinical variables and Type D personality using the Type D Scale (DS14) within the first week of hospital admission for acute MI. The end point was a composite of cardiac death and recurrent MI as verified by medical records. The average follow-up period was 1.8 years and follow-up data was complete for all patients. There were 34 events attributable to cardiac death (n=12) or recurrent MI (n=22), with 19 early (<6 months) and 15 late (>6 months) events. Type D patients were defined as having greater than 2-fold increased risk of elevated or recurrent MI compared with non-Type D patients (16.7% versus 7.3%; p=0.014). Cardiac history, LV EF and use of statins were predictors of total and late death/recurrent MI, with statins showing a substantial protective effect. Only cardiac history was significantly associated with early death/recurrent MI. Type D patients had a more than 2-fold increased risk of total death/recurrent MI after adjustment for disease severity (HR:2.58; 95%CRI.125-5.66; p=0.013), and a 5-fold increased risk of late death/recurrent MI (HR:5.75; 95%CRI.1.81-18.24; p=0.003). Type D personality was a strong predictor of adverse cardiac outcome after acute MI, above and beyond disease severity, and the associated risk was similar to that of traditional cardiovascular risk factors. Type D personality may be an important psychosocial factor to assess in post-MI patients for risk stratification purposes.

51) Abstract 1098

TYPE D AND FIVE-FACTOR PERSONALITY MODELS OF CARDIAC PROGNOSIS: IS TYPE D NOTHING MORE THAN OLD WINE IN NEW BOTTLES?

Susanne S. Pedersen, PhD, Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, The Netherlands

Background Personality explains individual differences in emotional distress and health outcomes, including the clinical course of coronary artery disease (CAD). Type D personality (increased negative emotions paired with social inhibition) is an emerging risk factor in CAD, but the construct has been criticized for being old wine in new bottles. We contrasted Type D personality with the Five-Factor personality model as a predictor of 5-year prognosis in CAD. At baseline, 230 CAD patients (87% men; mean age=56.7 years, SD=8.3) from the University Hospital Antwerp completed the DS14 and NEO-FFI to assess Type D personality and the Five-Factor Model (Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness), respectively. The endpoint was major adverse clinical events (MACE), defined as death, myocardial infarction or coronary revascularization, at 5 years follow-up. At follow-up, there were 33 events. Type D patients had an increased incidence of MACE (17.75% 23%) as compared to non-Type D patients (16.15% 10%). OR=2.35, 95%CRI.125-5.66, p=0.014. However, none of the Five-Factor traits were significantly associated with MACE. After entering Type D in a regression model, Neuroticism (p=.48), Extraversion (p=.94), Openness (p=.48), Agreeableness (p=.42) and Conscientiousness (p=.94) failed to add any prognostic power. A head-to-head comparison confirmed that Type D personality (OR=3.11, 95%CRI.133-7.27, p=0.009) but not the combination of high neuroticism/low extraversion as measured by the NEO-FFI (OR=0.63, 95%CRI.025-1.60, p=.33), predicted MACE. These findings support the notion that Type D is not a redefinition of the Five-Factor Personality model, but has unique prognostic power. Adopting a Type D personality approach would help identify high-risk patients in research and clinical practice. The Type D scale assesses a predisposition to experience substantial emotional distress that may have an adverse effect on cardiac prognosis.
DEPRESSION AND SUBTHRESHOLD SOMATIC DEPRESSION

Melinda J. Manley, M.A., M.Phil., Epidemiology & Public Health, Yale University, New Haven, Connecticut, Peter de Jonge, Ph.D., Internal Medicine, University Medical Center Groningen, Groningen, Groningen, The Netherlands

We investigated, on a general population level, whether a somatic depression subtype could be identified that might explain the association of major depression with physical health outcomes. The data for the present study came from the 2001-2002 National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), a nationally representative sample of 43,093 U.S. adults. Respondents were administered the AUDADIS-IV, with items assessing DSM-IV symptoms of lifetime major depression, post-year disability, and cardiac conditions. We applied latent class analysis (LCA) to study the structure of depressive symptoms. The classes derived from the LCA were then related to disability and presence of cardiac disease. The best latent class solution resulted in 7 classes: (1) no symptoms (69.2%), (2) low mood only (4.0%), (3) low mood plus somatic symptoms (2.5%), (4) core symptoms only (2%), (5) core symptoms plus cognitive symptoms (13.5%), (6) supportive symptoms plus core and (7) major depression (10.8%). Class membership served as the independent variable of interest and was entered into logistic regression models adjusted for sociodemographic factors, BMI, and past-year smoking, with separate models fit for 6 cardiac conditions, self-reported to have been confirmed by a health professional. Compared to subjects without depressive symptoms, there was a significant pattern of greater core disability and higher odds of past-year cardiac events and conditions among the major depression class and the class with core symptoms and somatic symptoms. OR's (p<0.05) for the subclinical somatic class ranged from 1.48 for hypertension to 2.39 for tachycardia, respective OR's for the depressive class ranged from 1.61 to 3.51. Our findings support the presence of a major depression class of 10.8% of the subjects in the NESARC sample, characterized by substantial disability and an increased prevalence of cardiac disease. In addition, we identified a sub-clinical depressive class of substantial size (9.8%) dominated by somatic symptoms, with increased physical disability and elevated odds of several cardiac conditions.

DOES PRE-SURGICAL DEPRESSION PREDICT DEATH OR OTHER NEGATIVE OUTCOMES AFTER CORONARY ARTERY BYPASS GRAFT SURGERY (CABG)? A SYSTEMATIC REVIEW OF THE LITERATURE

Ekaterina Stepanova, MD, Steven Cole, MD, Psychiatry, Stony Brook University Medical Center, Stony Brook, NY

Does Pre-Surgical Depression Predict Death or Other Negative Outcomes after Coronary Artery Bypass Graft Surgery (CABG)? A Systematic Review of the Literature Stepanova K, Cole S, Stony Brook University Medical Center, Stony Brook, NY

This report reviews the relationships between pre-surgical depression and post-surgical outcomes after CABG surgery. Studies were included if they tested the significance (p<0.05) of associations between pre-operative depression and post-surgical outcomes. PubMed searches, from 1990 to 2007, were conducted as well as examination of reference lists. Only 10 studies met methodological inclusion criteria. All ten (100%) of studies used depression scales and 10 (100%) of studies used psychosocial diagnoses to assess depression. Outcomes studied included death, cardiac complications, re-hospitalization for cardiac reasons, health-related quality of life, and complicated physical recoveries. Two of 3 studies (67%, N=556) examining mortality reported a statistically significant association between preoperative depression and postoperative mortality. Five of 5 studies (100%, N= 1105) examining the effect of depressed mood on cardiac complications after surgery or rates of re-hospitalization for cardiac reasons reported statistically significant associations. Three of 4 studies (75%, N=1585) evaluating health-related quality of life or physical complications reported statistically significant associations between preoperative depression and these negative post-surgical outcomes. In sum, this systematic review of the literature found that 9 of 10 studies meeting inclusion criteria demonstrated that pre-surgical depression is associated with a variety of negative post-surgical outcomes, including higher mortality, higher cardiac re-hospitalization rates, decreased health-related quality of life and increased physical problems. Though the total number of studies is relatively small, these positive associations point to the need for further confirmatory studies and suggest that pre-surgical treatment of depression may contribute to improved outcomes after CABG surgery.

HOSTILITY AND ANXIOUS ATTACHMENT ARE ASSOCIATED WITH ARTERIAL STIFFNESS IN ADOLESCENTS

Aimee J. Midei, B.S., B.A., Clinical/Biological and Health Psychology, Karen A. Matthews, Ph.D., Department of Psychiatry, University of Pittsburgh, Pittsburgh, PA

Preliminary evidence suggests that psychosocial factors may be related to arterial stiffness in adulthood, although little is known about associations during adolescence. Our objective was to examine the role of social relationships and negative emotional traits in future arterial stiffness, as measured by pulse wave velocity (PWV), in a sample of White and Black adolescents. Participants consisted of 143 boys and girls (50% Black, 51% male) from Pittsburgh Project Pressure. There were two data collection periods (T1 and T2), approximately 3.5 years apart, and participants were between the ages of 14 and 16 during T1. Socially supportive relationships (eg, parental support and attachment anxiety), were measured by the Social Relationships Index and Measurement of Attachment Qualities, respectively. Negative emotional traits were anger and anxiety, measured by the Spielberger Trait Scale, and hostility, measured by 26 items from the Cook-Medley Hostility Scale. Linear regression analyses were used to evaluate the association between T1 psychosocial variables and T2 PWV, controlling for T1 age, time interval between T1 and T2, gender, race, and body mass index. Results showed significant main effects of attachment anxiety (β = .211, p = .01), hostility (β = .234, p < .01), and two subscales of hostility, aggressive responding (β = .177, p = .03) and hostile affect (β = .194, p = .02). Analyses conducted separately in Whites and Blacks showed that less supportive relationships, higher attachment anxiety, hostile affect, total hostility, trait anxiety, trait anger, and aggressive responding were associated with greater PWV among Blacks. This study provides preliminary support that psychosocial variables may be important factors for arterial stiffness in adolescence. Supported by NIH HL025767 and NIH HL007560.

A LONGITUDINAL STUDY OF PANIC AND HEALTH ANXIETY IN PATIENTS WITH NON-CARDIAC CHEST PAIN (NCCP)

Kamila S. White, PhD, Psychology, University of Missouri-Saint Louis, Saint Louis, MO, Ernest V. Gervino, Sc.D., Cardiology, Beth Israel Deaconess Med Ctr, Harvard Med School, Boston, MA

The palpitations, chest discomfort, and shortness of breath of a panic attack may feel like a heart attack, and some research suggests that panic attacks may be an independent risk factor for heart disease (Smoller, et al., 2007). In contrast to patients who have a detectible cardiovascular cause for their chest pain, the majority of patients who experience chest pain have normal coronary angiograms. Chest pain in the presence of normal coronary arteries is a frequent presenting complaint in cardiology departments. Empirical research has supported theories of non-cardiac chest pain (NCCP) stressing the importance of psychological vulnerability in NCCP; however, the extent to which panic related and health anxiety are associated with recurrent NCCP is not known. The goal of this study was to examine panic, health anxiety, and their longitudinal associations with chest pain and healthcare utilization in patients suffering from NCCP. We examined these associations in a sample of 230 patients with NCCP. Patients completed an exercise tolerance test, structured clinical interview, questionnaire, and medical record review. Follow-up data were collected at 6-, 12-, and 18-months after initial presentation. Diagnostic interview findings revealed a psychiatrically heterogeneous sample of whom 44% had a current Axis I psychiatric disorder (41% were diagnosed with a current anxiety disorder, 13% were diagnosed with a mood disorder). Overall, 75% of patients had an Axis I clinical or subclinical disorder. Panic attacks (both full-blown and limited symptom attacks) were common in this sample of patients. Hierarchical regression analyses were conducted to examine the impact of health anxiety on chest pain experience (frequency, intensity, and duration)
and health care utilization (chest pain specific and general healthcare utilization). Results demonstrated that health anxiety was associated with increased chest pain severity ($r = 0.28$, $p < 0.01$) and healthcare utilization ($r = 0.27$, $p < 0.01$). Findings reveal that panic attacks are quite common among this group of patients, and health anxiety is associated with healthcare utilization in patients with NCCP. Implications for early identification of panic, worry, and anxious preoccupation with heart functioning in NCCP are discussed.

56) Abstract 1446
CANDIDATES TO HEART TRANSPLANTATION WITH DRINKING HABITS AND HIGH SOCIABILITY ARE PRONE TO EARLIER INFECTION EPISESHERS AFTER TRANSPLANTATION
Olivier Cotტencin, MD, Sylvie Pucheu, Ph D, Sonia Paydenot, Ph D, CL-Psychiatry, Veronique Boussaud, MD, Patrick Chevalier, MD, Christian Latremouille, Ph D, Jean-Noel Fabiani, Ph D, Cardiovascular surgery, Silla M. Consoli, Ph D, CL-Psychiatry, Georges Pompидou European Hospital, Paris, France
Infectious episodes are facilitated by immunosuppressive agents administered in transplanted patients and can lead to a severe complications or even to death. To our knowledge the behavioral or psychological characteristics predicting such episodes were not yet examined. Methods: Data were collected during the pre-transplantation assessment (OR=6.35; $p=0.012$). In multivariate analysis a trend was found for both drinking behavior and sociability as predictors of infectious episodes ($p=0.10$). These variables were not related to post-transplantation survival and were different from those which predicted rejection episodes in the same patients. Conclusion: We lack systematic data describing daily life behavior in these transplanted patients after their discharge from hospital. Our findings however suggest that patient characterized by high sociability, intense social and convivial interactions may be more exposed to infectious aggressions. Interestingly, having fantasies and concerns towards the donor could facilitate the implementation of healthier behavior and better compliance with medical recommendations regarding prophylaxis against infections.

57) Abstract 1443
STRONG FORMER PSYCHOLOGICAL STATUS PARADOXICALLY PREDICTS REJECTION EPISODES IN HEART TRANSPLANTED PATIENTS
Silla M. Consoli, Ph D, CL-Psychiatry, Georges Pompidou European Hospital, Paris, France, Olivier Cotтencin, MD, CL-Psychiatry, Georges Pompidou European Hospital, Paris, 75015, France, Sylvie Pucheu, Ph D, Sonia Paydenot, Ph D, CL-Psychiatry, Patrick Chevalier, MD, Christian Latremouille, MD, Christian Latremouille, MD, Jean-Noel Fabiani, Ph D, Cardiovascular Surgery, Georges Pompidou European Hospital, Paris, France
Systematic assessment of candidates for heart transplantation is currently generalized for CL-psychiatry teams. Methods: Data were collected during semi-structured psychological interviews that were conducted with 78 candidates for heart transplantation (63 males and 15 females; mean age 47.1 (SD=11.0)) and matched with clinical outcomes during an average of 3.8 years (SD=3.8) of follow up (1 day to 12 years). Results: Neither recipient’s age or gender, nor the etiology of heart transplantation (OR=2.52; $p=0.019$; Cox survival analysis). Similar findings were observed in patients demonstrating high sociability (OR=2.48; $p=0.02$), patients which did not motivated for heart transplantation by a solid affective bond (OR=2.97; $p=0.031$), and patients which did not express any fantasy regarding the graft and the donor during the pre-transplantation assessment (OR=1.52; $p=0.012$). In multivariate analysis a trend was found for both drinking behavior and sociability as predictors of infectious episodes ($p=0.10$). These variables were not related to post-transplantation survival and were different from those which predicted rejection episodes in the same patients. Conclusion: We lack systematic data describing daily life behavior in these transplanted patients after their discharge from hospital. Our findings however suggest that patient characterized by high sociability, intense social and convivial interactions may be more exposed to infectious aggressions. Interestingly, having fantasies and concerns towards the donor could facilitate the implementation of healthier behavior and better compliance with medical recommendations regarding prophylaxis against infections.

58) Abstract 1140
VASCULAR PROFILE AND DEPRESSION TREATMENT OUTCOME IN THE CREATE TRIAL
Brian Baker, FRPCP, Psychiatry, University of Toronto, Toronto, Ontario, Canada, Martine Habra, PhD, Psychiatry, CHUM, Université de Montréal, Montreal, Canada, Noam Freiman, Smith, PhD, Psychiatry, McGill University, Montreal Heart Institute, CHUM, Montreal, Quebec, Canada, Francois Lespérance, MD, Psychiatry, CHUM, Université de Montréal, Montreal, Quebec, Canada
The CREATE trial demonstrated a small to medium effect of 12 weeks of citalopram over placebo in 284 patients with stable coronary artery disease (CAD) and major depressive disorder (MDD). The vascular depression hypothesis proposed that depression in CAD patients may be related to brain lesions resulting from cerebrovascular illness, rendering the depression less responsive to pharmacological treatment. We sought to determine the degree to which baseline variables reflective of vascular profile and cardiac disease severity predicted treatment outcome in CREATE. Methods: Statistical analysis was based on ANCOVA models with continuous change on the 24 item Hamilton Depression Scale (HAMD-24) as the primary outcome measure. These models assessed the association between each variable and the interaction of the variable with treatment and baseline HAMD-24 scores. Similar logistic regression models were constructed to assess treatment response as the secondary outcome ($>$50% HAM-24 reduction, baseline to completion).

59) Abstract 1152
DEPRESSION AND ISCHEMIC HEART DISEASE (IHD): DO GENDER, MARITAL STATUS AND YEARS OF SCHOOLING PLAY A ROLE?
Oskar Mittag, ScD, Department of Quality Management and Social Medicine, University Medical Center of Freiburg, Freiburg im Breisgau, Germany, Thorsten Meyer, PhD, Institute of Social Medicine, University of Luebeck, Luebeck, Germany
Depression is associated with IHD independently of other somatic risk factors, but the nature of this association still remains unclear. Behavioral, social, physiological and genetic pathways are discussed. Here we pursue the question whether gender, marital status or years of schooling play a role in mediating the association of depression and IHD.

We reanalysed public use file data from the Medicare Health Outcome Survey (HOS) by logistic regression modelling. HOS includes random
samples of 1,000 beneficiaries each from more than 250 managed care plans. We included community dwelling whites who had not reported any incidences of IHD at baseline (N = 63,965; excluding proxy responses). Information on IHD at follow-up was available for 61%.

During the two years, 2,424 (6.2%) newly developed IHD.

Depression was associated with a 1.61-fold risk (OR; 95%-CI: 1.46-1.78) of developing IHD. Controlling for hypertension, diabetes, and smoking history reduced the risk somewhat to OR = 1.53 (1.39-1.69).

Male gender (OR = 1.47; 1.34-1.61), lower than high-school education (OR = 1.23; 1.12-1.36) and being married (OR = 1.14; 1.03-1.25; sic!) were slightly positively associated with IHD. But neither of the latter variables showed significant interactions with depression, nor did any higher order interactions yield statistical significance.

Thus we did not find any indication that gender, marital status or schooling either alone or in combination mediate the association of depression and IHD in this sample. This finding is all the more important since the sample is so large that even small effects would have yielded statistical significance. This gives further evidence of an association of depression and IHD that is self-contained e.g. in the sense of a common genetic factor (cf. McCaffery et al., 2006).


60) Abstract 1167

NYHA CLASS AND TYPE D PERSONALITY INDEPENDENTLY PREDICT VITAL EXHAUSTION IN CHRONIC HEART FAILURE PATIENTS

Patrick J. Straub, MSc, Krista C. Van den Broek, MA, Medical Psychology, Tilburg University, Tilburg, Noord Brabant, the Netherlands; Mark W. Ketterer, PhD, Walter Knysz, MD, Behavioral Health, Michael Hudson, MD, Steven Ketyeian, PhD, Amjad Farha, MD, Heart & Vascular Institute, Henry Ford Hospital/WSU, Detroit, MI

OBJECTIVE: Several previous studies have observed a positive relationship between emotional distress and various types of healthcare

The aim of this study was to examine the assessment of fatigue by the Fatigue Assessment Scale (FAS) in stroke patients and to compare the levels of fatigue as reported by stroke patients, heart failure patients, and healthy controls. Three different samples were included: 80 stroke patients, 137 heart failure patients, and 160 healthy controls. Fatigue was measured by means of the FAS at baseline and at 2-month follow-up, whereas depressive symptoms (BDI) were only assessed at baseline. The internal consistency (alpha) of the FAS was .77 both at baseline, and at 2-month follow-up. Test-retest reliability was .81 for a 2-month interval. Factor analysis of the combined pool of FAS and BDI items revealed two distinct factors that measure fatigue and depression as two separate constructs. Stroke patients (15.3; SD=7.6) and CHF patients (16.5; SD=7.9) reported similar levels of fatigue (p=.44). The level of fatigue in stroke and heart failure patients was considerably higher as compared to healthy controls (9.2; SD=5.6; p<.001). Using the healthy controls as a reference group, multivariable logistic regression revealed that stroke patients were at a 6-fold increased risk (OR=6.18; 95%CI 3.31-11.55, p<.001), and heart failure patients were at an 8-fold increased risk (OR=8.03; 95%CI 4.63-13.94, p<.001), for having symptoms of fatigue. In conclusion, the FAS is an adequate measure of fatigue in stroke patients. Levels of fatigue in stroke patients are similar to levels found in heart failure patients, emphasizing its clinical significance in stroke.

62) Abstract 1754

EMOTION SUPPRESSION DURING INTRINSIC STRESS EXACERBATES CARDIOVASCULAR RESPONSES TO SUBSEQUENT STRESS

Phillip J. Quaranta, M.S., Psychiatry, University of Illinois at Chicago, Chicago, IL, John W. Burns, PhD, Psychology, Rosalind Franklin University of Medicine and Science, N. Chicago, IL, Wesley P. Gilliam, Psychology, Rosalind Franklin University of Medicine and Science, N. Chicago, IL, Justin Matsuura, Psychology, Rosalind Franklin University of Medicine and Science, N. Chicago, IL

Trait anger-in is associated with exaggerated cardiovascular responses (CVR) to anger-provoking events, as well as markers of cardiovascular disease. Prior research has focused on correlations between 'trait' anger-in and CVR to stress. Such correlations, which may be attributed to advanced NYHA class and decreased ejection fraction (EF), although psychological factors may also play a role. We used vital exhaustion as a broader measure of fatigue and compared the influence of NYHA class, EF and Type D personality (increased negative emotions paired with non-expression) as predictors of exhaustion in CHF patients using a prospective design. Systolic CHF patients (n=115; 81% men; mean(SD) 62(9) years) completed the Type D Scale (DS14) at baseline, and the Maastricht Questionnaire (MQ) at baseline, and at 9 months.

The prevalence of Type D was 24%, and the prevalence of vital exhaustion was 57%, 51% and 55%, respectively. NYHA class (I/II versus III/IV) (F(1)=7.97, p=0.01) and Type D personality (F(1)=27.46, p=0.05) were associated with increased vital exhaustion in ANOVA for repeated measures, with mean differences ranging from 6.91-14.76. Type D exerted a stable effect on vital exhaustion, as shown by the non-significant interaction with time (F(2)=0.32, p>0.05). NYHA class (F(1)=5.02, p=0.03) and Type D (F(1)=22.07, p<0.05) remained significantly associated with increased exhaustion, adjusting for baseline characteristics. In adjusted logistic regression analysis, NYHA class (OR:2.65 [1.03-6.80], p=0.04) and Type D (OR:8.99 [1.68-48.08], p=0.01) independently predicted increased exhaustion. Overall, we found no main effect for EF (p=0.05), nor was the interaction term NYHA class by type D (p=0.05) significant. The level of vital exhaustion in CHF patients is not merely determined by disease severity, as measured by NYHA class and EF, but that psychological factors, such as personality, also play an important role.

61) Abstract 1206

FATIGUE LEVELS IN STROKE PATIENTS AS COMPARED TO END-STAGE HEART FAILURE PATIENTS: APPLICATION OF THE FATIGUE ASSESSMENT SCALE

Otto R. Smith, MSc, Krista C. Van den Broek, MA, Medical Psychology, Tilburg University, Tilburg, Noord Brabant, the Netherlands; Marielle Renkens, MA, Neuropsychology, Nursing home 'De Hazelaar', Tilburg, Noord Brabant, the Netherlands; Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, Noord Brabant, the Netherlands

The prevalence of Type D was 24%, and the prevalence of vital exhaustion was 57%, 51% and 55%, respectively. NYHA class (I/II versus III/IV) (F(1)=7.97, p=0.01) and Type D personality (F(1)=27.46, p=0.05) were associated with increased vital exhaustion in ANOVA for repeated measures, with mean differences ranging from 6.91-14.76. Type D exerted a stable effect on vital exhaustion, as shown by the non-significant interaction with time (F(2)=0.32, p>0.05). NYHA class (F(1)=5.02, p=0.03) and Type D (F(1)=22.07, p<0.05) remained significantly associated with increased exhaustion, adjusting for baseline characteristics. In adjusted logistic regression analysis, NYHA class (OR:2.65 [1.03-6.80], p=0.04) and Type D (OR:8.99 [1.68-48.08], p=0.01) independently predicted increased exhaustion. Overall, we found no main effect for EF (p=0.05), nor was the interaction term NYHA class by type D (p=0.05) significant. The level of vital exhaustion in CHF patients is not merely determined by disease severity, as measured by NYHA class and EF, but that psychological factors, such as personality, also play an important role.

63) Abstract 1077

HEALTHCARE UTILIZATION AND EMOTIONAL DISTRESS IN CAD PATIENTS

Mark W. Ketterer, PhD, Walter Knyaz, MD, Behavioral Health, Michael Hudson, MD, Steven Ketyeian, PhD, Amjad Farha, MD, Heart & Vascular Institute, Henry Ford Hospital/WSU, Detroit, MI

Objective: Several previous studies have observed a positive relationship between emotional distress and various types of healthcare...
utilization. However, no studies have yet examined the various types of emotional distress for their relative power at predicting costs.

SAMPLE & METHODS: The present study examined the association of total dollars spent on CAD-related testing (Echos, Nuclear Scans, chest x-rays, catheterizations), ER & outpatient visits and hospital bed-days in the year preceding referral of 161 CAD patients for stress management, and the scales of the Symptom Checklist 90 - Revised (SCL90R).

RESULTS: Average total one-year costs were $9500 for the sample as a whole. Total costs were associated with the Somatization (r = .136, p = .043), Anxiety (r = .177, p = .013) and Phobic Anxiety (r = .194, p = .007) scales. Sample mean splits yielded dollar cost differences for each scale of: Somatization ($10,834 vs $8048), Anxiety($10,841 vs $7000) and Phobic Anxiety ($11,286 vs $7261).

Present results indicate an association of higher costs with anxiety and somatization. Because the symptoms of anxiety overlap with those of cardiac disease, increased vigilance by practitioners resulting in more testing and longer hospital stays is not surprising. However, present results imply the potential for substantial cost savings with enhanced detection and treatment of anxiety spectrum emotional distress.

64) Abstract 1059
DEPRESSIVE CO-MORBIDITY IN PATIENTS WITH HIV-ASSOCIATED HEART FAILURE
Thomas Müller-Tasch, Wolfgang Herzig, Psychosomatic and General Internal Medicine, University of Heidelberg, Heidelberg, Germany, Raimund Erbel, Till Neumann, Cardiology, University of Essen, Essen, Germany

Purpose of the study: Depressive co-morbidity is frequent in patients with Human immunodeficiency virus (HIV) infection. HIV-positive patients have an elevated risk of developing heart failure (HF). The prevalence of depressive co-morbidity and the depression profile in patients with HIV-associated HF was assessed in patients from the HIV-HEART study (Prevalence and Natural History of Heart Failure in Outpatient HIV-Infected Subjects). Subjects and methods: N=805 HIV-positive outpatients, > 18 years participated. In addition to the clinical status, including echocardiography, depression was assessed using the depression module of the Patient Health Questionnaire (PHQ-9). Each of the 9 PHQ-9 items describes one symptom corresponding to one of the 9 DSM-IV diagnostic A-criteria for major depressive disorder. The categorical analysis of the PHQ-9 was used for diagnosing major depressive disorder (MDD) and other depressive disorders (ODD). We conducted Chi2-tests for analyzing differences in prevalence of MDD / ODD between patients with and without HF. Item-level analyses of variance, based on the PHQ-9 items, were used to compare the severity of depression symptoms in depressed patients with and without HF. Summary and conclusions: 83.1% of the patients were male, the mean age was 44.3 ± 10.3 years. 12.4% had symptomatic HF, MDD was present in 25.5% of patients with HF and in 11.0% of patients without HF (p<0.001). The prevalence rates for ODD were not significantly different: 9.4% in patients with HF, 8.9% in patients without HF. In patients with MDD, the depression profile of patients with HF did not differ significantly from that of patients without HF. In patients with ODD, patients with HF reported significantly less severe scores in the first item of the PHQ-9: little interest or pleasure in doing things (p=0.012). In conclusion, depressive co-morbidity is highly prevalent in HIV-positive patients with heart failure while the profile of depression is not substantially different between the patients with and without heart failure. Diagnosis and adequate treatment offers for affected patients are essential.

65) Abstract 1257
PERSISTENCE OF POSTTRAUMATIC STRESS SYMPTOMS 12 AND 36 MONTHS AFTER ACUTE CORONARY SYNDROMES
Anna Wikman, MSc, Mimi Bhattacharyya, MRCR, Linda Perkins-Porras, PhD, Andrew Steptoe, DPhil, Department of Epidemiology & Public Health, University College London, London, United Kingdom

There is increasing recognition that posttraumatic stress may develop in the aftermath of an acute cardiac event. However, there has been little research on the longer term prevalence of posttraumatic symptoms. The objectives of this study were to assess the prevalence and predictors of posttraumatic stress symptoms in patients at 12 and 36 months following admission for an acute coronary syndrome (ACS). Posttraumatic stress symptoms were assessed at 12 months in 213 ACS patients and in 179 patients at 36 months. Predictor variables included clinical and demographic factors, and emotional state measures obtained 7-10 days after the acute event. Patients were 78% male with a mean age of 60.95 (11.22). The majority had experienced an ST-elevation myocardial infarction (71.8%). ACS severity as defined by the Global Registry of Acute Coronary Events score was moderate, and only 9.9% had experienced a previous MI. Depression scores on the Beck Depression Inventory 7-10 days post admission were elevated, with 33.1% scoring > 10. 12 months post ACS, 26 patients (12.2%) qualified for a diagnosis of PTSD. 23 patients (12.8%) were identified with PTSD at 36 months. Posttraumatic symptoms at 12 months were associated with younger age, ethnic minority status, social deprivation, cardiac symptom recurrence, history of depression, depressed mood during admission, hostility and type D personality. Multiple linear regression was used to build a predictive model. At 12 months only depressed mood during admission and recurrent cardiac symptoms were independent predictors of posttraumatic symptoms (R² = 0.507, p < 0.001). Thirty-six month posttraumatic stress symptoms were independently predicted by posttraumatic symptom levels at 12 months and depressed mood during admission (R² = 0.635, p < 0.001). Posttraumatic stress symptoms persist for at least 3 years following an acute cardiac event. Early emotional responses are important in predicting longer term posttraumatic stress symptoms. It is important to identify patients at risk for posttraumatic stress as they are more likely to experience reduced quality of life.

66) Abstract 1665
THE ASSOCIATION BETWEEN POSITIVE AND NEGATIVE AFFECT AND INSULIN RESISTANCE IN PATIENTS UNDERGOING EXERCISE STRESS TESTING
Philippe R. Stebenne, Bachelor, Kim L. Lavoie, Post doct, Catherine Meloche, MD, André Arsenault, MD, Catherine Laurin, PhD, Sandra Pelaez, Master, Bernard Meloche, technicien, Simon L. Bacon, Post doct, Montreal Heart Institute, Montreal, Quebec, Canada

Previous studies have shown that negative affect (NA), e.g., depression, is twice as common in diabetic patients than in the general population. NA has also been associated with insulin resistance, with some studies showing higher NA is linked to increased levels of the homeostasis model assessment of insulin resistance (HOMA-IR). This might be a mechanism of how NA influences poorer CVD outcomes. However, there is limited data on the relative impact of positive affect (PA) and NA on these outcomes. The objective of the present study was to evaluate the relative impact of PA and NA on HOMA-IR in patients undergoing exercise stress testing. A sample of 107 patients (M SD age=58 (9.9) yrs) who were referred for myocardial perfusion exercise stress testing completed the Positive and Negative Affect Schedule-X and had a fasting blood sample drawn to assess insulin and glucose levels. General Linear Model analyses revealed a main effect of NA on HOMA-IR (F= 5.04, p=0.027) and insulin (F=4.78, p=0.031), and a trend between NA and glucose (F=3.38, p=0.069). These results suggest that patients with a high level of NA had higher insulin resistance. No significant main effects of PA were found for HOMA-IR (F=0.22, p=0.638), insulin (F=0.52, p=0.473), or glucose (F=0.00, p=0.999). There is also no significant interaction of PA and NA on HOMA-IR (F= 0.65, p=0.427) in every CVD outcome. These findings suggest that NA is associated with insulin resistance, which is consistent with previous studies. Given the role of insulin resistance in the formation of diabetes, clinicians should be vigilant of this risk factor in patients displaying high levels of NA. However, high PA was not associated with insulin resistance and seems to no have any clinical implications in this setting.

67) Abstract 1249
TYPE D PERSONALITY AND IMPAIRED HEALTH STATUS IN PATIENTS WITH ACUTE CORONARY SYNDROME: MEDICATION BY INADEQUATE CONSULTATION BEHAVIOR
Aline J. Pelle, MSc, CoRPS, Tilburg University, Tilburg, The Netherlands, Angelique A. Schiffer, MSc, Clinical Psychology, Twente University Ziekenhuis, Tilburg, The Netherlands, Otto R. Smith, MSc, CoRPS, Tilburg University, Tilburg, The Netherlands, Jobst B. Winter,
MD, Cardiology, TweeSteden Ziekenhuis, Tilburg, The Netherlands, Johan Denollet, PhD, CoRPS, Tilburg University, Tilburg, The Netherlands

Psychological risk factors have been acknowledged in the progression of chronic heart failure (CHF), with Type D personality being an emerging risk factor. Inadequate consultation behavior, a specific aspect of self management, might be a possible behavioral pathway in explaining the adverse effect of Type D on health outcomes. Therefore, we examined whether the relationship between Type D personality and impaired disease-specific health status is mediated by inadequate consultation behavior. CHF patients (n=313) completed the Type D Scale (DS14) at baseline, and the European Heart Failure Self-Care Behaviour Scale (EHFScBS) and the Minnesota Living with Heart Failure Questionnaire (MLWHFQ) at 6-month follow-up. The prevalence of Type D personality was 21.7%. In univariable analysis, a trend was shown for Type D personality to predict impaired self-management (OR=1.61, 95%CI[1.92-2.80], p<.10). Type D personality independently predicted inadequate consultation behavior (OR=1.80, 95%CI[1.03-3.16], p=.04) and impaired health status (OR=3.61, 95%CI[1.93-6.74], p=.001) at 6-month follow-up, adjusting for demographics and clinical variables. Consultation behavior independently predicted impaired health status (OR=1.80, 95%CI[1.11-2.94], p=.02), after controlling for demographics, clinical variables, and Type D personality (whereas self-management (OR=1.07, 95%CI[0.66-1.73], p=.78). Post-hoc multivariable analysis pointed out that Type D patients displaying inadequate consultation behavior were at a 6-fold increased risk of impaired health status (OR=6.14, 95%CI[2.56-14.74], p<.001). These findings provide evidence for consultation behavior as a potential mechanism explaining the link between Type D personality and impaired health status. Future studies are warranted to replicate these findings.

68) Abstract 1333

POSITIVE MOOD PREDICTS READINESS FOR CARDIAC REHABILITATION

Susan E. Hofkamp, PhD, Phys Med & Rehab, Johns Hopkins University, Baltimore, MD, Nicole Amoyal, BA, Psychology, Loyola College, Baltimore, MD, John W. Burns, PhD, Psychology, Rosalind Franklin University, N. Chicago, IL, Stephen T. Wegener, PhD, Phys Med & Rehab, Johns Hopkins University, Baltimore, MD

Following an acute cardiac event, patients are commonly referred to cardiac rehabilitation (CR) programs to enhance recovery. Traditionally, the focus has been on identifying pathological factors (e.g. depression) that may interfere with participation in rehabilitation. Research in other areas of rehabilitation (e.g. chronic pain) has shown that an individual’s readiness to engage in such a program can have a substantial impact on their treatment gains. The purpose of these analyses was to examine both positive (e.g. self-efficacy, positive mood) and negative (e.g. depression) factors that may affect readiness to adopt a self-management approach to CR. Cardiac patients (N=118) in a 12-week Phase II CR program completed measures at pre, mid, and posttreatment. Data were collected using standardized measures and a readiness to adopt a self-management approach questionnaire (MCHRCQ). The sample included: 74% males; mean age of 63 ±11 years; 93% Caucasian; 79% married; and 94% with at least a high school diploma. Indices of psychological functioning and readiness to engage in a self-management approach to care all improved during the course of the CR program (F’s (2, 234) > 26.01, p’s < .001). Pretreatment MCHRCQ was significantly correlated with age, self-efficacy, depression, relationship with CR staff, and positive mood (F’s > .211, p’s < .03). Results of hierarchical regression indicate that positive mood predicts MCHRCQ (B = .311, p < .01), while other psychosocial variables did not remain significant predictors of readiness. Findings suggest that positive mood is a better predictor of patients’ readiness to adopt a self-management approach to cardiac care than depression and self-efficacy, which have been the focus of previous research. Patients referred to CR programs may benefit from interventions to enhance positive mood prior to enrollment.

69) Abstract 1688

MELANCHOLIC DEPRESSION PREDICTS 1-MONTH ELECTRONICALLY MONITORED ASPIRIN NON-ADHERENCE IN POST-ACUTE CORONARY SYNDROME PATIENTS

Ian Kronish, MD, Department of Medicine, Nina Rieckmann, PhD, Department of Psychiatry, Mount Sinai School of Medicine, New York, NY, Rachel Waxman, MS, Department of Psychology, St. John's University, New York, NY, Joseph E. Schwartz, PhD, Department of Psychiatry, Stony Brook University, Stony Brook, NY, Gabrielle Albanese, BS, Matthew M. Burg, PhD, Karina W. Davidson, PhD, Department of Medicine, Columbia University, New York, NY

Patient non-adherence to prescribed medications after an acute coronary syndrome (ACS) is common, and predictive of worse medical outcomes. We previously found that patients with persistent depressive symptoms at ACS hospitalization had poor adherence to aspirin. Predicting a priori which depressed patient will be non-adherent is critical for early and appropriate intervention. The complex phenotype of Major Depressive Disorder (MDD) can be disaggregated into less complex subtypes. We hypothesized that ACS patients with Melancholic depression (those with current or history of MDD, and core symptoms of Anhedonia), due to significant behavioral inhibition, are at highest risk for medication non-adherence. Methods: 172 patients were enrolled within 7 days of ACS, completed the Beck Depression Interview (BDI) in hospital, and were discharged with 1-month supply of aspirin in a MEMS bottle (electronically time/date stamps each opening). Within 10 days of discharge, MDD diagnosis and history was ascertained from structured clinical interview (DISH). Nine patients were excluded from analysis due to cardiovascular event during the first month. Adherence was calculated as the percent of days over 1 month that aspirin was correctly taken. Patients with Melancholic depression (n=18) took their aspirin on average 75% of the time, Never depressed patients (n=113) 87% of the time, patients with Other depression (n=29) 81% of the time. Controlling for GRACE risk score and the Charlson Comorbidity index, patients with Melancholic depression had significantly lower rates of 1-month adherence compared to Never depressed patients (p=.02); there was no significant difference between the Other and Never depressed patients. Conclusions: Poor medication adherence may be specifically a problem in those with Melancholic subtype of depression. This raises the possibility of targeted behavioral interventions to reduce risk in this depression sub-group.

70) Abstract 1082

DEPRESSIVE SYMPTOMS PREDICTS WORSE OUTCOME OF MYOCARDIAL INFARCTION IN BOTH MEN AND WOMEN

Susmita Parashar, MD, MPH, MS, Medicine, Emory University, Department of Medicine, Atlanta, GA, Saadia Khizer, MBBS, MPH, Nazeera Dawood, MBBS, MPH, Medicine, Emory University, Atlanta, GA, John A. Speratus, MD, MPH, FACC, Division of Cardiovascular Research, Saint Luke's Mid America Heart Institute, Kansas City, Missouri, John S. Ramsfeld, MD, PhD, FACCH, Health Sciences Center, University of Colorado, Denver, CO, Kimberly J. Reid, MS, Division of Cardiovascular Research, Saint Luke's Mid America Heart Institute, Kansas City, Missouri, Viola Vaccarino, MD, PhD, Division of Cardiology, Emory University, School of Medicine, Atlanta, GA

Introduction: Depression predicts adverse outcomes after myocardial infarction (MI) and is more prevalent among women than men post-MI. It is unknown whether sex differences in the association between post-MI depression and outcomes differs in men and women.

Methods: A total of 2,498 (807 women) MI patients were enrolled from 17 US sites in a prospective registry of MI (PREMIER). Depressive symptoms were assessed with the Patient Health Questionnaire (PHQ). Outcomes were 1-yr rehospitalization and angina using the Seattle Angina Questionnaire and 2-yr mortality. We tested the interaction between sex and PHQ score on each outcome. PHQ score was modeled as a continuous variable in multivariable analysis after adjusting for clinical characteristics, separately in men and women.

Results: There was no significant interaction between sex and depression for any of the outcomes, confirming that the associations were of similar magnitude according to sex. After adjusting for demographics, comorbidities and MI severity, depression was significantly and
similarly associated with each study outcome in both men and women. The adjusted Hazard Ratios (HRs) for mortality for women and men were 1.01 and 1.04 respectively (p=0.01 for PHQ score point increase) and for rehospitalization they were 1.03 and 1.02 respectively (all P <0.05). For presence of angina, the corresponding adjusted odds ratios were 1.04 and 1.05 (all P<0.05) for women and men respectively.

Conclusion: Depression after MI predicts worse outcome in both men and women in a similar fashion. Our result underscores the importance of early identification of depression post-MI.

71) Abstract 1547

IMPACT OF ANXIETY AND DEPRESSION ON HEART RATE VARIABILITY IN APPARENTLY HEALTHY SUBJECTS DRAWN FROM THE GENERAL POPULATION: RESULTS FROM THE KORA AUGSBURG F3-STUDY

Karl-Heinz Ludwig, Professor, Institute of Epidemiology, German Research Center for Environmental Health, Neuherberg, Bavaria, Germany, Moritz F. Sinner, MD, Sebastian Fritsch, MD, Internal Medicine, LMU, Klinikum Grosshadern, Munich, Bavaria, Germany, Britt-Maria Beckmann, MD, Internal Medicine, LMU; Klinikum Grosshadern, Munich, Bavaria, Germany, Olga Lang, Master, Institute of Epidemiology, German Research Center for Environmental Health, Neuherberg, Bavaria, Germany, Stefan Kaeb, MD, Internal Medicine, LMU; Klinikum Grosshadern, Munich, Bavaria, Germany

Background: Decreased heart rate variability (HRV) is a predictor of poor long-term prognosis in coronary artery disease (CAD) patients and has also been associated with depressed mood in CAD patients. Thus, decreased HRV is considered a major link between depression and cardiovascular mortality. However, little is known whether this association is existent in apparently healthy individuals. We aimed to investigate whether decreased HRV is associated with anxiety and depression in individuals of the population-based KORA study. Method: Digital 12-channel 24-hour ambulatory Holter ECGs were recorded in a random sample of 288 men and 284 women (aged 55 to 79 years) drawn from the KORA-F3 study including totally 3,154 subjects. A complete data set was available in 544 subjects. HRV was assessed by automated calculation of the standard deviation of all normal R-R intervals (SDNN) applying the Hannover ECG System HES. Individuals were considered to have low HRV if SDNN was <70. Anxiety and depression were assessed by the Hospital Anxiety and Depression Scale (HADS) with a cut-off >8. Results: A total of 113 (20.4%) subjects (47 males, 66 females) suffered from anxiety and 82 (14.8%) (38 m, 44 f) from depressed mood. In a first analysis adjusted for age, sex, body mass index, alcohol intake and smoking, anxiety (OR 2.85, 95% CI 1.16-7.01, p=0.023) and depression (OR 3.99, 95% CI 1.62-9.81, p=0.001) were significantly associated with decreased HRV. Both remained significant after further adjustment for hypertension, hypercholesterolemia, diabetes and prior myocardial infarction (anxiety (OR 2.86, 95% CI 1.13-7.20, p=0.026), depression (OR 3.55 95% CI 1.41-9.95, p=0.007)). In addition, a covariate analysis revealed that smoking and alcohol intake were significantly associated with decreased HRV in all models applied. Conclusion: In a random sample of middle of older aged subjects, decreased HRV during daily life - likely to mirror an impaired autonomic function - was associated with anxiety and depression irrespective of gender and even after extensive adjustment for possible covariates. Negative affectivity may be associated with impaired autonomic function in a non-clinical population.

72) Abstract 1259

ANXIETY IN PARTNERS OF IMPLANTABLE DEFIBRILLATOR PATIENTS

Krista C. Van den Broek, MA, Ivan Nyklicek, PhD, Johan Denollet, PhD, CoRPS - Medical Psychology, Tilburg University, Tilburg, The Netherlands

Psychological problems occur in a subgroup of patients after implantable cardioverter defibrillator (ICD) implantation, but little is known about these problems in their partners. Our aim was to examine anxiety in partners of ICD patients. At baseline, partners (N=182) completed measures on personality, i.e. the Type D scale and Anxiety Sensitivity Index. Two months following ICD implantation, general anxiety (STAI-state) and posttraumatic stress symptoms (PTSS) were assessed. Partners of ICD patients (N=111) and patients (N=71) reported similar levels of general anxiety (p=0.42), and the proportion of partners (41%) and patients (40%) experiencing clinically relevant levels of general anxiety was also similar (p=1.0). Multivariable linear regression analysis showed that Type D personality (beta=-0.35, p<0.001) and anxiety sensitivity (beta=-0.35, p<0.001) were significant predictors of general anxiety, independent of gender, age, shocks, and ICD indication. Regarding PTSS, anxiety sensitivity (beta=-0.48, p<0.001) and age (beta=-0.15, p=0.041) were independent predictors, whereas Type D was not (p=0.12). Differential analysis in younger (age equal to or below 60) and older (age>60) partners revealed that anxiety sensitivity was a significant predictor for both anxiety outcomes in both age groups (all p's <0.05), whereas Type D personality was related to both anxiety outcomes in older partners only (both p's <0.05). Additional mediation tests, using the Sobel test and Bootstrapping, showed that anxiety sensitivity mediated the relationship between Type D and PTSS in the total sample as well as in younger partners. These findings emphasize the clinical importance of anxiety in partners of ICD patients. In clinical practice, identification of partners with Type D personality and anxiety sensitivity may be important following the implantation of an ICD.

73) Abstract 1675

PREVENTION OF ANXIETY DISORDERS IN PATIENTS WITH AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD)

Paul Pauli, Dr., Psychology, University of Würzburg, Würzburg, Germany, Alexander Crössmann, PhD, Psychology, University of Würzburg, Würzburg, Germany, Volker Kühlkamp, Prof. Dr., Heart-Center Badene, Konstanz, Germany, Hans Neuser, MD, Cardiology, Center of Cardiovascular Medicine, Bad Neustadt a.d. Saale, Germany, Wolfgang Bauer, Prof., Medical Clinic, University of Würzburg, Würzburg, Germany

At two different times (after the implantation and 6 months later), 119 ICD patients filled out psychometric questionnaires for the assessment of anxiety and depression (Hospital Anxiety and Depression Scale) and their attitude toward the ICD. After the first assessment, patients were randomly assigned into two groups (layered by indication for ICD, age, and gender). In addition to the medical treatment, one group received the prevention program: the normal R-R intervals range from 600 to 1000 ms. Patients in the prevention group were asked to perform 15 minutes of relaxation before or after shock delivery. In the control group, patients were asked to relax as they wished. A self-assessment of the prevention program was performed at follow-up. Two months following the ICD implantation, general anxiety and depression were assessed by the Hospital Anxiety and Depression Scale (HADS) with a cut-off >8. Results: A total of 113 (20.4%) subjects (47 males, 66 females) suffered from anxiety and 82 (14.8%) (38 m, 44 f) from depressed mood. In a first analysis adjusted for age, sex, body mass index, alcohol intake and smoking, anxiety (OR 2.85, 95% CI 1.16-7.01, p=0.023) and depression (OR 3.99, 95% CI 1.62-9.81, p=0.001) were significantly associated with decreased HRV. Both remained significant after further adjustment for hypertension, hypercholesterolemia, diabetes and prior myocardial infarction (anxiety (OR 2.86, 95% CI 1.13-7.20, p=0.026), depression (OR 3.55 95% CI 1.41-9.95, p=0.007)). In addition, a covariate analysis revealed that smoking and alcohol intake were significantly associated with decreased HRV in all models applied. Conclusion: In a random sample of middle of older aged subjects, decreased HRV during daily life - likely to mirror an impaired autonomic function - was associated with anxiety and depression irrespective of gender and even after extensive adjustment for possible covariates. Negative affectivity may be associated with impaired autonomic function in a non-clinical population.

74) Abstract 1662

THE ASSOCIATION BETWEEN POSITIVE AND NEGATIVE AFFECTS AND LIPIDS LEVELS IN PATIENTS WITH AND WITHOUT CORONARY ARTERY DISEASE(CAD)

Philippe R. Stebenne, Bachelor, Kim L. Lavoie, Post doc, André Arsenault, MD, Catherine Laurin, PhD, Sandra Pelaez, Master, Bernard Meloche, technicien, Catherine Meloche, MD, Simon L. Bacon, PhD, Montreal Behavioral Medicine Center, Montreal, Quebec, Canada

Previous studies have shown that depression is associated with a poorer lipid profile. Patients with a high level of depressive symptoms have been shown to have increased levels of total cholesterol and triglycerides and lower levels of HDL, suggesting that this might be a mechanism by which depression influences poorer CAD outcomes. However, the impact of more generalized positive (PA) and negative (NA) affect on these outcomes is limited. The objective of the present study was to evaluate the effect of PA in comparison to NA on lipid profiles in patients with and or at risk for CAD. A sample of 107 patients (M (SD) age 58 (9.9) yrs) who where referred for myocardial perfusion exercise stress testing completed the Positive and Negative Affect Schedule-X and had a fasting blood sample drawn to assess lipid profile. General Linear Model analyses revealed a significant main effect of NA on triglyceride level (F(4,07, p=0.046), such that patients with a high level of NA had higher triglyceride levels. In addition, there
Significant main effects of PA on total cholesterol ($F=2.03, p=.157$), but no significant main effect on HDL ($F=0.05, p=.825$). No trend for a main effect of NA on total plasma cholesterol ($F=3.13, p=.080$) was found. These findings suggest that NA influences triglycerides, but not other lipid measures. Clinicians should be attentive to the triglyceride levels of patients with a high level of NA. In contrast, PA was not related to lipids and thus may not be implicated in the evolution of CAD through this pathway. Further research is needed to understand the exact mechanisms behind these relationships.

75) Abstract 1183 DEPRESSIVE SYMPTOMS, SOCIAL POSITION AND CARDIOVASCULAR RISK: RELATIONSHIPS IN EASTERN EUROPE

A Nicholson, PhD, Epidemiology & Public Health, M Bobak, PhD, Epidemiology & Public Health, University College London, London, UK, R Kuhinova, MD, Centre for Environmental Health, National Institute of Public Health, Prague, Czech Republic, S Malyutina, PhD, Institute of Internal Medicine, Russian Academy of Medical Science, Novosibirsk, Russian Federation, A Pajak, MD, Epidemiology & Population Studies, Jagiellonian University, Krakow, Poland, MG Marmot, PhD, Epidemiology & Public Health, University College London, London, UK.

Depression has been extensively investigated as a risk factor for ischaemic heart disease (IHD) in western populations. Depression may be important as a mediator between social upheaval and increased rates of IHD in Eastern Europe. This paper investigates the relationship between depressive symptoms and biological and behavioral CHD risk factors in Eastern Europe, and specifically: 1. whether any associations are accounted for by the social patterning of depression, and 2. whether the biological effects of depression may be greater in persons who suffered depression in early life.

Using cross-sectional data on 26,635 participants from the baseline examination of the HAPIEE cohort (in the Czech Republic, Poland and Russia), CHD risk factors (including smoking, exercise, alcohol, BMI, waist-hip ratio, age) were examined in relation to depressive symptoms (assessed by the CESD-20) and social position (measured by education, household amenities in childhood, current financial hardship).

We found strong educational gradients in depression, as well as independent associations between depressive symptoms and adverse cardiovascular risk factors, including higher waist-hip ratio and increased smoking prevalence. Pulse rate, a predictor of coronary death, increased with depression in men in all 3 countries. The association of depression with pulse rate was stronger in men with more measures of social deprivation. This interaction remained statistically significant after controlling for age and health behaviors ($p < 0.04$) but was reduced by controlling for physical functioning.

Depressive symptoms are associated with an adverse CHD risk profile independent of social position. Our results suggest that social deprivation may have a double effect on the risk of IHD: through an increased risk of depression and an increased biological impact of depression.

76) Abstract 1271 ASSOCIATIONS BETWEEN POSITIVE EMOTION AND RECOVERY OF FUNCTIONAL STATUS FOLLOWING STROKE

Glenn V. Ostir, PhD, Internal Medicine, Ivonne M. Berges, PhD, Rehabilitation, University of Texas Medical Branch, Galveston, Texas Purpose of Study. Accumulating evidence indicates the beneficial effects of positive emotion on health and general well-being in older age. Less evidence is available on whether positive emotion supports improvement in functional status after an acute medical event such as stroke. This study examined the association between positive emotion at discharge from in-patient medical rehabilitation and functional status three months later in persons with stroke.

Subject Sample and Methods. A longitudinal study using information from the Stroke Recovery in Underserved Patients database. The study included 823 persons aged 55 years or older with stroke and admitted to an in-patient medical rehabilitation facility. Information was collected during in-patient medical rehabilitation stay and approximately 3 months post discharge.

Summary of Results. The mean age of the sample was 72.8 years (SD = 9.5), 51.5% were women and 53.8% were married. The sample was mostly non-Hispanic white (79.2%), followed by non-Hispanic black (15.0%) and Hispanic (5.8%). The average length of stay was 20.1 days (SD = 10.1). In multivariate regression analyses discharge positive emotion score was significantly associated with higher overall functional status ($b=1.00, SE=0.17, p=0.001$) as well as with higher motor ($b=0.67, SE=0.15, p=0.001$) and cognitive ($b=0.39, SE=0.05, p=0.001$) status at 3 month follow-up after adjustment for relevant risk factors.

Our results indicate positive emotion is associated with gains in functional status post-stroke. Findings have implications for stroke recovery programs and suggest the need to include measures of positive emotion in patient assessments.

Pain – clinical

77) Abstract 1469 GENDER AND ESTIMATED AND ACTUAL PAIN TOLERANCE IN PATIENTS WITH SICKLE CELL DISEASE (SCD)

Chante’ C. Wellington, Ph.D., Christopher L. Edwards, Ph.D., Mary C. Wood, MA, Miriam H. Feliu, Psy.D., Psychiatry, Laura DeCastro, MD, Hematology, Duke University Medical Center, Durham, NC.

The literature on gender differences in the experience of chronic pain is substantial and growing. However, research on gender differences in chronic pains associated with Sickle Cell Disease is relatively non-existent. Using survey methodology, we evaluated the highest "estimated" and "actual" ratings of pain that fifty adult men (22) and women (28), mean age 38.93 (13.51) with SCD, believed that they could tolerate without significant changes to their current level of functionality. Male patients with SCD reported a significantly higher "actual" pain tolerance (7.61 ± .47) than did their female counterparts (6.54 ± .43), p<.04. There was a trend towards males reporting significantly higher "estimated" pain tolerances (6.71 ± .50) than females (5.42 ± .46), p=.06. Neither males nor females differed in their propensity to report somatic complaints. Both genders tended to underestimate their capabilities to tolerate pain to a clinically significant degree. We conclude that estimates of pain tolerance may be differentially experienced as a function of gender with both men and women with SCD underestimating their capacities to tolerate pain.

78) Abstract 1481 CHRONIC PAIN AND ANXIETY IN ADULT PATIENTS WITH SICKLE CELL DISEASE (SCD)

Chante’ C. Wellington, Ph.D., Christopher L. Edwards, Ph.D., Mary C. Wood, MA, Psychiatry, Duke University Medical Center, Durham, NC, Camelia McDougald, MA, Psychology, East Carolina University, Greenville, NC, Patricia Pritchette, Psychology, North Carolina Central University, Durham, NC, Goldie Byrd, Ph.D., Biology, North Carolina A&T State University, Greensboro, NC, Laura M. DeCastro, MD, Hematology, Miriam H. Feliu, Psy.D., Psychiatry, M, Bobak, PhD, Epidemiology & Public Health, University College London, London, UK.

The influence of anxiety on the experiences of pain in African Americans with chronic disease is relatively unknown. Even less is understood about anxiety in the experience of pain in African American patients with Sickle Cell Disease (SCD). We evaluated anxiety as a predictor of the pain intensity, duration, and frequency fifty African American patients, mean age 38.93 (13.51), with SCD. Anxiety was found to predict both the Sensory and Affective dimensions of pain ($p<0.01$) but not the summary indices as measured by the Short-form McGill Pain Questionnaire (VAS and PP). Increased anxiety was associated with increased sensory and affective reports of chronic pain. Anxiety was not predictive of pain duration or frequency. The authors conclude that better understanding the relationship of anxiety to the experience of pain in patients with SCD may move us closer to developing more effective behavioral strategies for managing pain in this population of patients.
79) Abstract 1478
MUSCULOSKELETAL COMPLAINTS AND ADLS AS A FUNCTION OF AGE IN PATIENTS COMPROMISED WITH SICKLE CELL DISEASE (SCD)
Miriam H. Felis, Psy.D., Chante' C. Wellington, Ph.D., Christopher L. Edwards, Ph.D., Lekisha Edwards, MA, Psychiatry, Laura M. DeCastro, MD, Hematology, Mary C. Wood, MA, Psychiatry, Duke University Medical Center, Durham, NC, Elwood Robinson, Ph.D., Psychology, North Carolina Central University, Durham, NC, Keith Whitfield, Ph.D., Psychology, Duke University, Durham, NC.
We evaluated patterns of musculoskeletal complaints and activities of daily living (ADL's) in fifty men (22) and women (28), mean age 38.93 (13.51) with Sickle Cell Disease (SCD) as a function of their age. Using median split (35-years-old), we divided patients into "younger" and "older" age groups. We then compared the age groups, based on the hypothesis that older patients may report greater difficulties with physical functioning and mobility on a series of ADL's empirically reported as common obstacles among this patient population. Younger patients were much more likely to report significant difficulties with arm movements (p=0.07), hand movements (p=0.07), leg movements (p=0.06), and foot movements (p=0.04) without assistance compared to their older disease counterparts. There were also trends towards significance for younger patients reporting more difficulties walking as compared to their older disease counterparts. There were no reported differences between age groups in their abilities to dress, bathe, eat, drink, climb stairs, and attend doctor's appointments without assistance. Consistent with a growing literature, we believe that these data suggest that patients with SCD who live to be older than 35 years of age may suffer fewer morbidities and problems with ADLs as compared to their younger counterparts.

80) Abstract 1476
SEXUAL BEHAVIOR AMONG PATIENTS WITH SICKLE CELL DISEASE
Miriam H. Felis, Psy.D., Christopher L. Edwards, Ph.D., Mary C. Wood, MA, Psychiatry, Duke University Medical Center, Durham, NC, Stephanie Johnson, Ph.D., Science Directorate, American Psychological Association, Washington, DC, John W. Burns, Ph.D, Psychology, Rosalind Franklin University of Science, Phillip Quartana, Masters of Science, Carla Nappi, Masters of Science, Wesley P. Gilliam, Masters of Science, Justin Matsuura, Masters of Science, Eric J. Lenze, M.D., Psychiatry, Washington University, St. Louis, MO, Elwood Robinson, Ph.D., Psychology, Duke University, Durham, NC.
ACTIVITY AND MOOD STATES IN KOREAN FEMALE MIGRAINE PATIENTS
Eun-Ho Kang, M.D., Psychiatry, Sungkyunkwan University, Seoul, Korea(South), Moon-Soo Koo, M.S., Jong-Sun Lim, Bsc, Bum-Hee Yu, M.D., Ph.D., Kyung-Jeong Kim, Bsc, Jun-Bum Ahn, Bsc, Psychiatry, Sungkyunkwan University School of Medicine, Seoul, Korea(South), Joo-Eon Park, M.D., Psychiatry, Keyo Hospital, Euiwang, Korea(South), In-Su Lee, M.D., Psychiatry, Semin Hospital, Teojoo, Korea(South)
This study aimed to examine the effect of biofeedback treatment on headache activity, anxiety, and depression in female patients with migraine headache. The patients were randomized into the treatment group n=19) and monitoring group (n=19). Twenty one healthy female subjects were enrolled in the study as normal controls.

We found significant differences in the levels of anxiety and depression between the female migraine patients and age-matched controls. We found greater improvements in patients with biofeedback-assisted autogenic training than in monitoring group in terms of headache index (58.9% vs.20%, p = 0.029). The high scores on the anxiety and depression scales in the patients receiving biofeedback-assisted autogenic training decreased after the biofeedback treatment. Moreover, the decrease in their anxiety and depression levels was significantly correlated with the decrease in their headache activities.

This result suggests that the effectiveness of biofeedback-assisted autogenic training for migraine and its therapeutic effect might result from the improvement of the mood states.

83) Abstract 1113
AFFECTION INTENSITY AS A MODERATOR OF THE RELATIONSHIP BETWEEN PAIN CATASTROPHIZING AND PAIN SENSITIVITY
Wesley P. Gilliam, Masters of Science, Justin Matsuura, Masters of Science, Phillip Quartana, Masters of Science, Carla Nappi, Masters of Science, Brandy Wolff, Masters of Science, Erika Gray, Masters of Art, John W. Burns, Ph.D, Psychology, Rosalind Franklin University of Medicine and Science, North Chicago, Illinois
Research suggests that pain catastrophizing and pain sensitivity may be related via a variety of cognitive and emotional mediators. One critical element of pain catastrophizing is the misappraisals and subsequent exaggeration of the threat of pain. Studies show that people predisposed to show intense expressions of affect report stronger emotional responses to positive and negative events than people low in affect intensity. Thus, we expected the interaction of catastrophizing and anxiety to identify a subgroup very susceptible to these high on pain catastrophizing and high on affect intensity. 97 healthy
normals completed the Pain Catastrophizing Scale (PCS) and the Affect Intensity Measure (AIM), and underwent a 4-min forearm ischemia pain task and a 2-min recovery. A repeated measures regression indicated a significant PCS x AIM x Period interaction for pain ratings [F (8, 744) = 1.96, p<.05]. To further illustrate the interaction, a median split was performed on the AIM and additional repeated measures regressions were performed between PCS and the time periods at each level of AIM. At high AIM, the Catastrophizing x Period interaction was significant [F (8, 384) = 2.29, p<.05], such that as the tendency to catastrophize increased, so too did pain intensity during and following acute pain induction. At low AIM, the interaction was nonsignificant. Further analysis revealed positive and significant relationships between PCS scores and pain ratings at all post-task recovery periods for those with high levels of AIM (t's > 2.9, p's < .05). In addition, the PCS x AIM x Period interaction was not significant for distress ratings suggesting that this model is specific to pain sensitivity. These findings suggest that pain catastrophizing leads to greater pain sensitivity during and following acute pain only among individuals predisposed to express intense levels of affect.

84) Abstract 1527
REDUCED PAIN INTENSITY RATINGS OF ICD DISCHARGE IN PATIENTS WITH PTS DS SYMPTOMS
Jennifer E. Graham, Ph.D., Christopher J. Thorne, B.A., Megan E. Johnson, B.Sc., Kinesiology and Health Sciences, York University, TO, ON, Canada, Louise Harris, MD, Cardiology, Toronto General Hospital, TO, ON, Canada, Paul Dorian, MD, Cardiology, St. Michael's Hospital, TO, ON, Canada, Samuel Sears, Ph.D., Psychology, East Carolina University, Greenville, NC, Robert Cribbie, Ph.D., Joel Katz, Ph.D., Psychology, York University, TO, ON, Canada
Research demonstrates an inverse relationship between pain intensity (PI) and post-traumatic stress disorder symptoms (PTSS) in several traumatized populations. Implantable cardioverter defibrillator (ICD) shocks have been associated with PTSS, thus we examined the relationship between PTSS (and in particular emotional numbing) and PI for a sample of ICD patients. Impact of Events Scale-Revised (IES-R) at 6-months post-implant) and the patient's subjective rating of the average PI of shock (at 6-months post-implant) were correlated to examine this relationship. The sample comprised 9 patients who had received their first ICD for secondary prevention of sudden cardiac death. Participants (56% males) had a mean age of 61.8 ± 14.9 years and had experienced one ICD shock, verified by ICD interrogation, within 6-months of their implant. Results showed an inverse correlation (r = -0.708, p = .03) between the hyperarousal subscale of the IES-R and PI ratings. A significant and inverse correlation was also found between the emotional numbing item and PI (r = -0.804, p = .009). Consistent with other findings, our results indicated lower PI ratings in patients with higher PTSD symptoms. The nature of the negative association between PTSS and PI remains unknown. It is possible that hyperarousal and emotional numbing serve as protective factors against pain thus reducing the perceived PI of the shock. Conversely, the intensity of the shock may be interpreted by the patient as a signal that the ICD device is or is not working properly; leading to reassurance when PI is high, and to hyperarousal and emotional numbing when PI is lower. Alternatively, a third factor, such as the endogenous opioid system, may play a mediating role since elevated cerebrospinal fluid beta-endorphin levels have been reported in patients with PTSD. This study corrected these errors and evaluated opioid treatment in chronic pain patients.

85) Abstract 1214
PSYCHOLOGICAL STRESS MODERATES THE ASSOCIATION BETWEEN PAIN SEVERITY AND DEPRESSED MOOD
Jennifer E. Graham, Ph.D., Christopher J. Thorne, B.A., Megan E. Probst., Christine F. Fagiolietti., Biobehavioral Health, Penn State University, University Park, PA
Although there is no doubt that pain severity and depressed mood are associated, the directionality and consistency of this association is unclear. Our goal was to investigate the impact of psychological stress on the association between pain severity and depressed mood using structural equation modeling, we tested the hypothesis that pain severity contributes to depressed mood largely because pain interferes with life involvement. Further, we expected that the association between pain and depressed mood would be stronger for those experiencing high as opposed to low stress (as indicated by perceived stress, stressful life events, and academic stress) and that psychosocial factors (such as mood, control over pain, and pain catastrophizing) would affect pain severity only under conditions of high stress. A questionnaire containing psychometrically-robust measures was conducted with young adults (N = 105) self-reporting chronic pain from diverse sources. As predicted, perceived interference from pain mediated the association between pain severity and depressed mood, and this pathway was significant only for those with high compared to low stress, b = .29, p < .01 vs b = -.12, ns. Moreover, pain control and catastrophizing were associated with pain only among those with high stress, e.g., b = -.42, p < .01 vs b = .26, ns). Testing of alternative models suggested that depressed mood was not predictive of pain for either group. A model containing above variables as well as more traditional predictors of depressed mood (self-esteem, gender, weight, and general health) was an excellent fit to the data overall, CFI = 1.0, RMSEA = 0.0 (0.0-.05), X²(82) = 77.52, p = .62. These findings suggest that influences on both pain and depressed mood among young adults differ depending on the experience of psychological stress and extend literature demonstrating that stress can exacerbate mood and pain associations.

86) Abstract 1146
OPIOID TREATMENT OF CHRONIC PAIN PATIENTS IMPROVES LIFE QUALITY, REDUCES EMOTIONAL DISTRESS, AND ATTENUATES PAIN AS COMPARED TO PATIENTS NOT RECEIVING OPIOIDS
Ashley Longo, BA, Psychology, University of West Florida, Pensacola, Florida, Julie Smith, Ph.D., Psychiatry, University of Maryland School of Medicine, Baltimore, MD, David Longo, Ph.D., Psychology, Susquehanna University, Danville, Pa, Kalyan Krishnan, MD, Anesthesiology, Geisinger Medical Center, Danville, Pa
Recent studies have reported that opioid medication is not effective in treating chronic pain. Two methodological errors plague these studies (i.e., heterogeneous pain samples and improper pain assessment). This study corrected these errors and evaluated opioid treatment in chronic pain patients.

83 adults with chronic myofascial pain were recruited from visits to rural pain clinics. Questionnaires were completed prior to the 10-week multidisciplinary treatment (i.e., cognitive-behavioral psychotherapy, physical therapy, trigger point injections, and opioid medication), post-treatment, and 1 year follow-up. The following constructs were assessed: emotional status (Profile of Mood States; POMS); Pain Quality of Life Measure (PQLM); and pain (McGill Pain Inventory: Sensory, SEN; Affective, AFF; and Evaluative, EVAL; subscales). The sample was divided into opioid (N=41: patients receiving opioids following treatment) and non-opioid groups (N=42; no post-treatment opioids).

Significant differences were found for the total sample between initial and post-treatment for all research variables: McGill (SEN: 23.81 vs. 22.48; t(82) = 13.861, p = 0.0001; AFF: 10.06 vs. 8.32; t(82) = 12.451, p = 0.0001; and EVAL: 4.13 vs. 3.20; t(82) = 15.136, p = 0.0001); POMS (60.17 vs. 45.63; t(82) = 7.204, p = 0.0001; and PQLM (78.71 vs. 60.21; t(82) = 13.861, p = 0.0001; AFF: 10.06 vs. 8.32; t(82) = 12.451, p = 0.0001; and EVAL: 4.13 vs. 3.20; t(82) = 15.136, p = 0.0001). Significant differences were found between the opioid and non-opioid groups (N=42) on the research variables prior to or after treatment; however significant differences were found at follow-up between the groups: McGill (SEN: 7.39 vs. 10.57; t(81) = -.623, p = 0.0001; AFF: 2.61 vs. 4.14; t(81) = -7.801, p = 0.0001; and EVAL: 2.61 vs. 4.14; t(81) = -7.801, p = 0.0001; and PQLM (78.71 vs. 60.21; t(82) = 13.861, p = 0.0001; and PQLM (78.71 vs. 60.21; t(82) = 13.861, p = 0.0001; and PQLM (78.71 vs. 60.21; t(82) = 13.861, p = 0.0001). Significant differences were found between the opioid and non-opioid groups (N=41: patients receiving opioids following treatment) and non-opioid groups (N=42; no post-treatment opioids).

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Implications will be discussed.
87) Abstract 1325

STRENUEOUS EXERCISE INVOLVEMENT AND PAIN RESPONSE FOLLOWING NOXIOUS STIMULATION: AN EXAMINATION OF COGNITIVE MEDIATORS

Burel Goodin, MA, Psychology, Lacy Mayes, MA, Noel Burns, BA, Lynanne McGuire, PHD, Psychology, University of Maryland, Baltimore County, Baltimore, MD

Strenuous exercise involvement is related to less severe pain responses following experimental pain testing; however, underlying mechanisms associated with this relationship remain poorly understood. The current study investigated associations among self-reported strenuous exercise involvement, pain-related coping strategies, perceived positive control over pain, and pain response during acute laboratory pain using cold water in healthy, ethnically diverse young adults (N = 79; 52% women). The five active coping scales from the Coping Strategies Questionnaire (CSQ) Short-Form comprised the pain-related active coping composite score. The perceived positive control subscale was from the Survey of Pain Attitudes (SOPA). Pain response was assessed by the McGill Pain Questionnaire-Short Form (SF-MPQ). A bias-corrected (BC) bootstrapped multiple mediator model was used to examine whether active coping strategies and perceived positive control over pain significantly mediated the relation between strenuous exercise involvement and pain response, controlling for sex differences. The model accounted for a significant proportion of variance in pain response associated with strenuous exercise involvement (R2 = .250, p < .001). Perceived positive control over pain significantly mediated the relation between strenuous exercise involvement and pain response (95% BC Confidence Interval: [-.125, -.012] with 1000 resamples); however, active coping did not (95% BC Confidence Interval: [0.192, 3.595] with 1000 resamples). A pairwise contrast of the two mediated effects was completed and revealed that the magnitude of the mediated effect through perceived positive control was significantly greater than the mediated effect through active coping (95% Confidence Interval: [0.330, 5.142]). These findings suggest that individual differences in pain-related cognitions may be important for explaining positive pain-related outcomes associated with involvement in strenuous exercise.

88) Abstract 1194

EARLY ADVERSITY, PERFECTIONISM AND AFFECT REGULATION IN PATIENTS WITH CHRONIC FATIGUE SYNDROME/FIBROMYALGIA: AN ECOLOGICAL MOMENTARY ASSESSMENT STUDY

Patrick Luyster, PhD, Psychology, Boudewijn Van Houdenhove, MD, PhD, Liaison Psychiatry, Catholic University Leuven, Leuven, Belgium

Purpose of study: Chronic fatigue syndrome (CFS) and the highly overlapping fibromyalgia syndrome (FM) are medically unexplained syndromes that can be distressing. Initial adversity and perfectionism might in some CFS/FM patients contribute to the perpetuation of the illness. However, the mechanisms by which these factors may increase symptoms and impede recovery are largely unknown.

Methods: A sample of 33 patients diagnosed with CDC criteria for CFS and/or ACR criteria for FM, and 33 matched healthy controls were investigated using experience sampling methodology. Individuals in both samples completed each day for a period of 14 days brief measures of fatigue, pain, mood, hassles, subjective distress, and levels of positive and negative affect. Before the study, they also completed the Depression Experiences Questionnaire (Nijenhuis et al., 2002) to measure early adversity; and the Depressive Experiences Questionnaire (Blatt et al., 1976) to measure perfectionism. At the end of the study, they completed the Everyday Problem Checklist (Vingerhoets et al., 1998) to measure daily hassles experienced over the period of 14 days. To analyse the data, multilevel analyses were used.

Results: Compared to controls, patients with high scores on early adversity and perfectionism reported more hassles, and experienced more subjective distress, fatigue and pain as well as higher levels of negative affect and lower levels of positive affect (all p's < .01).

Conclusions: CFS/FM patients with a history of early adversity and/or high levels of perfectionism may perpetuate their illness and impede recovery through disturbances in the regulation of both negative and positive affect, combined with the generation of daily stressors, and this may have important therapeutic implications.

89) Abstract 1128

CHANGE IN PAIN SEVERITY WITH OPEN LABEL VENLAFAXINE USE IN PATIENTS WITH A DEPRESSIVE SYMPTOMATOLOGY: AN OBSERVATIONAL STUDY IN PRIMARY CARE

Stefan Begré, MD, General Internal Medicine, University Hospital, Bern, Switzerland, Martin Traber, MD, Neuroscience, Wyeth Pharmaceuticals AG, Zag, Switzerland, Martin Gerber, GEM, Clinical Research Consulting, Unterägeri, Switzerland, Roland von Känel, MD, General Internal Medicine, University Hospital, Bern, Switzerland

Venlafaxine has shown benefit in the treatment of depression in pain. Worldwide data are extensively lacking investigating the outcome of depressed pain patients treated by venlafaxine in the primary care setting. This observational study aimed to elucidate the efficacy of venlafaxine and its prescription by Swiss primary care physicians and psychiatrists in patients with chronic pain and comorbid depression. We studied 505 depressed patients suffering from chronic pain in a prospective naturalistic Swiss community based observational trial with venlafaxine in primary care. These patients have been treated with venlafaxine by 122 physicians, namely psychiatrists, general practitioners, and internists. On average, patients were treated with 143+/-.75 mg (range 0-450 mg) venlafaxine daily for a follow-up of 3 months. Venlafaxine proved to be beneficial in the treatment of both depression and chronic pain. Although side effects were absent in most patients, physicians might have frequently omitted satisfactory response rate of depression by underdosing venlafaxine. Our results reflect the complexity in the treatment of chronic pain in depressed patients in primary care. We conclude that further randomised dose-finding studies are needed to learn more about the appropriate dosage in treating depression and comorbid pain with venlafaxine.

90) Abstract 1718

DISEASE DURATION MODERATES THE RELATIONSHIP BETWEEN PAIN CATASTROPHIZING AND PATIENT/PARTNER OUTCOMES

Doerte U. Junghaenel, Ph.D., Psychiatry, Stefan Schneider, Dipl.Psych., Psychology & Psychiatry, Joan E. Broderick, Ph.D., Psychiatry, Stony Brook University, Stony Brook, NY

Recent conceptualizations of pain catastrophizing (CAT) emphasize the interpersonal context of the chronic pain experience. According to the communal coping model, individuals engage in CAT to elicit support and empathy from others. To date, evidence for the communal model is mixed. Some studies suggest that the association between CAT and social support varies with the individual’s stage in the disease process. This study examined if disease duration moderates the relationship between CAT and interpersonal outcomes (social support, caregiver strain). Ninety-nine chronic pain patients (mean age = 52 years, 50% female, 87% White, mean disease duration = 7 years) participated. They completed the Pain Catastrophizing Scale, three Multidimensional Pain Inventory subscales, and the Social Provisions Scale. Their partners (mean age = 51 years, 97% White) completed the Caregiver Strain Index. In moderated multiple regression analyses, high CAT patients perceived their partners as more punishing (beta = .29, p = .05) irrespective of disease duration (interaction beta = .08, p = .72). However, disease duration significantly moderated the relationship between CAT and solicitous partner responses (beta = -.47, p < .05), distracting partner responses (beta = -.63, p < .01), and general social support (beta = -.46, p < .05). In each case, CAT was positively associated with support for patients with short disease duration, but not for patients with long disease duration. Moreover, disease duration significantly moderated the relationship between CAT and partners’ caregiver strain (beta = -.76, p = .01): CAT was positively associated with partner burden early in the disease process but not at a later stage. The results indicate that the interpersonal effects of pain CAT vary depending upon patients’ disease duration. They suggest that CAT may initially elicit empathy and support, yet these supportive relationships erode over time.
FATIGUE IN WOMEN WITH FIBROMYALGIA DIFFERENTIAL PREDICTORS OF SLEEP QUALITY AND PAIN SEVERITY

Rebecca E. Wershba, B.A., John A. Sturgeon, B.A., Andrea C. Fowler, B.A., Alex J. Zautra, Ph.D., Mary C. Davis, Ph.D., Psychology, Arizona State University, Tempe, AZ

Fatigue and poor sleep quality have been related to a range of negative outcomes for patients with chronic pain disorders such as Fibromyalgia (FM). Although fatigue and sleep quality often are considered interchangeable, data suggest that they share only 10-15% of their variance (Nicassio et al., 2002; Wershba, unpublished data). Given that fatigue and sleep quality appear to be independent constructs, they may be differentially related to demographic, health, coping and personality factors related to either sleep or fatigue in prior research. In this study, age, disease-related factors, mental health, personality and catastrophizing were regressed separately on sleep quality (controlling for fatigue), and fatigue (controlling for sleep quality) to determine how much variance they account for in these outcomes. A sample of 392 FM patients was assessed for sleep quality via the Pittsburgh Sleep Quality Index and daily fatigue (0-100 rating, measured for 30 days and averaged). All other variables were assessed at an initial clinician visit. Results from regression analyses indicated that age accounted for more variance in fatigue than in sleep quality (3.6% vs 0.1% at p<.05). Likewise, disease-related physical function (CSSD and average pain) accounted for three times the variance in fatigue as sleep quality (21.9% vs 6.7%). However, mental health measures (anxiety, depression, and PTSD assessed via MHI, HDE and DSM-IV) accounted for more than twice the variance in sleep quality (18.0% vs 7.3%). Personality variables (extraversion and neuroticism assessed via the NEO-FFI) likewise accounted for twice the variance in sleep quality as fatigue (7.7% vs 1.6% at p<.05). In Catastrophizing (assessed via the Vanderbilt Multidimensional Pain Coping Inventory) accounted for similar variance in sleep quality and fatigue (5.8% vs 3.5%). These findings suggest that demographic and disease-related physical symptoms are more strongly related to fatigue, whereas mental health symptoms and personality are more strongly related to poor sleep. Attention to these differences may lead to better and more specific treatments for difficulties associated with poor sleep and fatigue.

DIFFERENT TYPES OF TRAUMAS HAVE DIFFERENT MODERATORS OF PAIN CATASTROPHIZING AND DEPRESSION

K. Somur, J. Barnes, PhD, Psychology, Rosalind Franklin University, North Chicago, IL

Chronic pain patients report more traumatic events than people without pain. PTSD symptoms in general are related to high negative affect, but among chronic pain patients, PTSD symptoms may also increase pain severity. We expected that PTSD symptoms among traumatized pain patients would be related to pain through distinct emotional factors (pain catastrophizing, anger-out), and that mediators of links between PTSD symptoms and pain would depend on whether patients experienced a traumatic accident or were sexually assaulted. 249 chronic pain patients completed: Life Events Checklist, PTSD Checklist, Multidimensional Pain Inventory, Pain Catastrophizing Scale (PCS), and the Anger Expression Inventory. For patients who reported an accident, PTSD symptoms were correlated with PCS scores (r=.54, p<.01) and pain severity (r=.33, p<.01). PCS was also correlated with anger-out severity (r=.31, p<.01). Regression analyses showed that PTSD was a significant predictor of pain severity with PTSD symptoms controlled (beta=.24, p<.01). PTSD symptoms also accounted for unique variance in pain severity with PCS controlled (R2 change=.04, p<.01). However, the amount of mediation was significant (Sobel=.19, p<.04). Anger-out (AO) did not mediate this link in this group. For patients who had an accident, pain catastrophizing may convey effects of PTSD symptoms to pain severity, while expressed anger does not. For patients who report sexual assault, PTSD symptoms were correlated with AO (r=.23, p<.04) and pain severity (r=.37, p<.01). Also, AO was correlated with pain severity (r=.31, p<.01). Although regressions revealed that AO was a significant predictor of pain severity with PTSD symptoms controlled (beta=.25, p<.05), the latter also were unique predictors with AO controlled (R2 change=.10, p<.01). The Sobel test was non-significant. The current findings suggest that whereas expressed anger is part of the symptom profile that affects pain in sexually assaulted patients, it did so independently of PTSD symptoms. Thus, different factors may explain pain severity among pain patients depending on type of trauma.

TREATING PSYCHIATRIC COMORBIDITY IN CHRONIC PELVIC PAIN: AN OPEN LABEL TRIAL OF LAMOTRIGINE

Samantha E. Meltzer-Brody, M.D., Psychiatry, Denniz Zolnoun, M.D., Obstetrics/Gynecology, John F. Steege, M.D., Obstetrics and Gynecology, Katherine Rinaldi, B.A., Psychiatry, Jane Leserman, Ph.D., Department of Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Chronic Pelvic Pain (CPP) affects 15% of the adult female population, and is associated with high rates of psychiatric comorbidity. Because many women with CPP are refractory to treatment and have psychiatric comorbidity, this study examined the efficacy of lamotrigine, an anticonvulsant with demonstrated efficacy in both mood and pain symptoms, for the treatment of patients with CPP using an open-label design. Also, given the diversity of patients meeting criteria for CPP, we examined differences in treatment response based on sub-type of CPP (e.g. diffuse abdominal pain, neuropathic pain, and vulvovaginal pain). We enrolled 43 women with CPP recruited from the UNC Pelvic Pain Clinic from November 2004 to December 2006. Thirty-one subjects completed 8 weeks of WOAMC treatment (CPP patients completed the 12 week maintenance phase. The primary outcome variables included: (1) McGill Pain Rating Index, (2) McGill Visual Analog Scale (VAS) of overall pain intensity, (3) McGill pain intensity scale modified to rate pelvic pain, (4) the Hamilton Depression Rating Scale (HAM-D), and (5)the Hamilton Anxiety Rating Scale (HAM-A). Average age was 41 years (SD=12.6), average years of education was 15 years (SD=1.8), and average dose of lamotrigine was 240 mg in those completing 8 weeks of treatment. Types of CPP included vulvovaginal pain (N=17), diffuse abdominal pain (N=7), and neuropathic pain (N=7). About half (48.4%) of the patients were on antidepressant medication at baseline and this did not vary across type of CPP diagnosis (chi-square=1.92, p=.38, N=31). When examining the whole group, we found significant reductions on the McGill pain rating index (r=.003, McGill VAS intensity P<.001), McGill pain intensity P<.001, HAM-D (P=.002), and HAM-A (P=.02) at the 8 week visit as compared to baseline. Analysis of the data by the three subtypes of pelvic pain showed that the vulvovaginal pain group had robust reductions on all measures of pain at the 8 and 12 week visits as compared to baseline and had significant reductions in mood symptoms at the 12 week visit. CPP is a heterogeneous disorder, with psychiatric comorbidity and poor treatment response. This open label study suggests that the use of lamotrigine in the treatment of patients with CPP may be helpful in addressing both the pain and mood symptoms associated with this disorder.

SATISFACTION WITH SPouse SUPPORT AS A MODERATOR OF PAIN CATASTROPHIZING AND DEPRESSION

Andrea C. Fowler, B.A., Rebecca E. Wershba, B.A., Mary C. Davis, PhD, Alex J. Zautra, PhD, Psychology, Arizona State University, Tempe, AZ

Pain catastrophizing, a negative cognitive-affective process that includes elements of helplessness, magnification and rumination, has been identified as a psychosocial factor that greatly influences pain. In the context of Pain Catastrophizing Scale (PCS), it was suggested that pain catastrophizing may serve as a communicative function for some individuals, with an interpersonal goal rather than one of pain alleviation (Sullivan et al. 2001). However, in attempting to get and retain these social goals, catastrophizers may inadvertently increase their pain and distress. The present study examines whether, consistent with the CCM, high catastrophizers who report high spouse support for satisfaction items report on lower levels of depression but unchanged levels of average pain. To test this hypothesis, 140 women with Osteoarthritis and/or Fibromyalgia reported on their satisfaction with spouses’ coping responses, and their own catastrophizing (Vanderbilt Multidimensional Pain Coping Inventory), depression (Hamilton Depression Inventory), and average pain (scale 0 to 100). Hierarchical multiple regression analyses including first catastrophizing and spouse support in a single regression, and then catastrophizing, spouse support, in a single regression, revealed that the relationship between pain catastrophizing and depression was
Among 101 healthy, pain-free participants, underwent 2-min forearm ischemia while engaging in a modified Dot-probe paradigm with negative affective and physical pain-neutral stimulus pairs. Trials were divided into early (1st minute) and late (2nd minute) blocks. Attentional biases to pain-affective and pain-sensory stimuli were calculated for each block. Repressors were identified by high and low scores on the Marlow-Crowne Social Desirability and Taylor Manifest Anxiety scales, respectively. Groups comprised Low Anxious and High Anxious. A Condition (repressor, low anxious, high anxious) x Block (Early, Late) x Stimulus Type (pain-affective, pain-sensory) effect emerged (F(2,65)=5.16, p<.05). As predicted, comparisons revealed that 'repressors' evidenced an increase in bias away from pain-affective stimuli (F(1,21)=3.90, p<.06), but an increase in bias toward pain-sensory stimuli (F(1,21)=8.69, p<.008), across blocks. Low-anxious and High-anxious participants did not reveal such a pattern, however (p>.18). These results provide preliminary support for an information processing model of repression and conversion. Importantly, results stemming from this methodological approach, if replicated, may allow researchers to demystify the process by which repressed or suppressed emotions may convert into physical pain and suffering among those with chronic pain, or suggest it has promising potential as a non-pharmacologic treatment of chronic pain for older adults.

96) Abstract 1073
ANGER MANAGEMENT STYLE AND ACUTE PAIN RESPONSES: IMPROVING UNDERSTANDING WITH A MULTI-VARIABLE PROFILE APPROACH
Justin T. Matsusara, BA, Wesley P. Gilliam, MS, Phillip J. Quarta, MS, Carla M. Nappi, MS, Brandy L. Wolff, MS, Erika P. Gray, MA, Kristin L. Somar, BA, John W. Burns, PhD, Psychology, Rosalind Franklin University, Chicago, IL, Wesley P. Gilliam, MS, Justin Matsusara, John W. Burns, PhD, Psychology, Rosalind Franklin University of Medicine and Science, N. Chicago, IL.

The idea that repressed or suppressed emotions may convert into physical pain remains an intriguing one. Although methods for identifying so-called repressors have been proposed, and some extent validated, the purported mechanisms by which repressed affect surfaces as physical pain have been difficult to test empirically. We propose an information processing model of repression and conversion, and suggest that during painful stimulation repressors will, over time, evidence increased attention away from pain-affective (e.g., cruel) information and increased attention toward pain-sensory (e.g., throbbing) information. Sixty-nine healthy, pain-free participants underwent 2-min forearm ischemia while engaging in a modified Dot-probe paradigm with negative affective and physical pain-neutral stimulus pairs. Trials were divided into early (1st minute) and late (2nd minute) blocks. Attentional biases to pain-affective and pain-sensory stimuli were calculated for each block. Repressors were identified by high and low scores on the Marlow-Crowne Social Desirability and Taylor Manifest Anxiety scales, respectively. Groups comprised Low Anxious and High Anxious. A Condition (repressor, low anxious, high anxious) x Block (Early, Late) x Stimulus Type (pain-affective, pain-sensory) effect emerged (F(2,65)=5.16, p<.05). As predicted, comparisons revealed that 'repressors' evidenced an increase in bias away from pain-affective stimuli (F(1,21)=3.90, p<.06), but an increase in bias toward pain-sensory stimuli (F(1,21)=8.69, p<.008), across blocks. Low-anxious and High-anxious participants did not reveal such a pattern, however (p>.18). These results provide preliminary support for an information processing model of repression and conversion. Importantly, results stemming from this methodological approach, if replicated, may allow researchers to demystify the process by which repressed or suppressed emotions may augment physical pain and suffering among those with chronic pain, or other medical conditions often accompanied by physical pain.

97) Abstract 1768
A PRELIMINARY TEST OF AN INFORMATION PROCESSING MODEL OF REPRESSION AND CONVERSION
Phillip J. Quarta, M.S., Psychiatry, University of Illinois at Chicago, Chicago, IL, Wesley P. Gilliam, MS, Justin Matsusara, John W. Burns, PhD, Psychology, Rosalind Franklin University of Medicine and Science, N. Chicago, IL.

The idea that repressed or suppressed emotions may convert into physical pain remains an intriguing one. Although methods for identifying so-called repressors have been proposed, and some extent validated, the purported mechanisms by which repressed affect surfaces as physical pain have been difficult to test empirically. We propose an information processing model of repression and conversion, and suggest that during painful stimulation repressors will, over time, evidence increased attention away from pain-affective (e.g., cruel) information and increased attention toward pain-sensory (e.g., throbbing) information. Sixty-nine healthy, pain-free participants underwent 2-min forearm ischemia while engaging in a modified Dot-probe paradigm with negative affective and physical pain-neutral stimulus pairs. Trials were divided into early (1st minute) and late (2nd minute) blocks. Attentional biases to pain-affective and pain-sensory stimuli were calculated for each block. Repressors were identified by high and low scores on the Marlow-Crowne Social Desirability and Taylor Manifest Anxiety scales, respectively. Groups comprised Low Anxious and High Anxious. A Condition (repressor, low anxious, high anxious) x Block (Early, Late) x Stimulus Type (pain-affective, pain-sensory) effect emerged (F(2,65)=5.16, p<.05). As predicted, comparisons revealed that 'repressors' evidenced an increase in bias away from pain-affective stimuli (F(1,21)=3.90, p<.06), but an increase in bias toward pain-sensory stimuli (F(1,21)=8.69, p<.008), across blocks. Low-anxious and High-anxious participants did not reveal such a pattern, however (p>.18). These results provide preliminary support for an information processing model of repression and conversion. Importantly, results stemming from this methodological approach, if replicated, may allow researchers to demystify the process by which repressed or suppressed emotions may augment physical pain and suffering among those with chronic pain, or other medical conditions often accompanied by physical pain.

98) Abstract 1499
HEAT AND COLD PAIN THRESHOLD DIFFERENCES BETWEEN WOMEN WITH FIBROMYALGIA AND HEALTHY CONTROLS
Bruce W. Smith, Ph.D., Psychology, University of New Mexico, Albuquerque, New Mexico, USE, Amanda Robinson, Erin Tookey, BA, Erica Montague, B.A., Jennifer Bernard, B.A., Psychology, University of New Mexico, Albuquerque, New Mexico, Paul Mullins, Ph.D., Bangor Imaging Center, School of Psychology, Adelaid Brigantia, United Kingdom.

This study compared heat and cold pain thresholds between women with fibromyalgia (FM) and healthy controls (HC). Pain reports in women with FM may be partially due to greater sensitivity to pain stimuli. Pain reports in women with FM may be due to differences in the FM and HC groups in heat and cold pain thresholds and whether differences in stress, emotion, and mental health helped to explain pain threshold differences. Participants were 33 women with FM and 44 women who were healthy controls. There were no difference between the groups in age (M = 48.0, SD = 6.8) but the HC group had more education and higher incomes than the FM group. The sample consisted of 66% Caucasian, 23% Hispanic, and 11% other ethnicities. We determined heat and cold pain thresholds using the Medoc Pathway
perceived stress, negative affect, anxiety, depression, and somatization were assessed. The mean cold pain thresholds were 42.02 °Celsius (SD = 8.80) for the FM and 6.73 °Celsius (SD = 6.18) for the HC groups (d = 0.98, t = 4.30, p < .001). The mean cold pain thresholds were 14.99 °Celsius (SD = 3.78) for the FM and 45.22 °Celsius (SD = 2.68) for the HC groups (d = 1.09, t = -4.78, p < .001). With the groups combined, perceived stress, negative affect, anxiety, depression, and somatization were all negatively related to cold pain thresholds (rs = -.32 to -.39) and all positively related to cold pain thresholds (rs = .32 to .41). Also with the groups combined, positive affect was positively related to heat pain thresholds (r = .34) and negatively related to cold pain thresholds (r = -.37). While there were large group differences on each of the stress, emotion, and mental health measures (ds = 1.43 to 2.40), none of them even partially accounted for the group differences in heat and pain thresholds.

99) Abstract 1377
BRIDGING THE GAP BETWEEN SCIENCE AND COMMUNITY PRACTICE: A RESEARCH AGENDA FOR ACCESS TO BEHAVIORAL MEDICINE TREATMENT FOR ARTHRITIS PAIN
Joan E. Broderick, Ph.D., Psychiatry & Behavioral Science, Stony Brook University, Stony Brook, New York, Frank J. Keefe, Ph.D., Psychiatry & Behavioral Science, Duke University, Durham, NC, Patricia Bruckenthal, Ph.D., Nursing, Stony Brook University, Stony Brook, New York
The leading cause of disability in the U.S. is arthritis, affecting approximately 60% of those over 65 years of age. Biomedical treatments are available, but pose challenges to their ability to control disease progression and to eliminate pain and functional impairment. Efficacy trials have documented that Pain Coping Skills Training (CST) for arthritis reduces pain, improves physical and social functioning, increases self-efficacy, and reduces psychological distress. CST, based on cognitive-behavior treatment, trains patients in behaviors and strategies that can reduce chronic pain. Despite the efficacy of CST documented in randomized controlled trials, CST has not been translated into community practice and is unavailable to the vast majority of arthritis patients. Increasing patient access to CST interventions will require an innovative delivery model. Nurse practitioners (NP), with their training in patient education, seem well-suited to deliver CST. Preliminary work has been conducted to lay the groundwork for the first RCT effectiveness trial bringing CST from academic medical settings into community primary care offices where NPs will be trained to deliver manualized, 10-session CST. The pilot study demonstrated the feasibility of training NPs to deliver CST and yielded pre-post change scores on clinical outcome measures that are comparable to the improvements reported in the efficacy literature, thus suggesting the potential for effective translation of CST into the community. Treatment fidelity was confirmed based on 80% adherence (across patients and 10 sessions) to therapy manual curriculum. Patient satisfaction with CST and NP were both > 4 on a 5-point scale. Based on the success of the preliminary work, a large-scale multi-site effectiveness trial has been funded by the NIH to investigate this NP delivery model for pain management in community medical settings. Study design has incorporated RE-AIM guidelines to enhance data collection pertaining to issues of effectiveness in the community and dissemination.

100) Abstract 1076
POST TRAUMATIC STRESS DISORDER 20 YEARS AFTER MULTIPLE TRAUMA CAUSED BY AN ACCIDENT
Friedhelm M. Lamprecht, Prof. Dr. med., Hans-Werner Kuensebeck, Prof. Dr. Phil., Department of Psychosomatic Medicine, Hannover Medical School, Hannover, Germany
Background: Posttraumatic stress disorder (PTSD) appears to be much more common in patients after severe multiple trauma than might have been suspected, and may complicate full rehabilitation, even over a long-term follow-up. Method: We investigated the relationship between physical and psychological parameters in victims of severe multiple trauma 10 to 20 years after the injury. 54% of the 637 living patients participated in this cohort study and completed a battery of standardized questionnaires. Psychological and emotional measures included the Impact of Event Scale (IES) and the Hospital Anxiety and Depression Scale (HADS). Functional outcomes were measured using the SF-12 and the Hannover Score of Polytrauma Outcome (HASPOC). Results: With regard to the traumatic situation of the injury, 79 of the 326 patients (24%) fulfilled DSM-IV criteria of PTSD. In addition, 124 of the 326 (38%) suffered from a depressive disorder. The posttraumatic disturbance was not associated with gender, severity of the injury (IES) or extreme body disturbance (e.g., amputations). Significant associations were found between age (younger patients had less psychic trauma) and functional outcome as measured by the SF-12 (there was more physical and psychological impairment in patients with depression and PTSD) but not by the HASPOC. Conclusions: The association between PTSD and impaired functional outcomes after multiple trauma 20 years after the traumatic injury shows that it is a still significant problem. Further research is required to determine what factors predispose patients to develop PTSD, and to determine whether an approach that combines physical and psychotherapeutic treatments can improve patient outcomes.

101) Abstract 1576
A PILOT STUDY OF ASSOCIATIONS BETWEEN MATERNAL POSTTRAUMATIC STRESS AND INFANT RESPIRATORY AND CARDIAC REACTIVITY AND REGULATION
Michelle Bosquet, Ph.D., Psychiatry, Children's Hospital Boston, Harvard Medical School, Boston, MA, Antje Kallowitz, Ph.D., Environmental Health, Harvard School of Public Health, Boston, MA, Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Rosalind Wright, M.D., M.P.H., Channing Laboratory, Brigham & Women's Hospital, Boston, MA, Patricia Wolff, Ph.D., C-L Psychiatry, European Georges Pompidou Hospital, Paris, France, Michelle Bosquet, Ph.D., Psychiatry, Children's Hospital Boston, Harvard Medical School, Boston, MA, Antje Kallowitz, Ph.D., Environmental Health, Harvard School of Public Health, Boston, MA, Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Rosalind Wright, M.D., M.P.H., Channing Laboratory, Brigham & Women's Hospital, Boston, MA, Patricia Wolff, Ph.D., C-L Psychiatry, European Georges Pompidou Hospital, Paris, France
Data suggest an association between parental Posttraumatic Stress Disorder (PTSD) and offspring mental health problems, including increased risk for PTSD. However, the mechanisms accounting for these associations are unknown. The purpose of the current study is to test the hypothesis that the intergenerational transmission of PTSD is mediated by heightened stress reactivity and poor regulation of the stress response. Heart rate and indices of respiratory timing in maternal and infant samples were recorded from 12 demographically varied infants using an initial play phase (baseline) followed by a maternal still face (stressor) phase and a dyadic reunion (recovery) phase. Mothers self reported lifetime exposure to DSM-IV Criterion A traumatic events and current symptoms of PTSD. Results suggested the study hypothesis. Maternal trauma history was associated with greater increases in infant physiological activation and dysregulation from Play to Still Face and poorer physiological response dampening during Reunion, as evidenced by higher heart rate and breaths per minute as well as thoraco-abdominal discoordination (rs .58-.71, ps < .05). Maternal PTSD symptoms, particularly hyperarousal symptoms, were associated with poorer infant recovery during reunion (rs .61-.77, ps < .05). These findings represent the first step toward demonstrating that the intergenerational transmission of PTSD may be mediated by heightened reactivity and poor regulation of the stress response.

102) Abstract 1253
AUTOBIOGRAPHICAL MEMORY AND EMOTIONAL DISTRESS: BEYOND OVERGENDERIALITY
Céline Lenoge, MD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, France, Loretxa Bergouignan, CNRS UMR 7593, IFR neurosciences Pitié-Salpêtrière, Paris, France, Philippe Fossati, MD, PhD, Psychiatry, Pitié-Salpêtrière Hospital, Paris, France
Autobiographical memory (AM) grounds the self and is involved in many psychotherapy processes. However, in patients presenting with depressive or post-traumatic symptoms, AM is biased toward overgeneralization, a tendency to recall repeated rather than specific events. Overgeneralization may be associated with intrusive memories avoidance and persist after full remission in previously depressed patients. However, previous studies paid little attention to the core components of the recollective experience: specificity of details, state of consciousness, and self-perspective. In order to fill this gap, we designed 3 studies using a new AM task to assess positive and negative memories regarding specificity, autobiographic consciousness (remember/know procedure), and self-perspective (field/observer
procedure). Twenty-one depressed inpatients and 21 matched controls were included in the study 1. ANOVAs revealed a main group effect for age (P<.001), remember (P=.001), and field responses (P=.028). Between groups, patients showed lower scores than controls for positive memories. Within groups, patients showed greater scores for negative memories, and controls showed greater scores for positive memories. Thirty-eight healthy subjects were included in the study 2 and fulfilled the revised Impact of Event Scale (IES-R) to measure intrusive memories. The IES-R avoidance subscale was negatively correlated with specificity (P=.008) and remember responses (P=.007) for positive memories, and with remember (P=.032) and field (P=.001) responses for negative memories. Twenty depressed patients in full remission and 20 matched controls were included in the study 3. Euthymic depressed patients displayed less field responses for positive memories (P=.014) compared to controls. Regarding the construction of the self, it is noteworthy that how people recall matters as much as what they recall. All together, these results suggest new cognitive interventions to adjust the self-relevance of emotional memories in patients experiencing emotional distress.

103) Abstract 1251
PREDICTORS OF TEST ORDERING IN A PSYCHIATRIC EMERGENCY UNIT
Cédric Lemogne, MD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, France, Elise Blandin, INSERM U562, CEA, Orsay, France, Marie-Jeanne Guedj, MD, CPOA, Sainte-Anne Hospital, Paris, France
Patients attending an emergency department with a psychiatric complaint may experience medical problems that contribute to their condition. To prevent an unsafe admission to a psychiatric department, the first medical assessment should search for such medical problems. There is no standard for ordering laboratory tests to achieve that goal. This prospective study aimed to explore the clinical and non clinical predictors of test ordering in a psychiatric emergency department. We recruited 527 consecutive patients and used a standardized questionnaire to collect demographic, contextual, and clinical data. Tests were ordered for 50 patients (9.5 %). We entered in logistic regression the variables found to predict test ordering in univariate analyses with P<0.2. Test ordering was independently predicted by age (P=.001), spoken language (P=.053), referral by relatives (P=.003), eating disorders (P=.012), and somatic complaints (P=.006). Additionally, we found significant interactions. Having been referred by a general practitioner predicted test ordering in the absence (P=.018), but not in the presence (P=.465) of a clinical report. Age predicted test ordering in patients presenting with a consultation motive different than anxiety (P=.002) or suicidal ideation (P=.001). In contrast, age did not predict test ordering in patients consulting for anxiety (P=.547) or suicidal ideation (P=.646). Finally, alcohol and substance-related symptoms predicted test ordering in patients older than 55 (P=.001 and P=.008, respectively), but not in younger patients (P=.454 and P=.981, respectively). These results raise some clinical issues. First, clinicians should be aware of possible age-related and symptoms-related biases when assessing the need of laboratory testing in patients presenting with psychiatric complaints. Second, clinicians should consider the need of an interpreter whenever they are not fluent in speaking the patient's language. Th ird, in the absence of a direct physician to physician communication, a clinical report is warranted to accurately assess the need of laboratory testing.

104) Abstract 1056
CASE REPORT: VALACYCLOVIR-INDUCED PSYCHOSIS IN A 17-YEAR-OLD FEMALE WITH GENITAL HERPES
Sunny P. Aslam, MD, Bushra Naz, MD, Psychiatry, Adekola O. Alao, MD, Psychiatry-Division of Consultation Liaison Psych., SUNY Upstate Medical University, Syracuse, NY
We report the first case of likely Valacyclovir-induced psychosis in a 17-year-old female with newly acquired genital herpes and no previous psychiatric history. The patient presented with acute psychosis after being started on Valacyclovir and the symptoms continued after stopping the Valacyclovir, but improved after administration of Risperidone. Genital herpes is a common illness and antiviral medications, such as Valacyclovir, Acyclovir and Famciclovir are used to reduce the duration and severity of the painful lesions. There are reports of psychosis with Valacyclovir's structural analogs in older and sicker patients. This case is unusual in that it was in a younger and healthier patient. The event scored as a probable using the Naranjo Adverse Drug Reaction scale. Clinicians should be aware that Valacyclovir could induce psychosis in younger and healthier patients with no previous psychiatric history.

105) Abstract 1166
RAPID-CYCLING BIPOLAR DISORDER IN CHILDREN AND ADOLESCENTS: TREATMENT AND HOSPITALIZATION
Ruby Castilla-Puentes, MD, Psychiatry and Epidemiology, U Penn and UNC, Philadelphia, PA
Objective: To describe demographic characteristics, medication use and hospitalization in bipolar children and adolescents with and without rapid cycling. Methods: Analysis was conducted on a cohort of 8,129 children and adolescents patients (d18 y.o.) with Bipolar disorder (BD), from the Integrated Healthcare Information Services (IHIS) Identified from June 30, 2000 to July 1, 2003. Demographics variables, type of hospitalization and psychotropic medication used in the year of follow-up were compared between rapid and non rapid cycling bipolar children and adolescents. Results: Included were 58 patients with rapid cycles (defined as: ≥4 episodes per year) and 8,071 without rapid cycles. Children and adolescents with rapid cycles versus those without rapid cycles were differentiated in their hospitalization and treatment as follows: higher rate of hospital admission for depression (12.1% vs. 1.8%, p<0.0001); for other psychiatric conditions (48.3% vs. 11.2, p<0.0001 and for medical conditions (22.4% vs. 3.9%, p<0.0001). Patients with rapid cycling were more likely than those without rapid cycling to be given mood stabilizers (91.4% vs. 60.3%, p<0.0001), antidepressants (79.3% vs. 59.2%, p<0.0003), and antipsychotics (38.6% vs. 26.1%, p<0.0003). The use of stimulants did not differ between the two groups (24.1% vs. 23.0%, p=0.96). Conclusions: Our findings support that children and adolescents with rapid cycles require more hospitalizations and pharmacological treatment than those with non-rapid cycles. This study highlights the need to refine treatments for rapid cycling to reduce the overall morbidity of patients with this illness course modifier.

106) Abstract 1693
A MODEL OF PTSD: DO CORTISOL AND PERITRAUMATIC DISSOCIATION MEDIATE THE RELATIONSHIP BETWEEN TRAUMA HISTORY AND PTSD SYMPTOMS?
Leah Irish, M.A., Psychology, Kent State University, Kent, OH, Eve M. Sledgeki, PhD, Psychology, Wesleyan University, Middletown, CT, William Fallon, MD, Eileen Spooneter, RN, Trauma Services, Summa Health System, Akron, OH, Douglas L. Delahanty, PhD, Psychology, Kent State University, Kent, OH
Trauma history is associated with increased risk for posttraumatic stress disorder (PTSD) following subsequent exposure to trauma. The purpose of the present study was to examine two explanatory mechanisms for this association: peritraumatic dissociation and cortisol levels in the acute aftermath of a serious motor vehicle accident (MVA). Participants included 104 adult MVA victims (46 males and 58 females) admitted to a level one trauma center after their accident. The PDEQ was administered to assess peritraumatic dissociation and cortisol levels. Twenty-one depressed inpatients and 21 matched controls were included in the study 1. ANOVAs revealed a main group effect for specificity (P<.001), remember (P<.001), and field responses (P<.001) to measure intrusive memories. Twenty depressed patients in full remission and 20 matched controls were included in the study 2. Euthymic depressed patients displayed less field responses for positive memories (P=0.014) compared to controls. Results: Included were 58 patients with rapid cycles (defined as: ≥4 episodes per year) and 8,071 without rapid cycles. Children and adolescents with rapid cycles versus those without rapid cycles were differentiated in their hospitalization and treatment as follows: higher rate of hospital admission for depression (12.1% vs. 1.8%, p<0.0001); for other psychiatric conditions (48.3% vs. 11.2, p<0.0001 and for medical conditions (22.4% vs. 3.9%, p<0.0001). Patients with rapid cycling were more likely than those without rapid cycling to be given mood stabilizers (91.4% vs. 60.3%, p<0.0001), antidepressants (79.3% vs. 59.2%, p<0.0003), and antipsychotics (38.6% vs. 26.1%, p<0.0003). The use of stimulants did not differ between the two groups (24.1% vs. 23.0%, p=0.96). Conclusions: Our findings support that children and adolescents with rapid cycles require more hospitalizations and pharmacological treatment than those with non-rapid cycles. This study highlights the need to refine treatments for rapid cycling to reduce the overall morbidity of patients with this illness course modifier.
DIURNAL CORTISOL DISRUPTION IN PREGNANT WOMEN 

The combined effect of multiple trauma experiences over the life span is lower awakening response and morning rise. The results suggest that the ETV were associated with both greater cortisol AUC and with a higher awakening response and morning rise. The results of this study was to explore the interactive effects of early trauma experience and current exposure to community violence on HPA axis functioning, in a sample of urban pregnant women enrolled in the Asthma Coalition on Community, Environment, and Social Stress (ACCESS) project, a prospective study of early life risk factors on childhood asthma risk. Subjects were administered the Childhood Trauma Questionnaire (CTQ) and a self-report measure of current community violence, the Survey of Exposure to Violence (ETV). Salivary cortisol samples were collected five times per day for three consecutive days to assess basal awakening response, morning rise, and area under the curve (AUC) in order to assess diurnal salivary cortisol patterns. Multimodal measures were corrected for race, education level, age, smoking status and weeks pregnant at time of sampling. In the sample of 295 pregnant women aged 17-41, 56% self-identified as Hispanic and 37% reported an education level less than high school. Diurnal cortisol disruption was most evident among women reporting both higher scores on the CTQ and the ETV. In adjusted analyses, higher scores on both the CTQ and the ETV were associated with both greater cortisol AUC and with a lower awakening response and morning rise. The results suggest that the combined effect of multiple trauma experiences over the life span is more detrimental to HPA functioning than trauma at a single time point.

DEPRESSIVE MOOD AND PERFECTIONISM PREDICT DELIRIUM SYMPTOMATOLOGY AFTER A PLANNED ORTHOPAEDIC SURGERY

Thuy D. Do, MD, CL-Psychiatry, Denis SAFRAN, Ph D, Anaesthesiology, Silla M. CONSOLI, Ph D, CL-Psychiatry, Georges Pompidou European Hospital, Paris, France

The occurrence of a delirium is a classical motive for requesting CL-psychiatrists. A few studies that looked into predictive psychological factors of delirium suggested that depressive mood assessed through Hamilton's rating scale could be an independent risk factor. Methods: 108 consecutive candidates to a planned orthopaedic surgery (55% males; mean age 53.5 (SD=18.5)) were asked during the preoperative anaesthesiology visit to fill out various self-report questionnaires for assessing depression (short form of BDI), sociotropie and autonomic tendencies (Robin's PSI) and perceived social support (Sarason's SSQ). Patients were visited daily from the time of surgery to day 5 and the same interviewer filled out the 10 item Memorial Delirium Assessment Scale (MDAS). Results: 8.3% of the patients scored higher than the suggested MDAS cut-off point (13) at least one of the 5 days of the survey. The sampled population was also divided into 3 groups according to the cumulative MDAS score over the 5 days, labelled as non-delirium (75%), mild-delirium (14.8%) and major-delirium (10%). MDAS patients were univariate analysed and with a older age, preoperative haemoglobin concentration, arterial blood oxygen saturation and by having undergone a blood perfusion during the operation, as well as by preoperative depression (p<0.001), sociotropie (p<0.01), perfectionism (p=0.01) and by poor satisfaction with social support (p<0.05). A gradient of BDI scores was found according to the severity of post-operative delirium. In multivariate logistic regression analysis and after controlling for clinical confounding variables, depression (p=0.012) and perfectionism (p=0.02) still predicted the occurrence of delirium. Conclusion: it is possible that depressive mood constitutes an index of severity of the underlying somatic pathology or cerebral vascular damage. Admittedly, all the confounding variables could not have been controlled for. Results nevertheless indicate that depressive patients as assessed through a self-administered instrument, and the most perfectionist patients are candidates to a post-operative delirium and possibly need a better preparation to and a more careful follow-up after surgery.
112) Abstract 1297 THE NEURAL SUBSTRATE OF DECISION-MAKING IN ALEXITHYMIC INDIVIDUALS
Michiko Kano, MD.PhD. Behavioral Medicine, Masatoshi Itho, MD.PhD. Cylotron and Radiosotope Center, Shin Fukudo., Behavioral Medicine, Tohoku University, Sendai, Miyagi, Japan
Purpose: Alexithymic individuals show abnormal brain processing in the anterior cingulate cortex during recognition of emotional faces (Kano et al., Brain, 2003). They also have exaggerated activity of the anterior cingulate cortex, insula, and midbrain during visceral perception (Kano et al., Pain, 2007). These abnormalities in emotional processing and interoceptive awareness may increase their risk of psychosomatic disorders. Damasio proposed the somatic marker hypothesis, which posits that emotional signaling with somatic activities leads to appropriate decision-making. Related evidence shows that the ventromedial prefrontal cortex is a key region for interoceptive and emotional processing. Therefore, we hypothesized that alexithymic individuals would have dysfunction of the ventromedial prefrontal cortex during decision making. Method: The subjects were 23 healthy young male volunteers, i.e. 10 alexithymics and 13 non-alexithymics. All were right-handed and alexithymia was evaluated with the 20-item of Toronto alexithymia scale (TAS-20). All subjects performed The Iowa Gambling Task, which tests the ability to weigh short-term rewards against long-term losses using [15O] H2O positron emission tomography. Results: Conjunction analysis revealed that left ventromedial prefrontal cortex (Brodmann_s Area 10; x, y, z =-12, 62, -4) was less activated in the alexithymics than in the non-alexithymics during performance of the decision-making task (p<0.001, uncorrected). However, there was no significant difference in the task performance between alexithymics and controls. Summary: The present research suggests that alexithymia individuals have dysfunction of ventromedial prefrontal cortex during decision making. Alexithymics may have abnormal cognitive control of emotional responses during decision-making.

113) Abstract 1778 STRUCTURAL BRAIN CHANGE RELATED TO ALEXITHYMIA: A MORPHOMETRIC STUDY
Yoshiya Moriguchi, PhD, MD, Gen Komaki., Psychosomatic Research, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan
Purpose of study The structural abnormality of brain in alexithymia, difficulty in identifying and expressing one's own emotions, has been scarcely investigated. Using magnetic resonance imaging (MRI), we compared individuals with and without alexithymia for their regional brain morphometric differences. Methods We screened 38 participants, scoring high and low on Toronto Alexithymia Scale (TAS-20) from 310 healthy college students. They underwent self-administered questionnaires (NEO-FFI) and Structured Interview for BIQ (SIBIQ), and volumetric MRI study. For group comparison analysis, alexithymia (n=16) and a non-alexithymia group (n=14) were used after eliminating participants with discrepancy of their scores between TAS-20 and SIBIQ. The 3-D volumetric images taken with 1.5-T MRI were processed using optimized VBM method. These images of two groups were compared by analysis of covariance (age, gender, and IQ score as nuisance variables). We set region of interests (ROI) within the regions showing significant group difference and calculated correlation coefficients between each factor of psychological measurements (TAS-20, NEO-FFI) and intensities in each ROI indicating gray matter volumes. Results The alexithymia group showed more increased gray matter volumes in the bilateral caudal anterior cingulate cortex than non-alexithymia group [ACC; peak Z=4.29 (p<0.001)]. All factors on TAS-20 and E (Extraversion), A (Agreeableness), and C (Conscientiousness) on NEO-FFI were significantly correlated positively with gray matter volume in ROIs in bilateral caudal ACC, and the most salient correlation among them is following: DDF (Difficulty in Describing Feeling) of TAS-20 (r=0.58, p<0.005), C of NEO-FFI (r=0.50, p<0.005). Conclusion This result is consistent with another morphometry study in Spain. The morphometric change in ACC which is critical for emotional awareness and functionally disturbed in alexithymics suggests their impairments in cognitive and executive function in emotional processing.

114) Abstract 1072 LOCALIZED CEREBRAL PERFUSION ABNORMALITIES IN UNDIFFERENTIATED SOMATOFORM DISORDER AND PANIC DISORDER
Kyuong Bong Koh, M.D.,Ph.D., Jee In Kang, M.D., Youngjoon Lee, M.A., Department of Psychiatry, Jong Doo Lee, M.D., Department of Nuclear Medicine, Yonsei University College of Medicine, Seoul, Korea
The objective of this study was to make a comparison on regional brain function between somatoform disorder and anxiety disorder. Regional cerebral perfusion was measured by 99m-Tc-ECDF (ethyl cysteinate dimer) Single Photon Emission Computed Tomography in the resting state. Using statistical parametric mapping (SPM) analysis, the SPECT images were compared between 16 non-medicated, sex and age-matched patients with undifferentiated somatoform disorder and 10 healthy subjects and between 16 non-medicated, sex and age-matched patients with panic disorder and 10 healthy subjects on a voxel by voxel basis. Cerebral perfusion in the right parahippocampal gyrus and right medial frontal gyrus was significantly reduced in both patients with undifferentiated somatoform disorder (p<0.001) and those with panic disorder (p<0.001) compared with healthy subjects. In conclusion, both patients with undifferentiated somatoform disorder and those with panic disorder showed cerebral hyperperfusion in the non-dominant parahippocampal gyrus and medial frontal gyrus. These findings suggest that undifferentiated somatoform disorder and panic disorder are likely to have a common pathway in terms of brain function.

115) Abstract 1342 SUBGENUAL ANTERIOR CINGULATE CORTEX (BA25) ACTIVITY: COVARIATES WITH CHANGES IN CARDIAC VAGAL TONE DURING AFFECTIVE STATE SHIFTING IN HEALTHY ADULTS
Richard D. Lane, M.D., Ph.D., Hollis Weidenbacher, Ph.D., Carolyn L. Fort, B.A., Psychiatry, University of Arizona, Tucson, AZ, Julian F. Thayer, Ph.D., Psychology, Ohio State University, Columbus, OH, John J. B. Allen, Ph.D., Psychology, University of Arizona, Tucson, AZ.
The functional significance of BA25 hyperactivity in depression is unknown. BA25 is the principal site of autonomic regulation in the frontal lobe and vagal tone is decreased in depression. Given that the ventromedial prefrontal cortex participates in affective reversal learning, and that affective state shifting may be impaired in depression, we hypothesized that during affective state shifting in healthy individuals changes in BA25 activity and changes in cardiac vagal tone would be closely linked. Eleven healthy adults (6 women, mean age 23.1 years) performed a variant of the Emotional Counting Stroop Task: subjects indicated the number of appearances of a neutral or emotion word. Conditions were presented in 48 15-second blocks of 10 1.5-second trials; neutral blocks alternated with positive emotion, negative emotion, or depression-specific emotion, yielding 40 emotion-neutral or neutral-emotion shifts. Cardiac vagal tone, defined as the natural log of high frequency (0.15- 0.40 Hz) power (LnHF) of interbeat intervals, was obtained in 15-second segments during scanning corresponding to each block. Changes in BOLD signal from neutral to emotion or vice versa relative to visual fixation were calculated in SPM2 using region-of-interest data. Since increases and decreases tend to cancel, absolute values of change were used to preserve magnitude. Strong positive correlations were observed between the absolute value of change in LnHF during affective state shifting and the absolute value of BOLD change in BA25 (right: r=0.67, p<0.02; left r = .69, p <.02) and left BA47 (r=.68, p<.02) but correlations between the absolute value of change in LnHF and the absolute value of change in BOLD signal in dorsal or rostral anterior cingulate cortex or right and left BA46 were not significant. These findings indicate that changes in frontal lobe activity and changes in cardiac vagal tone during affective state shifting may be specific to BA25 and BA47, key structures in the medial visceral motor system. They also suggest that the dysfunction of BA25 and the abnormality in cardiac vagal tone in depression may be linked.
Cancer

116) Abstract 1095

SPIRITUAL ABSENCE PREDICTS POORER 1-YEAR SURVIVAL OUTCOMES AFTER HEMATOPOIETIC STEM CELL TRANSPLANT

Lisa M. Christian, MA, Deidre Pereira, PhD, Clinical and Health Psychology, Michelle Bishop, PhD, Medicine, Stacy Dodd, MS, Clinical and Health Psychology, John Wingard, MD, Medicine, University of Florida, Gainesville, Florida, Vijay Reddy, MD, Florida Hospital, Orlando, Florida

Spirituality can be an important source of coping with major life stress and has been associated with increased longevity in the general population as well as among those with chronic health conditions including some cancers. The current investigation examined the relationship between spirituality and 1-year survival in a sample of 58 adults (26 women, 32 men; mean age = 48 ± 12 years) who underwent hematopoietic stem cell transplant (HSCT) for treatment of hematologic malignancies. Prior to undergoing transplant, participants completed the Millon Behavioral Medicine Diagnostic (MBMD), which was used to assess spiritual absence, a stress moderator that may affect health care. Survival was tracked for 1 year post-transplantation. At 1 year, 41 patients (71%) were alive. Cox survival analyses demonstrated that spirituality correlates for age and disease risk level (high vs. standard), those with clinically significant elevations on the MBMD spiritual absence scale experienced poorer odds of 1-year survival (adjusted hazard ratio [AHR] = .30, p = .02). Thirty-three percent of individuals with clinically significant elevations on the spiritual absence scale were alive at 1-year compared to 78% of individuals without elevations on this scale. Although based on a small sample size, these preliminary findings suggest that spirituality may be associated with survival outcomes following HSCT. Future research should attempt to replicate these findings in a larger sample. In addition, future studies should examine specific behavioral (e.g., problematic compliance) and physiological pathways by which spiritual absence may be associated with poorer survival in HSCT patients.

117) Abstract 1136

AFFECTIVE DISORDERS AND DETERMINANTS OF QUALITY OF LIFE AMONG MEN WITH PROSTATE CANCER: A POPULATION-BASED APPROACH

Frank C. Bandiera, MPH, Edward Trappido, ScD, Epidemiology and Public Health, University of Miami, Miami, Florida, Nabih Asal, PhD, Epidemiology and Biostatistics, University of Florida, Gainesville, Florida

Prostate cancer has been related with impaired quality of life. Little is known, however, of determinants of quality of life, particularly depression and anxiety disorders, at the population level. 2006 BRFSS demographic, prostate cancer, and quality of life data were obtained. Ordinal logistic analysis was used to examine the main effects of depression disorders, anxiety disorders, race/ethnicity, marital status, income level, physical activity, smoking status and age on poor mental health (n=4,734), poor physical health (n=4,677), activity limitation or worse general health, all ps<.05. Depression (AOR=1.61, p=.04) and anxiety disorders (AOR=1.96, p=.001) were related with poor mental health. Depression (AOR=2.23, p=.001) and anxiety disorders (AOR=2.23, p=.001) were related with poor physical health. Depression disorders (AOR=1.96, p=.0042) were related with activity limitation. Depression (AOR=1.72, p=.0085) and anxiety disorders (AOR=1.60, p=.0213) were related with worse general health. In conclusion, depression and anxiety disorders, among other determinants, were related with impaired quality of life among men with prostate cancer.

118) Abstract 1373

CONTROL APPRAISALS AND COPING STRATEGIES PREDICT CHANGES IN BEHAVIORAL DISTURBANCES IN MEN UNDERGOING RADIOTHERAPY FOR PROSTATE CANCER

Kamala S. Thomas, PhD, Psychiatry, Julienne E. Bower, PhD, Psychology and Psychiatry, UCLA, Los Angeles, CA

Behavioral disturbances are common in cancer patients, including disturbances in sleep, energy, and mood. There is a large literature on psychosocial predictors of psychological adjustment to breast cancer. However, few studies have examined these relationships in prostate cancer (PC), the most common cancer diagnosed in men. In addition, few studies have examined how psychosocial factors influence fatigue and sleep disturbance, even though these symptoms are common side effects of cancer treatment. The current study examined the impact of control appraisals and coping in men undergoing radiotherapy (RT) for localized PC. Twenty-three men were intensively studied at 8 assessments conducted before, during, and after their 6-8 week course of treatment. Participants completed measures of sleep (MOS-sleep), fatigue (FSI), depressive symptoms (CES-D), and health-related quality of life (SF-36 general health). Control appraisals and coping (COPE subscales: active and behavioral disengagement) were assessed at baseline and examined as predictors of changes in symptoms using HLM. There was a quadratic trajectory for symptoms, such that symptoms peaked at the time of diagnosis and gradually returned to baseline by follow-up. Control appraisals moderated that trajectory over time. During the treatment period when symptoms were at their peak, individuals who perceived more control over their health had less sleep disruption (p=.001) and depressive symptoms (p=.047) as well as better general health (p=.005). Although non-significant, there was a similar pattern in fatigue symptoms among those who perceived more control over their health and a greater peak in sleep symptoms (p=.019). These findings suggest that interventions targeting control appraisals and coping may improve quality of life in men undergoing RT for PC.

119) Abstract 1618

PRO-INFLAMMATORY CYTOKINES AND NEURO-COGNITIVE FUNCTIONING IN BREAST AND CERVICAL CANCER SURVIVORS

Elizabeth A. Muller, M.S., Psychology, Natalie Denburg, Ph.D., Neurology, University of Iowa, Iowa City, IA, Katrina Protherbers, HS, Lincoln University, Lincoln University, PA, Patrick Henderson, B.S., Psychology, Geraldine Jacobson, M.D., Radiation Oncology, Mark Karval, M.D., Internal Medicine, Koen De Geest, M.D., Gynecologic Oncology, David Lubaroff, M.D., Urology, Susan Latgeendorf, Ph.D., Psychology, University of Iowa, Iowa City, IA

While cognitive declines among cancer patients have often been attributed to chemotherapy effects, elevated levels of cognitive impairment have been reported even before chemotherapy (Wefel et al., 2004). In addition, cancer-related proinflammatory cytokine elevations have been related to concentration difficulties. We explored the hypothesis that pre-chemotherapy cognitive function may be related to inflammatory cytokines in breast and cervical cancer patients. We examined the relationship of neuropsychological tests of verbal learning, psychomotor speed and non-verbal attention (AVLT, Trails A and B) to level of interleukin-6 (IL-6) and interleukin-1 receptor antagonist (IL-1ra) in 27 women with breast or cervical cancer before chemotherapy or radiation treatment. Mean cytokine levels were commensurate with those previously associated with cancer-related morbidity (IL-1ra=693.07pg/ml; IL-6=6.58 pg/ml). While mean neuropsychological scores did not differ from norms in healthy subjects, a subset of patients demonstrated impairment greater than 1 standard deviation from norms (AVLT = 34.4%, Trails A = 9.0%, BVMT = 36.7%). Partial correlations adjusted for age. Levels of pro-inflammatory cytokines were found to be significantly associated with AVLT total score (IL-1ra: r =-.47, p =.024), BVMT errors (IL-6: r =.42, p =.051), Trails A time (IL-1ra: r =.37, p =.05) and Trails A errors (IL-1ra: r =.47, p =.011). Cognitive scores were unrelated to fatigue. These findings suggest that cognitive functioning may be related to levels of proinflammatory cytokines in breast and cervical cancer patients, and such a relationship may already exist before initiation of treatment.
120) Abstract 1756
SEVERELY STRESSFUL EVENTS, SEXUAL ABUSE HISTORY, CHRONIC ANXIETY, LOW EMOTION ACCEPTANCE & LOW FAMILY COHESION: MAIN AND MODERATED EFFECTS ON MOOD DISTURBANCE IN BREAST CANCER PATIENTS
Karen L. Weils, M.D., Psychiatry and Arizona Cancer Center, University of Arizona, Tucson, AZ
Purpose: Examine psychosocial risk factors and longitudinal predictors of distress & depressed mood in breast cancer patients. Sample and Methods: 91 Stage II breast cancer patients (53% Caucasian, 42% African American) were assessed at 14 +/- 5 (T1) and at 34 (T2) months post-diagnosis. The outcome measure was the Profile of Mood States - total distress and depression subscale. Predictor variable measures were: Life Events and Difficulties Schedule, Taylor Manifest Anxiety Scale, Emotion Acceptance Scale, Family Environment Scale Cohesion & Sexual Abuse Interview. Linear regression analyses, including interaction & cross-lagged analyses were used. Results: Fifteen percent of subjects scored > 51 on total distress (POMS) at T1 indicating clinically significant distress. A greater decline in distress(T1 to T2) occurred with high emotion acceptance (p=.04), as well as with higher family cohesion (p =.005). Severely stressful, non-cancer life events (SLE) occurred in 29% of subjects in the year prior to diagnosis & 45% of those in the year after diagnosis. More SLE were associated with total distress and depressed mood (r = .38, p =.0003; r =.29, p =.006, respectively) at T1. Chronic anxiety moderated the effect of stressors on depressed mood (p=.03), such that stress effects on mood were exacerbated by anxiety. There was a trend for higher family cohesion (p=.06) to buffer distress in high-stress but not low-stress conditions (p=.07). Twenty-eight percent of breast cancer patients reported a history of childhood sexual abuse, which was associated with higher distress scores at T1 and a more rapid decline in distress by T2(p =.01). Sexual abuse was associated with higher distress in subjects with stressors scores above the median(p=.008). Conclusion: Severely stressful events, sexual abuse history, chronic anxiety, low emotion acceptance & low family cohesion predicted persistent mood disturbance. The effects of stress on mood were exacerbated by history of sexual abuse, chronic anxiety and low family cohesion.

121) Abstract 1439
DEPRESSIVE MOOD PREDICTS CANCER IN WOMEN UNDERGOING A COLONOSCOPY, BUT NOT IN MEN
Gaelle Abgrall-Barbry, MD, Psychiatry, Dominique Lamarque, MD, Hepato-Gastro-Entérology, Berangere Leuret, RN, Psychiatry, Hotel-Dieu Hospital, Paris, France, Sarah Bydlowski, MD, CL-Psychiatry, Georges Pompidou European Hospital, Paris, France, Raymond JIAN, Ph D, Hepato-Gastro-Entérology, Georges Pompidou European Hospital, Paris, France, Nicolas Dantchev, Ph D, Psychiatry, Hotel-Dieu Hospital, Paris, France, Silla M. Consoli, Ph D, CL-Psychiatry, Georges Pompidou European Hospital, Paris, France
The role of psychological characteristics as risk factors for cancer is much more controversial than for cardiovascular diseases. bushes new findings: Were patients waiting for a colonoscopy constitute a study design similar to the pre-biopsy studies in breast cancer, allowing to control for the potential emotional impact of diagnosis when filling out a self-administered questionnaire. Methods: 98 patients (53 males and 63 females, aged 55.2 (SD=11.9) yrs) filled out several questionnaires for measuring depression (BDI-short form), anxiety (STAI), emotional awareness and regulation. Characteristics of the 30 patients historically diagnosed as suffering from colorectal cancer were finally compared with those of the remaining population. Results: cancer was associated with male gender, older age, having undergone a previous colonoscopy, and depressive mood, but neither by cancer antecedents in the family (n=38), nor by the presence of blood in the feces as an alarm symptom (n=23), patient's intuition of the patient. Conclusions: A-44
progress cannot be excluded. It is also possible that depressed women ask more for diagnostic procedures than non depressed ones. Our findings nevertheless support the hypothesis of depression as a risk factor for colorectal cancer in women.

122) Abstract 1534
PREDICTORS OF CORTISOL AWAKENING RESPONSE (CAR) & DIURNAL CORTISOL VARIABILITY (DCV) IN FATIGUED BREAST CANCER SURVIVORS
Shamini Jain, M.S., Desiree Pavlik, B.A., Barbara Woods, Ph.D., Chris Pruitt, M.S., Srikrishna Khandrika, Ph.D., Kirsten Aschbacher, M.S., Paul J. Mills, Ph.D., Psychiatry, UC, San Diego, CA Cortisol variability has been found to be reduced in fatigued breast cancer survivors; however, it is unclear what contributes to these alterations. We examined CAR and DCV in 21 women breast cancer survivors (mean age = 54) who were fatigued as measured by belos-normative scores (< 50) on the RAND energy/fatigue subscale. Salivary cortisol levels were assessed for two consecutive days at 5 timepoints: rising, 30min post-rise, 12pm, 5pm, & 9pm. Cortisol levels were determined by ELISA (SALIMETRICS). Values over the two days were averaged & log-transformed. CAR responses were calculated by subtracting the average 30min post-rise from rising values. DCV was assessed using standard AUCg calculations on averaged data for the rising timepoints. Data were then examined for possible relations between demographic (age & ethnicity), medical (time since diagnosis, disease stage, and prior history of chemotherapy and/or radiation) and psychological variables of depression (CESD) & fatigue (MFSI-sf). Correlational analyses revealed that CAR was significantly associated with lesser time since diagnosis as well as positive chemotherapy and radiation histories (r > .43, p < .05 in all analyses). Stepwise regression revealed that positive chemotherapy history was the only significant independent predictor of CAR (b = .470, p = .045). Correlational analyses with cortisol AUCg revealed significant associations only with MFSI-sf total fatigues scores (r = -.40, p = .049). Examination of MFSI-sf subscales revealed notable associations between AUCg and general fatigue (r = -.519, p = .008) & vigor (r = -.386, p = .037). Results indicate that for fatigued breast cancer survivors, CAR is more closely linked to prior chemotherapy history than current ratings of fatigue, while reduced DCV appears to be more specifically associated with general fatigue and lack of vigor. Further research examining the effects of chemotherapy on CAR and specific fatigue aspects on DCV are warranted.
(z=2.69, p<0.007) and a test of reverse mediation showed that SC did not significantly reduce the relationship between AC and distress. Thus, in line with SCP theories, these results show that SC can lead to greater distress through the use of more AC behavior.

### 124) Abstract 1782

**IS THE DEXAMETHASONE SUPPRESSION TEST A BIOMARKER OF CHRONIC STRESS? CORTISOL MORNING RISE OVERCOMES DEXAMETHASONE SUPPRESSION IN STATES OF STRESS**

Wendy Wolfson, M.A., Aoife O'Donovan, PhD, Owen Volkowitz, MD, Rose Whitmore, BA, Hana Tylowa-Sein, BA, Elissa Epel, PhD, Psychiatry, University of California San Francisco, San Francisco, CA

Negative mood and stress can lead to hypothalamic-pituitary-adrenal (HPA) axis dysregulation, evidenced by flattened diurnal rhythm and overall elevations in daily cortisol. However, reliable measures of daily cortisol are burdensome, requiring repeated sampling over several days. Impaired negative feedback of cortisol assessed by the dexamethasone suppression test (DST) is a measure of HPA dysregulation that has been associated with depression and chronic stress. We aimed to compare these measures of HPA regulation to see which are more consistently related to measures of chronic stress and affect. Eighteen healthy, post-menopausal women (M age = 57.83, SD = 7.20) completed the DST, taking saliva samples at waking and 30 min post-waking, to capture the stimulated cortisol waking response, following ingestion of 0.5mg dexamethasone at 2200 h. They also collected saliva samples upon waking, 30 min post-waking and bedtime across 3 consecutive days, and the DST cortisol slope was calculated. Participants completed measures of life stress (Perceived Stress Scale, a Chronic Stressor Checklist) and affect (Positive and Negative Affect), and the Inventory of Depressive Symptomatology. Average daily cortisol and waking cortisol were not significantly related to measures of stress and distress. A flatter diurnal rhythm was related only to elevated chronic stressors (r = .41, p < .05). In contrast with diurnal slope and mean cortisol, the DST cortisol slope was consistently related to chronic stress measures and negative mood. DST cortisol 30 min post-waking was related to higher chronic stressors (r = .41, p < .04), perceived stress (r = .40, p < .04), and negative affect (r = .52, p < .01) and lower positive affect (r = -.45, p < .02). We conclude that the 30-min DST cortisol waking response (but not DST cortisol upon waking) may be a more sensitive, consistent, and less burdensome biomarker of mood and chronic stress. This has methodological implications for clinical stress studies and population studies of social-epidemiologic stress.

### 125) Abstract 1759

**INDEPENDENT AND INTERACTIVE RELATIONSHIPS BETWEEN SES, ADIPOSITY, AND C-REACTIVE PROTEIN**

Cathy A. Bykowski, B.S., William P. Saico, Ph.D., Kristen Salomon, Ph.D., Psychology, University of South Florida, Tampa, FL

Recent research has suggested that elevated inflammatory responses are related to a number of chronic diseases. Two risk factors for increased inflammation and chronic disease are low socioeconomic status (SES) and excess adiposity. However, few researchers have investigated the interactive effects of SES and adiposity on inflammation, instead controlling for one factor while examining the other. This study aimed to extend prior research by demonstrating that the relationship between adiposity and inflammation is moderated by SES. The study utilized the data from 4460 adults (2258 males; mean age 46.97 years) who participated in the National Health and Nutrition Examination Survey. Two measures of SES (education level and household income) and two measures of adiposity (body mass index; BMI and waist circumference; WC) were examined as predictors of an inflammatory marker, C-reactive protein (CRP). Hierarchical linear regression demonstrated that education (β1 = -.243, p < .05) and WC (β1 = 7.92, p < .01) were independently related to CRP, controlling for gender, age, race, use of blood pressure medication, use of cholesterol medication, and smoking status. Further, the interaction of education and WC was significant (β1 = 2.26, p < .05). The overall model accounted for 23% of the variance in CRP (F(11, 3620) = 96.36, p < .0001). Similar patterns of results were obtained when analyses were performed using income and/or BMI. Overall, adiposity was positively related to CRP and SES was negatively related to CRP. However, as adiposity increased, the negative relationship between SES and CRP disappeared. These findings suggest that higher SES may be a protective factor among those who have normal to overweight levels of adiposity. Among the obese, adiposity may elevate inflammation to the extent that higher SES no longer confers protection.

### 126) Abstract 1048

**CARING BURDEN IS ASSOCIATED WITH LOW SECRETION RATES OF IMMUNOGLOBULIN A IN SALIVA**

Anna C. Phillips, PhD, Stephen Gallagher, MSc, Douglas Carroll, PhD, Sport & Exercise Sciences, University of Birmingham, Birmingham, UK, Phil Evans, PhD, Psychology, University of Westminster, London, UK, Kate Hunt, MSc, Geoff Der, PhD, MRC Social & Public Health Sciences Unit, University of Glasgow, Glasgow, UK

The chronic stress of caregiving for a sick or disabled person has been associated with poor immune function, using a variety of immune indices, and increased infectious disease incidence, in comparison to matched controls. The impact of caregiving on secretory immunoglobulin A (S-IgA), a key factor in mucosal immunity, has not yet been examined. The present study assessed the impact of caregiving on S-IgA secretion rate in a large community sample of adults. The sample consisted of 1841 healthy, post-menopausal women from the West of Scotland Twenty-07 Study, split into three distinct age cohorts of 24, 44, or 63 years. Participants indicated whether or not they were responsible for caring for someone other than their own or someone else's children. They provided ratings of the strain they felt due to caregiving, and a caregiving burden index was also derived as the composite of the number of people being cared for, the type of care provided, and the recipient status of the person being cared for. S-IgA secretion rate was computed from 2-minute saliva samples. Although caregivers did not differ from non-caregivers in their S-IgA secretion rate, a significant interaction between caregiver status and age cohort emerged, F (2,1834) = 3.40, p = .03, eta-squared = .004, such that for the older cohort, caregivers showed lower S-IgA secretion rates than age-matched non-caregivers. Within the caregiving group, those who experienced a greater strain, beta = -.09, t = 2.3, p = .03, change in R-squared = .009, and burden, beta = -.90, t = 2.24, p = .03, change in R-squared = .008, had lower S-IgA secretion rates. These data resonate with the findings of previous research on the impact of caregiving stress on immune function and suggests that the chronic stress of caregiving has widespread effects on immunity.

### 127) Abstract 1360

**LONG-TERM IMPACT OF REPEATED STRONG HYPOTHALAMUS PITUITARY ADRENAL AXIS ACTIVATIONS ON BASAL GLUCOCORTICOID SENSITIVITY**

Jana Strahlert, Master’s degree, Christiane Berndt, Master’s degree, Clemens Kirschbaum, Doctoral degree, Psychology, Dresden University of Technology, Dresden, Germany, Nicolas Rohleder, Doctoral degree, Psychology, University of British Columbia, Vancouver, British Columbia, Canada

Beneficial and adverse effects of stress hormones such as glucocorticoids depend on target tissue sensitivity. Changes of glucocorticoid (GC) sensitivity may therefore be of physiological and pathologic relevance. This study was designed to investigate the long-term impact of repeated strong hypothalamus pituitary adrenal (HPA) axis activations without the need on continuous dexamethasone (DEX) stimulation. We therefore recruited 17 competitive modern and Latin dancers, 7 men and 10 women, all members of the national squad of the German Dance Sport Association (mean age: 20.24; range: 15-30). Ballroom dancers were compared to 17 age- and sex-matched controls. One blood sample was obtained between 17:00h and 20:00h, and GC sensitivity was assessed by in-vitro inhibition of lipopolysaccharide-stimulated production of interleukin-6 by different concentrations of dexamethasone (DEX) in whole blood. We found no significant differences between dancers and controls in the amount of DEX required for cytokine suppression, reflecting no GC sensitivity differences between the groups (F=0.01; p=0.93). The same was true for the main effect of gender (F=0.53; p=0.47). But further analyses revealed a significant interaction effect of group and gender (F=4.13, p=0.05) indicating different results for men and women depending on the group. Results of control subjects are in line with previous findings.
from our working group showing lower basal GC sensitivity in healthy young men. In ballroom dancers, however, men show a higher basal GC sensitivity than male controls, whereas women hardly differ from those in the control group. These different patterns of gender differences in dancers as compared to controls may be due to dysregulations of stress hormones, probably reflecting allostatic load factors especially affecting male ballroom dancers. Whether these changes are beneficial or adverse for health remains to be investigated.

128 Abstract 1714
THE RELATIONS BETWEEN ELEVATED DEPRESSIVE SYMPTOMS AND THE CIRCADIAN RHYTHM OF INFLAMMATORY MARKERS
Sajith Kuruvilla, MD, Dorota Gruber, MS GC, Moshe Levison, PhD, Kiran Nallella, MD, Medicine, Sally Aboelela, PhD, School of Nursing, Syed Ahsan, MD, Daichi Shimbó, MD, Karina Davidson, PhD, Medicine, Columbia University Medical Center, New York, New York, Joe Schwartz, PhD, Psychiatry, State University of New York-Stony Brook, Stony Brook, New York, Thomas Pickering, MD/PhD, Medicine, Columbia University Medical Center, New York, New York
Evidence suggests that depression is associated with an earlier onset (between 10 PM and 6 AM) of coronary heart disease (CHD) events but the cause of this finding remains poorly understood. It is well established that the circadian regulation of several biological pathways. Although inflammation has been linked to the onset of coronary heart disease (CHD) events, no study to date has examined alterations in the circadian regulation of inflammation as a plausible mechanism explaining the link between depression and incident CHD. We compared the diurnal patterns of inflammatory biomarkers (high sensitivity C-reactive protein (hsCRP), interleukin-6 (IL-6), and soluble intercellular adhesion molecule-1 (sICAM-1)) between depressed (D) and non-depressed (ND) persons. A repeated measures mixed design study was conducted in 17 healthy participants (mean age 49.9±14.3 years, 80% males, mean BMI 27.6±1.7 kg/m2) who were divided into D and ND groups based on Hamilton Depression scores. Participants were admitted for 24-hour overnight stays to the Mount Sinai GCRC in New York during which blood samples for inflammatory biomarkers were collected every 4 hours. After adjusting for age, sex and BMI, mean sICAM and IL-6 levels differed significantly across time (p<0.001); the main effect of time was not significant for hsCRP. None of the three measures differed significantly between the D and ND groups, however, there was a significant group by time interaction (p<0.04) for sICAM. Most notably there was a sharp decline (p<0.004) in sICAM levels in the ND group at 4 AM, while the drop in sICAM levels at 4 AM was blunted in the D group. The group by time interactions were not significant for hsCRP and IL-6. In healthy participants, elevated depressive symptoms were associated with blunting of the early morning drop in sICAM levels, and an accompanying alteration in circadian period. The blunting of the drop in sICAM levels in the early morning hours in depressed patients is a plausible mechanism underlying the earlier onset of CHD events. Future studies should consider differences in the circadian rhythm of inflammatory biomarkers when examining the link between depression and incident CHD events.

129 Abstract 1430
SALIVARY DHEA-S LEVELS ACROSS THE DAY: EVIDENCE FOR A DAILY RHYTHM IN A HEALTHY ADULT POPULATION
Laura Cousino Klein, Ph.D., Courtney A. Whetzel, M.S., Biobehavioral Health, David M. Almeida, PhD, Human Development and Family Studies, Jeannette M. Bennett, M.S., Biobehavioral Health, Robert S. Stawski, PhD, Gerontology Center, Sean R. Banks, M.S., Ann C. Crouter, PhD, Human Development and Family Studies, The Pennsylvania State University, University Park, PA
The anabolic hormone, dehydroepiandrosterone-sulfate (DHEA-S), is a strong biomarker with purported anti-aging and anti-stress effects that also may buffer the health-damaging effects of the catabolic stress hormone, cortisol. Increased attention has been given to translating laboratory-based stress research into studies of daily stress and well-being, including self-reported stress and health information coupled with multiple daily assessments of salivary cortisol (e.g., diurnal cortisol rhythms). The extent to which DHEA-S can be reliably added to these daily stress biomarker studies is unknown. Previous research has identified DHEA-S levels as being stable across the day (e.g., Goodyer et. al. 1996), whereas other studies report the opposite (Zhao et. al. 2003). Clarification regarding the presence or absence of a DHEA-S daily rhythm is critical for both field and laboratory-based stress research. As part of a larger project examining daily stress and well-being of hotel employees, we examined daily salivary DHEA-S levels in 57 healthy men (N=29) and women (N=28) aged 41 (+/- 1.29) years. Saliva was collected via Salivette (Sarstedt, Newton, NC) by participants at home at 4 times across the day for 4 days: upon awakening, 30 minutes after waking, before lunch and before going to bed. Samples were sent back to the lab via overnight mail and immediately frozen for later DHEA-S assessment by enzyme immunoassay (DSL Inc, Webster, TX). Repeated-measures analyses of variance for each day revealed a stable DHEA-S rhythm across the day, with levels dropping significantly from awakening through the afternoon (P<0.01) and then leveling off before bedtime (n.s.). Although there were no sex differences in this pattern, men had higher daily DHEA-S levels overall compared to women (P<0.01). Results suggest that there is a daily DHEA-S rhythm among healthy adults and that DHEA-S can be reliably added to field-based studies of stress biomarkers. Further, as is the case for cortisol assessment, this daily pattern (i.e., time of day) should be taken into consideration for lab-based neuroendocrine stress studies.

130 Abstract 1358
GENDER AND AGE-RELATED DIFFERENCES IN THE DIURNAL PATTERN OF SALIVARY CORTISOL SECRETION
Angela J. Clow, PhD, Tony D. Towell, PhD, Cathrine Fredhøi, MSc, Psychology, Frank Hucklebridge, PhD, Human and Health Sciences, Phil Evans, PhD, Psychology, University of Westminster, London, England, UK
There is a growing literature linking psychosocial and health variables with patterns of cortisol secretion; however age and gender effects are less well documented. This study systematically explores gender and age-related associations with the pattern of cortisol secretion in two adult populations of different age.

One group (n=50) comprised healthy community dwelling active seniors with a mean age of 73.9 ± 6.9 years; 16 men and 34 women (Old Group: OG). The second group (n=51) were healthy undergraduate students with a mean age 22.8 ± 5.8 years; 18 men and 33 females (Young Group: YG). No participants took medication known to affect cortisol status.

Participants were provided with saliva collection packs, verbal and written instructions. Saliva was sampled on two consecutive normal weekdays 0, 15, 30 and 45 minutes and 3, 6, 9 and 12 hours post waking. Cortisol concentration was determined by ELISA. Measures of physical health (SF36) and psychological distress (GHQ 30) were also ascertained.

A 3-way ANOVA (gender x age x sampling time) revealed interactions between gender x sampling time (F=4.77, df=7,651, p=0.003) and age group x sampling time (F=3.03, df=7,651, p=0.029). However there was no 3-way interaction between age group, gender and sampling time: differences in the cortisol cycle between males and females were independent of age and differences between the old and young groups were independent of gender. Detailed comparisons indicated that mean cortisol in the first 45 minutes post waking was higher in the OG compared to the YG: F=4.835, df=1,97, p=0.03 and that males had higher mean cortisol levels than females in the evening (mean of 9 and 12 hours post waking) F= 5.787, df=1,97, p=0.018. These associations were independent of physical health and psychological distress.

These associations should be taken into account when exploring links between psychosocial and health variables and patterns of cortisol secretion.
131) Abstract 1736
SUCCESSFUL AND UNEXPECTED LOSS OF A LOVED ONE AND IMMUNE FUNCTION IN AN URBAN PRIMARY CARE SETTING
Banu Cankaya, Ph.D., Nancy L. Talbot, Ph.D., Benjamin P. Chapman, Ph.D., Jan Moynihan., Paul Duberstein, Ph.D., Psychiatry, University of Rochester Medical Center, Rochester, NY

Sudden and unexpected loss of a loved one is a common trauma. Effects on mental health are well-established, but the implications for health and immune function are unclear. We investigated the association between sudden, unexpected loss and levels of the pro-inflammatory cytokine interleukin (IL)-6 in a sample of 75 primary care patients, ranging in age from 40 to 80 (mean = 51.97, SD = 9.35). Women constituted the majority (73.3%) of the sample. Ethnic minorities were well-represented (46.7% African-American or black origin) as were those receiving disability benefits (52%). Measurements included a demographic questionnaire, Traumatic Life Events Questionnaire (TLEQ, Kubany et al., 2000), a version of Medical Outcomes Study Short Form-12 (SF-12, Ware, Kosinski, Turner-Bowker, and Gandek, 2002) among others. Blood samples were collected to measure levels of IL-6. Features of loss exposure including frequency, timing, natural (illness) vs. non-natural (suicide, murder, accident) death and emotional reaction were examined with respect to health outcomes using hierarchical linear regression models and covariates of age, education, marital status, and other trauma exposure. Lifetime exposure to more than one sudden loss due to illness and non-natural death was significantly associated with higher IL-6 levels (B = .327, p = .037). Patients with at least one exposure to loss reported more problems with their physical functioning (B = -.268, change in R² = .045, p = .045). Moderator analyses showed that exposure to loss was moderated by gender, with higher IL-6 levels in women compared to men (B = 1.192, change in R² = .062, p = .031). A similar interaction was found for loss due to different causes of death and gender (change in R² = .093, p = .055). Main effects are in line with the associations shown between posttraumatic stress disorder and high IL-6 levels (Maes et al., 1999; Rohleder et al., 2004). Future research with a larger sample is warranted to examine comprehensively the implications of sudden loss for immune function and physical health in urban primary care settings.

132) Abstract 1544
PSYCHOLOGICAL STRESS AFFECTS REGULATORY T CELL LEVELS IN HUMANS
Kevin S. Del Ben, Ph.D., Psychiatry, University of Mississippi Medical Center; Jackson, MS; Lianbin Xiang, MD, Medicine, University of Mississippi Medical Center, Jackson, MS; Jacob Olivier., Preventative Medicine, University of Mississippi Medical Center, Jackson, MS; Christian Koch, MD, Gailen D. Marshall, Ph.D., Medicine, University of Mississippi Medical Center, Jackson, MS

For years researchers have attempted to link psychological stress to immune based disorders. Although the clinical associations have been robust, the exact mechanisms of action are still unknown. Th1/Th2 immune responses dictate the balance between specific cellular vs. humoral immunity a balance known to be affected by psychological stress. Recent studies have shown the TH1/TH2 balance to be under the control of regulatory T cells (Treg - CD4+CD25highFoxP3+). The purpose of this study was to investigate the affect that psychological stress (measured using the Perceived Stress Scale; PSS) has on FOXP3 in a sample of normal participants. 62 participants were recruited over a 12 month period. Participants completed the PSS and provided a sample of blood between 8:00 a.m. and 11 a.m. The blood was then centrifuged, the plasma separated and tested for FOXP3 via flow cytometry. Results showed that stress levels were significantly lower in participants with high PSS scores (M = 2.4, SD = .93). Participants reporting a greater number of life events had a poorer Treg levels (R² = .067, F(1, 60) = 4.3, p < .05). These data support T cell and suggest a potential mechanism of action to explain dysregulation of the immune system during times of stress and possibly further explains the relationships between psychological stress and immune based medical diseases.
for by age and sex, or by variations in health behaviours. Psychosocial factors would appear to influence the response to both thymus-dependent and thymus-independent vaccines, but not in the same manner.

136) Abstract 1538
HOW CAN WE INHIBIT OUR UPLEASENT EMOTION? - USING COGNITIVE TASK IN ADVANCE-
Saea Iida, MA, Psychology, Nagoya University, Nagoya, Aichi, Japan, Naho Ichikawa, MA, Cerebral Integration, National Institute for Physiological Sciences, Okazaki, Aichi, Japan, Hideki Ohira, MD, Psychology, Nagoya University, Nagoya, Aichi, Japan

Prior studies have emphasized that particular brain regions are specialized for either cognition or emotion processing, and that this specialization is anatomically segregated and often functionally reciprocally. Although such a direct distinction between cognition and emotion is probably not viable, considerable data are compatible with the hypothesis that brain structures are involved in different stages of information processing. We hypothesized that performing a purely cognitive task would inhibit subsequent negative emotional reactions. Sixteen participants (8 for control group and 8 for cognitive task group) underwent an experimental session composed of 6 periods: baseline (10 min), rest/cognitive task (10 min), emotional task 1 (10 min), rest (10 min), emotional task 2 (10 min), and recovery (10 min). We measured self-reports of subjective unpleasantness, and autonomic responses such as heart rate and skin conductance throughout the experimental session. The cognitive task used in this study was mental arithmetic, and the emotional task was viewing emotional images. During the rest and recovery periods, the participants were asked to relax and wait for 10 min for machines to be set up. There were significant differences between the groups in subjective unpleasantness after both emotional task stages (p< .05). Moreover, heart rate was significantly lower in the cognitive task group than in control group after the emotional task 1 stage before the recovery stage (p< .05, p< .05, p< .05), and skin conductance was also lower during the emotional task 1 stage in cognitive task (p< .05). These results are consistent with our hypothesis that the cognitive task inhibits negative emotion.

137) Abstract 1178
EMOTION REGULATORY STYLES AND CORTISOL/reactivity to a social-evaluative speech task
Suman Lam, B.A., Sally S. Dickerson, Ph.D., Peggy J. Mycek, M.A., Psychology and Social Behavior, University of California, Irvine, Irvine, California, Frank P. Zaldivar, Ph.D., Pediatrics, University of California, Irvine School of Medicine, Irvine, California

Certain stressful situations give rise to negative emotions, and in turn, these emotions affect physiological functioning. Thus, regulating these emotional responses may have implications for physiological reactivity. However, different emotion regulation strategies may have unique effects on physiological responses. For example, coponent-focused strategies, such as reappraisal, focus on behaviors and cognitions before emotions have been fully activated. In contrast, suppression, a response-focused strategy, inhibits ongoing emotional expression (Gross, 1998).

Previous work has shown that suppression is related to increased physiological reactivity. However, research has shown little effects on physiological changes (Gross, 1998). However, this research has focused on autonomic or cardiovascular reactivity to emotional stimuli. The present study builds on these findings, and examines whether trait measures of reappraisal and suppression predict cortisol reactivity to a social-evaluative speech task. We hypothesized that suppression would predict exaggerated cortisol reactivity whereas reappraisal would be unrelated to reactivity.

103 participants performed a speech in front of an evaluative panel. Salivary cortisol was collected at five time points throughout the session. The use of emotion regulation strategies was assessed prior to the speech task using the Emotion Regulation Questionnaire (Gross & John, 2003).

As hypothesized, suppression significantly predicted exaggerated cortisol reactivity to the speech task [Mauchly's W < .001; Wilk's Lambda = .727, p = .003] whereas reappraisal was not associated with these changes. These findings suggest that, consistent with previous research, response-focused emotion regulation strategies such as suppression may be associated with increases in health-relevant physiological responses.
beneficial development in plasma fibrinogen concentration was also observed in the choir group. According to scores calculated from the internationally accepted IBS diagnostic criteria, IBS was diagnosed at the beginning of the intervention and one year later ‘pain’ tended to develop more favourably in the choir group and ‘satiety’ more favourably in the information group (P=0.05-0.10). Choir singing for IBS patients may be effective for vitalising a group process. This is reflected in increased anabolic/regenerative activity in that group after half a year. Although non-conclusive, pain tended to develop more favourably in the choir group and satiety problems more favourably in the study group. Key words: Choir singing, study group, IBS symptoms, saliva testosterone, plasma fibrinogen, vascular endothelial growth factor, arousal.

139) Abstract 1397
LONG-TERM STRESS REDUCTION AFTER A SHORT STRUCTURED BEHAVIORAL INTERVENTION
Adrienne Stauder, MD, PhD, Behavioral Sciences, Semmelweis University Budapest, Budapest, Hungary, Virginia P. Williams, PhD, Williams LifeSkills Inc, Durham, NC, Redford B. Williams, MD, Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC
We studied the long-term effectiveness of a short structured stress management training (Williams LifeSkills Program, WLS) in Hungary. The components included the 12 hours WLS training are identification of stressors, analysis of related thoughts and emotions, relaxation techniques, cognitive restructuring, problem solving, communication and interpersonal skills practice. Data was collected from 93 voluntary participants (87,1% females, 12,9% males; mean age 43,6, sd=12,64) at baseline and 4-6 month after the training. The outcome measures were Cohen Perceived Stress scale (PSS10), Spielberg Trait Anxiety Inventory (STAI), shortened Beck Depression Inventory (BDI), shortened Cook-Medley Hostility (HOST), Siegrist Work- Stress Questionnaire (ERI), Patients Health Questionnaires (PHQ15), WHO Well-being (WWBS), Rahe Life Meaning (MEAN), life-satisfaction. We found for the whole sample a significant decrease of perceived stress, anxiety, subjective health complaints, depression, and overcommitment at work scores (paired sample T-test p<0,05). Further analysis revealed that people with high symptom scores at baseline showed greater improvement, their scores approaching normal ranges, while those with normal scores at baseline showed no significant change. There was also a clear, but not significant increase in indices of well-being (P=0,07-0,10) in the high distress group. The Hungarian version of the Williams LifeSkills Program proved to be effective in reducing perceived stress and stress related psychological and somatic complaints not only after the training, but its benefits were maintained in 4-6 month after the intervention. Aknowledgements: to the WLS training Facilitators Noemika Kovacs, Piroska Balog, Csilla Raduch, Noemi Keresztes, Tamas Martos, Magda Rohanszky, Gabriella Seres, Andras Beothy-Molnar. Research supported by the grants TS-049785/2004 and NKFP 1b/020/2004.

POSTERS/Session 2

Cardiovascular

140) Abstract 1230
B-TYPE NAPHTURETIC PEPTIDES ASSOCIATED WITH LOW ANXIETY IN PATIENTS WITH CONGESTIVE HEART FAILURE (CHF)
Christoph Herrmann-Lingen, Prof. Dr. med., Andreas Cordes, Dipl. Psych., Psychosomatic Medicine, Michael M. Kochen, Prof. Dr. med., Martin Scherer, Dr. med., General Practice, Rolf Wachter, Dr. med., Cardiology, Lutz Binder, Dr. med., Clinical Chemistry, University, Göttingen, Germany, Burkert Pieske, Prof. Dr. med., Cardiology, University Hospital Graz, Austria
Natriuretic peptides (NPs) are cardiac hormones secreted in response to hemodynamic stress. Besides their natriuretic and vasodilating effects, it has been suggested that at least atrial NP might also serve as an anxiolytic agent. We now studied associations between b-type NPs and anxiety in 1328 primary care pts. (184 with CHF; mean age 69 y.; 55% men and 1144 with risk factors but no CHF; 67 y.; 50% men). Patients completed a set of validated self-rating scales including the Hospital Anxiety and Depression Scale and received extensive cardiovascular diagnostics including assessment of brain natriuretic peptide (BNP) and N-terminal pro-BNP (NT-proBNP). Log-transformed NP values were used in the analyses. As expected, BNP and NT-proBNP were significantly higher in the CHF group than in the risk factor group (BNP: median=53 vs. 92 pg/ml; NT-proBNP: median=97 vs. 213 pg/ml; both p<.0005). Only NT-proBNP was weakly related to lower anxiety in the whole sample (r=-.08; p=.003) and in the subgroup without CHF (r=-.07; p=.025), and this effect disappeared once age was controlled for. In contrast, high BNP and NT-proBNP levels were more substantially related to low anxiety in CHF pts. (both r=-.27; p<.0005). This association remained significant after controlling for age and sex. After additional adjustment for CHF severity, medication, income, personality, disease coping, and depression, anxiety remained negatively associated with BNP (beta=-.15; p=.044) while the association with NT-proBNP lost significance (beta=-.11; p=.126). In conclusion, although indicating more severe heart disease, high BNP levels are independently associated with low anxiety in CHF pts. In these pts. with increased cardiac vulnerability BNP may therefore serve as an endogenous anxiolytic agent, limiting autonomic arousal and its adverse cardiovascular consequences.

141) Abstract 1468
INFLAMMATORY MARKERS AND NEGATIVE MOOD SYMPTOMS FOLLOWING EXERCISE WITHDRAWAL
Willem J. Kop, Ph.D., Medicine (Cardiology), University of Maryland Medical Center, Baltimore, MD, Ali A. Weinstein, Ph.D., College of Health and Human Services, George Mason University, Fairfax, VA, Patricia A. Deuster, Ph.D., Emergency Medicine, USUHS, Bethesda, MD, Russell P. Tracy, Ph.D., Pathology, U.Vermont, Burlington, VT
Depression and other negative mood symptoms are associated with elevated inflammatory markers. Little is known about the trajectories of the development of negative mood and inflammatory markers and the inter-relationship between these factors. An exercise withdrawal paradigm was used to examine whether inflammatory markers play a role in increased negative mood symptoms. Participants with regular exercise habits (> 30 min, aerobic exercise > 3 times/week; N=40, mean age=31±8 yrs, 55% women) were randomized to aerobic exercise withdrawal (n=20) or to continue regular exercise (n=20) for two-weeks. Protocol adherence was documented using ambulatory actigraphy. Inflammatory markers (interleukin-6 (IL-6), C-reactive protein (CRP), fibrinogen and soluble intercellular adhesion molecule-1 (sICAM-1)) were assessed at baseline, 7 days, and 14 days. Negative mood symptoms were measured with the Profile of Mood States (POMS) and depression with the Beck Depression Inventory (BDI). Results showed that exercise withdrawal did not result in increased levels of IL-6 or CRP (p-values > 0.20), whereas decreases in fibrinogen (p = 0.002) and sICAM-1 (p = 0.003) were observed from baseline to day 14. Changes in inflammatory markers did not differ between groups (multivariate interaction = 0.25). Exercise withdrawal resulted in increased negative mood symptoms compared to controls (POMS p = 0.008, BDI p = 0.002). However, increased negative mood was not significantly related to changes in inflammatory markers, nor were there cross-sectional relationships between negative mood symptoms and inflammatory markers at day 14 (all p values > 0.10). It is concluded that negative mood symptoms develop following exercise withdrawal, but these symptoms are not related to changes in inflammatory markers.

142) Abstract 1585
DEPRESSIVE SYMPTOMS & INFLAMMATION IN CONGESTIVE HEART FAILURE PATIENTS VS. HEALTHY INDIVIDUALS
Suzi Hong, Ph.D., Christopher Pruitt, B.S., Barbara G. Woods, B.S., Chirstine Zapanta, Sara Linke, M.A., Laura Redwine, Ph.D., Douglas Dejardin, B.S., Thomas R. Rutledge, Ph.D., Joel E. Dimsdale, M.D., Psychiatry, Barry H. Greenberg, M.D., Alan Maisel, M.D., Medicine, Paul J. Mills, Ph.D., Psychiatry, University of California San Diego, La Jolla, California
Patients with congestive heart failure (CHF) are at greater risk for depression, which is linked to poor prognosis. This may be in part due to increased inflammation. We examined the associations between depression and inflammatory markers in individuals with CHF (n=39, 61±14 years) and no-CHF (n=40, 51±11 years). CHF patients were NYHA Class II-IV (average NYHA 3.0±1.8) and CHFadmission creatinine fraction was 0.29±0.13. Depression was assessed by Beck Depression Inventory (BDI),
and blood was drawn to measure the levels of CRP, TNF-α, IL-6, and sICAM-1 by ELISA. Brain natriuretic peptide (BNP) was also assessed. Compared to n-CHF, CHF patients showed higher BDI scores (11.9 vs. 5.2; p<0.001) and plasma levels of CRP (4.77 vs. 1.71 mg/L, p<0.01), TNF-α (1.04 vs. 1.77 pg/ml, p<0.05), IL-6 (4.71 vs. 2.34 pg/ml, p<0.01), sICAM-1 (303 vs. 247 pg/ml, p<0.01), and BNP (238 vs. 15, p<0.0001) after controlling for age. Across all subjects, BDI scores correlated with the levels of CRP (r=0.38), BNP (r=0.40), IL-6 (r=0.35), and sICAM-1 (r=0.35) (all p’s<0.01). These associations did not remain when CHF and n-CHF groups were examined separately. Regression analyses were performed to examine how much variance in BDI scores was explained by each inflammatory marker (Step 3) after controlling for demographics (age, gender, BMI; Step 1) and disease status (CHF diagnosis, BNP; Step 2). Only CHF diagnosis and sICAM-1 levels were predictive of BDI scores. Among CHF patients BDI scores were marginally associated with EF (r=-0.23, p=0.09) and sICAM-1 levels were predictive of BDI scores. Among CHF patients BDI scores were associated with depression after controlling for demographic variables. Disease severity and sICAM-1 levels were related to depressive symptoms in CHF patients. These findings suggest that CHF and CHF severity are the main factors affecting depression in all CHF and CHF subjects, respectively. In addition, sICAM-1 levels are a stronger correlate of depression than other inflammatory markers among CHF patients.

143) Abstract 1532
INVESTIGATING ORDER EFFECTS OF TWO INTERPERSONAL TASKS ON CARDIOVASCULAR AND EMOTIONAL REACTIVITY
Matthew C. Whitehead, MS; Kevin T. Larkin, PhD; Amanda L. Wheat, BS; Psychology, West Virginia University, Morgantown, WV
A study investigating cardiovascular reactivity to two interpersonal stressors found interesting order effects based on the averisiveness of the two tasks. Twenty-six males and 31 females with a mean age of 20 years (SD=1.89) engaged in two tasks. Participants were exposed to a Conflict Task that involved interpersonal conflict with a confederate, and a Comfort Task that involved providing social support to a confederate. Participants rated the Conflict Task as more stressful to experience in their daily lives, F(1,51)=27.79, p<.001, and rated it less likely to be encountered in everyday life, F(1,51)=6.43, p=.014. They also reacted to the Conflict Task with a higher degree of anxiety indicated by self-reported anxiety-related emotions via the Multiple Adjective Affect Checklist; however, this was only true when the order of exposure was Conflict-Comfort, F(1,27)=20.74, p<.001, and not when it was Comfort-Conflict, F(1,26)=.60, p=.444. Similar results were observed for physiological reactivity. Heart rate reactivity was greater for the Conflict Task when the order of exposure was Conflict-Comfort, F(1,27)=31.19, p<.001, but there were no differences in reactivity when the order of exposure was Comfort-Conflict, F(1,26)=1.00, p=.326. Stysolic blood pressure reactivity adhered to the same pattern with Conflict-Comfort order resulting in a higher SBP reactivity for the Comfort Task, F(1,27)=17.23, p<.001, and no reactivity differences for the opposite order, F(1,26)=.71, p=.407. These results indicate that the Conflict Task was only experienced as more aversive when it was presented first. The prosocial experience of the Comfort Task may have had a neutralizing effect on participants then exposed to the Conflict Task. From these results, it is difficult to definitively separate the contribution of the novelty of task performance in the laboratory versus the influence of the two tasks in order in the real world. These results lead to a consideration of the limitations on interpreting order effects in repeated measures designs.

144) Abstract 1757
STRESS AND SYMPATHETIC REACTIVITY
Thomas J. Paradikos, MA; Ben Allen, BS; Chad L. Stephens, MS; Psychology, Bruce H. Friedman, PhD; Psychology, Virginia Tech University, Blacksburg, VA
Abundant evidence exists for the link between cardiovascular disease (CVD) and stress. Sympathetic nervous system reactivity may be a mediating factor in this relationship. Elevated stress reactivity is associated with both high levels of sympathetic activity and increased CVD risk. This study examined the relationship between state stress, as assessed by the Depression Anxiety Stress Scale (DASS), and sympathetic reactivity to a dual stress task. 35 healthy undergraduate subjects (20 female, 15 male) scoring in the normal to moderate ranges on the DASS performed a simultaneous coldpressor/mental arithmetic task. Physiological data were recorded during this 3-minute task and a 3-minute pre-task baseline. Sympathetic activity was assessed via pre-ejection period (PEP), cardiac output (CO), and skin conductance level (SCL) derived from electrocardiogram (ECG), impedance cardiogram (ICG) and electrodermal activity (EDA). All 3 autonomic variables were significantly different from their baseline levels (p<.001). DASS stress scores were significantly related to decreases in PEP (r=-.44, p<.05). Decreases in PEP were correlated with increases in CO (r=-.43, p<.001) and SCL (r=-.34, p<.05). Decreases in PEP, increases in CO and SCL in reaction to the task illustrate an active sympathetic system. Individuals displaying even mild state stress demonstrate greater sympathetic reactivity. The relationship between state stress and sympathetic reactivity to stress tasks provide support for connections between stress and CVD.

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146) Abstract 1731
THE IMPACT OF ANGER AND SOCIOECONOMIC STATUS ON CARDIOVASCULAR DISEASE RISK AMONG AFRICAN AMERICANS
Catherine J. Mills, BA, Jonathan Livingston, PhD, Dwayne Brandon, PhD, Psychology, Mildred Pointer, PhD, Biology, North Carolina Central University, Durham, NC
The goal of this research study is to investigate the impact of anger and socioeconomic status on cardiovascular disease risk. The present study was designed to 1) determine the impact of anger on cardiovascular disease risk which was operationally defined as high lipid profiles (HDL, LDL, triglycerides, and total cholesterol), 2) test the influence of demographic factors such as age and gender, in addition to socioeconomic status indicators (income, education, and employment status) on lipid profiles, and 3) search for a moderating relationship of socioeconomic status and anger expression on increased Cardiovascular Disease risk (elevated lipid profiles). The SAE scale was used for anger. Demographic variables and socioeconomic status variables are the independent variables. Accuracy analysis proved to be in acceptable ranges. Pearson's correlations were performed to find relationships among the variables (anger expression, total cholesterol, LDL, HDL, and triglycerides). Correlations were conducted to determine the linear relations between lipids and both the psychological and demographic variables. Standard multiple regression analysis was performed to assess the influence of anger and socioeconomic variables on the risk factors for cardiovascular disease among African Americans. Multiple regression analysis assisted in testing the hypothesis that socioeconomic variables served as a moderator, increasing the risk of cardiovascular disease among African Americans. Significant relationships were found between SES and cardiovascular risk at the p < .05 levels. For example triglycerides (r = .197, p < .05), education and total cholesterol (r = -.150, p < .05). No relation was found between anger and cholesterol levels, however this maybe due to a difference in the way African Americans endorse items on the Spielberger Anger Expression Scale. Individual items will be correlated with high lipid level participants. Anger and SES proved to be predictors of cardiovascular risk in African Americans.

147) Abstract 1726
PLATELET REACTIVITY: A POSSIBLE LINK BETWEEN HOSTILITY AND INCIDENT CORONARY HEART DISEASE EVENTS?
Sujith Kuruvilla, MD, Medicine, Sally Aboelela, PhD, School of Nursing, Dennis Abraham, MD, Moshe Levison, PhD, Kiran Nallilla, MD, Geetha Pinto, MD, Matthew Burg, PhD, Daichi Shimbo, MD, Medicine, Columbia University Medical Center, New York, New York
Hostility predicts incident coronary heart disease (CHD) events. Platelet reactivity - implicated in CHD events - may underlie this link. ADP-induced platelet reactivity was assessed by gold standard (FC). Agonists included ADP and (Carver et al., 1989) to assess coping strategies. Hemodynamic (SBP, DBP, HR) measures and digitized ECG were examined during the session and ischemia was assessed using SPECT perfusion imaging. The presence of inducible ischemia was quantified as a summed difference score of greater than or equal to 4 new ischemic segments. Results: Eleven patients (31%) had inducible MSI and 24 (69%) did not (No MSI group). Both groups were comparable on baseline hemodynamic levels and responses to MS, CAD severity, and demographic variables. The MSI group, compared to No MSI group, reported less Problem-Focused Coping (t = 2.33, p = .03) as well as less Emotion-Focused Coping (t = 1.99, p = .005). On specific COPE subscales, the MSI group reported less Active Coping (t = 1.81, p .008), more Avoidance of Denial (t = 1.77, p = .05), less Suppression of Competing Activities (t = 2.10, p = .044), and less Planning (t = 2.36, p = .02). Conclusions: CAD patients with anger-induced MSI exhibit less problem-focused and less emotion-focused coping. These results suggest lack of coping skills or less effective coping during stress in these patients.

148) Abstract 1655
COUPING STYLES DISTINGUISH PRESENCE/ABSENCE OF INDUCIBLE MENTAL STRESS ISCHEMIA IN CORONARY ARTERY DISEASE PATIENTS
Sari D. Holmes, MS, Kventions, Whittaker, BS, David S. Krantz, Ph.D., Dept. of Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, John S. Gottschi, MD, Cardiology Division, University of Maryland School of Medicine, Baltimore, MD
Objective: To examine the relationship of coping styles with susceptibility to anger-induced mental stress ischemia (MSI) in patients with coronary artery disease (CAD). Methods: Thirty-five patients with CAD underwent mental stress (MS) testing using an anger recall task (speaking about an anger incident) and completed the COPE Inventory (Carver et al., 1989) to assess coping strategies. Hemodynamic (SBP, DBP, HR) measures and digitized ECG were examined during the session and ischemia was assessed using SPECT perfusion imaging. The presence of inducible ischemia was quantified as a summed difference score of greater than or equal to 4 new ischemic segments. Results: Eleven patients (31%) had inducible MSI and 24 (69%) did not (No MSI group). Both groups were comparable on baseline hemodynamic levels and responses to MS, CAD severity, and demographic variables. The MSI group, compared to No MSI group, reported less Problem-Focused Coping (t = 2.33, p = .03) as well as less Emotion-Focused Coping (t = 1.99, p = .005). On specific COPE subscales, the MSI group reported less Active Coping (t = 1.81, p = .008), more Avoidance of Denial (t = 1.77, p = .05), less Suppression of Competing Activities (t = 2.10, p = .044), and less Planning (t = 2.36, p = .02). Conclusions: CAD patients with anger-induced MSI exhibit less problem-focused and less emotion-focused coping. These results suggest lack of coping skills or less effective coping during stress in these patients.

149) Abstract 1707
AUTONOMIC REACTIVITY IN HIGH AND LOW TRAIT WORRY
Bruce H. Friedman, Ph.D., Psychology, Michael M. Knepp, MS, Psychology, Virginia Tech, Blacksburg, Virginia
Chronic worry may be a risk factor for cardiovascular (CV) disease via its relation with perseverance and CV reactivity. This study assessed autonomic features of CV reactivity in low and high trait worriers in response to common laboratory stressors. 450 healthy female undergraduates completed the Penn State Worry Questionnaire, a trait worry instrument. 21 women scoring in the lowest third of all respondents formed the low worry group and 17 women scoring in the highest third comprised the high worry group. Subjects engaged in 6 3-minute tasks (each task had its own 3-minute baseline and recovery period): orthostatic stress, supine rest, hand cold pressor, mental arithmetic, and worry and relaxation imagery. The electrocardiogram (ECG) and impedance cardiogram (ICG) were acquired during all tasks and in an initial baseline period prior to all tasks. Root mean successive squared differences (rMSSD) of ECG-derived heart rate (HR) served as a cardiac vagal index. Across tasks, high worriers had higher HR (M=77.8 bpm, SE=2.1) than low worriers (M=71.5 bpm, SE=1.9, p=.05). Cardiac pre-ejection period (PEP), a beta-adrenergic sympathetic ICG-derived index, was longer in the low worriers (M=115.8 ms, SE=10.5) than in high worriers (M=89.0 ms, SE=11.7) in recovery from orthostatic stress (p<.02). Low worriers also showed greater PEP increases between the first and second halves of the recovery periods following hand cold pressor (low worry: M change=10.4 ms, SE=4.6; high worry: M change=7.3 ms, SE=5.3, p=.02) and worry imagery (low worry: M change=11.4 ms, SE=5.6; high worry: M change=8.2 ms, SE=6.3; p=.05). These PEP data collectively indicate delayed sympathetic recovery in the high worry group. rMSSD was marginally higher in the low worry group in the initial baseline (M=57.7 ms, SE=7.4) when compared with high worriers (M=39.9, SE=7.4, p=.09). These results suggest that high trait worry is marked generally by increased HR and specifically by sustained sympathetic myocardial contractility following certain stressors, and is possibly associated with low cardiac vagal tone.
150) Abstract 1666
PHYSICAL FITNESS AFFECTS CIRCULATING sICAM-1 LEVELS IN RESPONSE TO EXERCISE
Julie L. Sadja, B.A., Suzi Hong,, Kate M. Edwards, PhD, Paul J. Mills, PhD, Psychiatry, University of California, San Diego, San Diego, CA
Many studies demonstrate associations between levels of circulating inflammatory markers and future risk for coronary heart disease (CHD). Studies consistently show that circulating levels of intercellular adhesion molecule 1 (sICAM-1) and interleukin-6 (IL-6) predict risk of future cardiovascular events in both the healthy and those with CHD. Regular (chronic) exercise is shown to reduce the risk of CHD. Meanwhile, acute stress leads to increases in circulating levels of these inflammatory markers, and an acute bout of exercise is known to elicit transient systemic inflammatory responses. Thus, we examined sICAM-1 and IL-6 levels under physical stress and how cardiovascular fitness affects the inflammatory response in normotensive and mildly hypertensive women (N=30) and men (N=32) (mean age 41 years, SD=10). Participants underwent 20-min treadmill exercise at 65-70% of their peak capacity with blood drawn pre, post, and 10-min post to assess circulating levels of sICAM-1 and IL-6 using ELISA. Multiple regression analyses were performed to examine the association between cardiovascular fitness levels (measured by VO2 max, mL/kg/min) and post-exercise inflammatory marker levels after controlling for age, gender, blood pressure, and BMI (Step 1). Heart period was measured using CESD and MFSI-SF (Step 2), and pre-exercise inflammatory marker levels (Step 3). Circulating levels of IL-6 (F=22.8, p<0.01) and sICAM-1 (F=25.2, p<0.01) increased significantly in response to exercise. Regression analysis indicated that post exercise levels of sICAM-1 were best predicted by initial resting levels of sICAM-1 (deltaR2=.752, Beta=.944, p<0.001) and degree of cardiovascular acceleration (deltaR2=.024, Beta=.944, Beta=.01) such that higher fitness contributed to lower sICAM-1 levels. For IL-6, only the resting levels of IL-6 (deltaR2=.744, Beta=.944, p<0.001) were significant predictors of post exercise IL-6 levels. Neither age, gender, depressed mood, or fatigue were significant contributors to the inflammatory response to exercise. These findings suggest that high physical fitness is associated with smaller sICAM-1 responses to an acute bout of moderate exercise even after controlling for baseline sICAM-1 levels.

151) Abstract 1620
PERSONALITY AND INFLAMMATION: THE PROTECTIVE EFFECT OF OPENNESS TO EXPERIENCE
Charles R. Jonassaint, MA, Psychology, Stephen H. Boyle, PhD, Psychology, Cynthia M. Kuhn, PhD, Pharmacology, Ilene C. Siegler, PhD, Redford B. Williams, MD, Psychiatry, Duke University, Durham, NC
Facets of the Openness to Experience personality domain have predicted lower cardiac and all-cause mortality in CHD patients. C-Reactive Protein (CRP) is a marker of inflammation that has been associated with the development of diabetes, hypertension and cardiovascular disease (CVD). The present study examined the Openness to Experience (O) domain and its facets, assessed by the NEO PI-R Factors of Predictive Reactions to stress (CRP) in a sample of 165 healthy African-American and Caucasian, male and female community volunteers. Blood samples for determination of CRP levels were taken before and after a 40-minute mental stress protocol. Age, BMI and education were all significant predictors of CRP and were included as covariates in all analyses. Race and gender were tested as possible moderating variables. In a mixed effects model the main effect of Time (pre/post-stress), O and their interaction were not significant predictors of CRP. However, results showed a significant race x O effect on CRP (p < .05). In blacks, lower baseline CRP was associated with higher O domain (r = -.41, p<.01), Aesthetics facet (r = -.32, p<.01), Feelings facet (r = -.39, p<.01), and Ideas facet (r = -.36, p<.01) scores. The effect of the Actions facet on CRP approached significance (r = -.22, p<.06). In contrast, among white participants, neither the O domain nor its related facets were associated with CRP. These effects were independent of age, BMI, and education. These findings suggest that, for blacks, Openness to Experience may be a protective factor against inflammatory conditions that increase risk for CVD or confer a poorer prognosis once CHD is present. Supported by NHLBI grant # P01HL36587

152) Abstract 1632
COUPING WITH STRESS AND INFLAMMATION MARKERS IN CONGESTIVE HEART FAILURE
Christyline Zapanta,, Sarah Linke,, Thomas R. Rutledge,, Laura Redwine,, Doug DeJardin,, Suzi Hong,, Barbara G. Woods,, Christopher Pruitt,, Paul J. Mills,, Psychiatry, University of California, San Diego, La Jolla, CA
Congestive heart failure (CHF) patients often report higher rates of stress which may be linked to coping styles that CHF patients employ to deal with the stress of living with heart failure. It is unknown whether approaches to coping with stress in CHF are related to the increased inflammation typically observed in CHF patients. This study examined ways of coping with stress and inflammatory markers among CHF (n= 38, 61±14 years) and non-CHF (n=119) individuals (n= 40, 51±11 years). CHF patients were NYHA Class II-IV with ejection fractions (EF) <40% (30 ± 10). Coping styles were assessed by the Ways of Coping Questionnaire (WOC). Resting blood samples were drawn to determine levels of TNF-a, IL-6, and IL-1RA in plasma (ELISA). A MANOVA testing all 8 WOC subscales and controlling for age and gender showed that CHF patients had poorer overall coping skills compared to non-CHF patients (p= .023). CHF patients also showed poorer problem solving (p <.01), seeking social support (p <.01), positive reappraisal (p <.01), and accepting responsibility (p<.05), and marginally poorer self-controlling (p<.07) and confrontive coping (p<.07) skills, but no difference in distancing or escape-avoidance. In parallel, compared to non-CHF, CHF patients had higher circulating levels of IL-6 (2.37 vs. 3.89 pg/ml, p<.01), and IL-1RA (262.7 vs. 392.3 pg/ml, p<.01) and marginally higher levels of TNF-a (1.66 vs. 1.30, p = .15). Among CHF patients, distanced correlated with IL-6 levels (r=.418, p=.008) and confrontive coping correlated with TNF-a levels (r=.354, p=.055) and IL-6 (r=.181, p=.108) levels. IL-1RA levels were negatively correlated with confrontive coping (r =-.443, p=.023), self-controlling (r =-.415, p=.035) and positive reappraisal (r =-.438, p=.025) skills. The findings suggest that CHF patients report poorer overall coping skills and that these skills are associated with certain inflammatory cytokine levels in blood.

153) Abstract 1512
AGONISTIC STRIVING PREDICTS VAGAL REGULATION DURING ANGER RECOVERY IN ADOLESCENT MALES
Craig K. Ewart, PhD, Marta Kadziolka, MA, Nina J. Stoeckl, MA, Mi M. Ditmar, BA, Gavin Elder, BA, Randall S. Jorgensen, PhD, Michelle Payeur, BA, Psychology, Syracuse University, Syracuse, NY
"Agonistic striving (AS)," a chronic struggle to control or dominate others, is associated with high blood pressure during daily activities in low-income urban youth. We tested the hypothesis that AS also is associated with impairment of a parasympathetic (vagal) mechanism that enables emotional recovery from anger arousal. Cardiac vagal tone, indexed by heart period variability (HPV), has been found to covary with emotional control. Participants (90 females, 89 males; 43% White, 40% Black, 17% Other) attended a large public high school in NY State. AS was measured with a questionnaire that assessed thoughts and goals. About 10 weeks later, participants performed a novel emotion regulation protocol including (a) Baseline rest (BL1; 10 min); (b) Anger Recall (3-min); followed immediately by Self-Disclosure (SD; 6 min) that involved sharing with "a new friend" a personally meaningful memory and envisioning one's future; and (c) Baseline rest (BL2; 5 min). This protocol tests social-emotional competence by requiring a participant to regulate angry affect while quickly shifting attention to an affiliative social task. Parasympathetic (vagal) control was assessed by recording HPV; phasic respiratory and heart period data recorded throughout the protocol were used to estimate respiratory sinus arrhythmia (RSA), which served to index cardiac vagal tone. Changes in RSA from the start of SD to the end of BL2, calculated by computing area-under-the-curve (AUC), were used to test the hypothesis that higher AS predicts vagal regulation during anger recovery. Results disclosed that higher levels of AS assessed by SC1 predicted lower RSA (AUC) during recovery from anger in males (r = -.26, p<.02) but not in females (r = .06, ns). These findings support a possible connection between agonistic interpersonal stress and vagal regulation of hostile affect in young males who are chronically exposed to urban environments characterized by disorder and violence.
154) Abstract 1340
CARDIOVASCULAR, AFFECTIVE, AND INTERPERSONAL MOTIVE RESPONSES TO CONFLICT AND COMFORT TASKS AMONG HIGH AND LOW HOSTILE MEN AND WOMEN
Lauren M. Penwell, BA, Matthew White, MS, Kevin Larkin, PhD, Psychology, West Virginia University, Morgantown, WV
To explain commonly observed relations between hostility and negative health outcomes, it has been hypothesized that high hostile persons exhibit exaggerated psychophysiological reactions to mental stress in comparison to low hostile persons, particularly in response to anger-eliciting interpersonal stressors. Although there is empirical support for this hypothesis, it is unknown whether these observed exaggerated psychophysiological reactions are also seen in non-anger-eliciting situations. The current study was designed to examine the relation between hostility, as measured by the Cook Medley Hostility Questionnaire, and cardiovascular reactivity during two interpersonal tasks. Participants, 56 undergraduates from West Virginia University, engaged in a Comfort scenario in addition to a traditional Conflict scenario, during which time measurements of heart rate and blood pressure were taken. In contrast to the Conflict task, the Comfort role-play task involved comforting a friend who recently broke up with a romantic partner. Analyses revealed a significant effect of task on heart rate variability. Regardless of hostility level, $F(1, 51) = 4.90$, $p < .05$. Main effects for hostility and interaction effects among hostility, gender, and task were not significant for any cardiovascular or affect response variable. Examination of communion or agentic motives reported during the two tasks indicated that high hostile participants experienced less agentic motives than their low-hostile counterparts, $F(1,53) = 4.02$, $p < .05$. Given the lack of correspondence between these findings and previous studies of the associations between cardiovascular responses to stress, additional empirical work is needed to clarify mechanisms involved in the association between hostility and negative health consequences.

155) Abstract 1283
VAGAL WITHDRAWAL AND ISCHEMIA DURING MENTAL STRESS AND EXERCISE IN PATIENTS WITH CORONARY ARTERY DISEASE AND VULNERABILITY TO ARRHYTHMIAS
Heather L. Rogers, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, Willem J. Kop, Ph.D., Cardiology, University of Maryland Medical Center, Baltimore, MD, Anna Ghambarian, MS, Sari D. Holmes, MS, Chiao-Wen Hsiao, MD, David S. Kranz, Ph.D., Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
Mental stress can induce myocardial ischemia in patients with coronary artery disease (CAD). Autonomic pathways may differ in mental stress ischemia (MSI) vs. exercise-induced ischemia (EXI), and vagal responses are implicated in the pathogenesis of MSI. We examined relationships between vagal activity and MSI compared to EXI in CAD patients with implantable cardioverter defibrillators (N=34) who underwent mental stress (MS; anger recall, mental arithmetic) and following isolation or pairing. Isolation (versus pairing) significantly ($p=0.05$) increased basal heart rate (HR) and the HR response to a 5-min stressor; oxytocin administration prevented these changes. Isolation reduced HR variability and vagal regulation of the heart; these responses were prevented by oxytocin. In Study 2, depression-like behaviors were measured using sucrose intake and the forced swim test (FST). Isolation reduced sucrose intake (anhedonia) and increased immobility in the FST; these responses were prevented by oxytocin. Administration of oxytocin did not significantly affect cardiac or behavioral responses of paired animals. These findings provide insight into potential oxytocinergic mechanisms that underlie behavioral and cardiac dysfunction in response to disruption of social bonds and isolation. Support: MH67446, MH72935, MH73233, HD48390.

156) Abstract 1263
OXYT OCIN HAS BENEFICIAL EFFECTS ON DEPRESSION-LIKE BEHAVIORS AND CARDIAC DYSREGULATION IN SOCIALLY ISOLATED PRAIRIE VOLES
Angela J. Gripp, PhD, Diane Trahanas, Robert Zimmermann, Imran Hassan, Maulin Shah, Damon G. Lamb, Stephen W. Porges, C. Sue Carter, Psychiatry, University of Illinois at Chicago, Chicago, IL
A well established association exists between depression and cardiovascular disease in humans. The socially monogamous prairie vole is a useful translational rodent model for investigating neural and social regulation of behavior and cardiac function, because it displays social behaviors and an autonomic balance similar to humans. Previously we demonstrated depressive behaviors and autonomic dysfunction in socially isolated prairie voles. Here we hypothesized that long-term administration of oxytocin, a peptide that regulates social behavior, would prevent depression-like behaviors and adverse cardiac responses to the disruption of social interactions such as those that occur during isolation. Adult, female prairie voles were exposed to isolation (separation from a same-sex partner) or continued pairing (control) for 4 weeks. During weeks 3 and 4, animals were administered oxytocin (20µg/50µl sc) or saline (50µl sc) daily for 14 days. In Study 1, electrocardiographic parameters were recorded during and following isolation or pairing. Isolation (versus pairing) significantly ($p=0.05$) increased %HF at stage 1 ($r=0.90$, $p<0.05$). Patients with EXI also showed a decrease in %HF from rest to stage 1 EX ($p=0.05$). Results did not vary by gender or left ventricular dysfunction. Thus, MS induces vagal withdrawal in all patients. MSI appears to be associated with lower vagal tone before MS in CAD patients with arrhythmic vulnerability and MS HF HRV responses do not predict MSI. Those with EXI show lower vagal tone at low level EX than those without EXI. Subject to sample size limitations, these findings suggest that low resting vagal tone may increase the risk of developing MSI induced in the laboratory.
158) Abstract 1133
HOTILITY PREDICTS AMBULATORY BLOOD PRESSURE REACTIVITY IN AFRICAN AMERICANS
J.D. Lane, PhD, R.B. Williams, MD, R.S. Surwit, PhD, Psychiatry, Duke University Medical Center, Durham, NC
Research shows that the personality trait of hostility (Ho) and measures of ambulatory systolic blood pressure variability are both significant risk factors that predict the incidence of cardiovascular disease (CVD). This study tested a relationship between these two risk factors to explore ambulatory variability as a mechanism of Ho risk. The study included 152 healthy white (W) and African American (AA) men and women 18 to 55 years of age who scored in the top or bottom tertile on the 27-item version of the Cook-Medley inventory. Subjects completed a day of ambulatory blood pressure (ABP) monitoring. Daytime readings of systolic (SBP) and diastolic (DBP) pressures (4/hr from 7AM to 10PM) were used to determine mean and standard deviation (ABPSD) for each subject. GLM analyses tested for differences between Ho groups in ABP mean and ABPSD and the moderating effects of Race and Sex. In the sample, age (M±SD)=32±9 years. The high Ho group (N=36) was predominantly AA (N=22) and female (N=21). The low Ho group (N=116) was predominantly W (N=81) and female (N=85). Ho groups did not differ in mean ambulatory SBP or DBP, and there was no evidence of interactions with Sex or Race. However, analyses found a Ho by Race interaction for daytime ABPSD (p<0.001). No evidence of interactions with Sex or Race. In the sample, age (M±SD)=32±9 years. The low Ho group (N=116) was predominantly W (N=81) and female (N=85). Ho groups did not differ in mean ambulatory SBP or DBP, and there was no evidence of interactions with Sex or Race. However, analyses found a Ho by Race interaction for daytime ABPSD (p<0.001). No evidence of interactions with Sex or Race.

159) Abstract 1691
MENTAL STRESS AND EXERCISE HEART RATE RECOVERY IN PATIENTS WITH CORONARY ARTERY DISEASE (CAD) AND ARRHYTHMIC VULNERABILITY
Anna Ghambaryan, MS, Chiao-Wen Hisiao, MS, Heather L. Rogers, MS, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, Willem J. Kop, PhD, Division of Cardiology, University of Maryland Medical Center, Baltimore, MD, Mark C. Haigney, MD, Cardiology, David S. Kranz, PhD, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
Impaired cardiac vagal regulation is associated with high risk of sudden death and malignant arrhythmias in CAD patients. Heart rate recovery (HRR) is a marker of restoration impacting rest oration of vagal tone after MS vs. EX. HRR after exercise appears to depend on max HR, and max HR may not be as important to HRR after MS.

160) Abstract 1669
PARASYPATHETIC WITHDRAWAL AND SYMPATHETIC AROUSAL DURING ANGER CORRELATE WITH ELEVATED ENDOTHELIN-1 IN PATIENTS WITH CORONARY ARTERY DISEASE
Aaron Soifer, BS, Hooman Bajghajar, MD, Brendan Graeber, MD, Matthew Burg, PhD, Joyce Liu, BS, Rachel Lampert, MD, George Tellides, MD, PhD, Dorothea Collins, ScD, Robert Soifer, MD, Section of Cardiovascular Medicine, Yale University School of Medicine, New Haven, CT
Objective: Anger provokes myocardial ischemia, characterized by impaired blood flow in the coronary microvascular bed. The pathophysiology of this effect is unknown. Anger, characterized by sympathetic arousal and parasympathetic withdrawal, also increases Endothelin-1 (ET-1), a potent vaseoconstricor. We investigated the relationship between autonomic activity and ET-1 during anger in patients with Coronary Artery Disease (CAD). Methods: 83 CAD patients underwent ambulatory ECG monitoring during laboratory anger recall. Heart rate variability was analyzed by spectral analysis via fast Fourier transformation during the baseline and anger conditions, and analyzed by regression for day-to-day correlations. Results: Analyses found no interactions related to sex. The effects of Race and Sex. In the sample, age (M±SD)=32±9 years. The low Ho group (N=116) was predominantly W (N=81) and female (N=85). Ho groups did not differ in mean ambulatory SBP or DBP, and there was no evidence of interactions with Sex or Race. However, analyses found a Ho by Race interaction for daytime ABPSD (p<0.001). No evidence of interactions with Sex or Race. After exercise appears to depend on max HR, and max HR may not be as important to HRR after MS.

161) Abstract 1686
RELATIONSHIP BETWEEN INFLAMMATORY PROCESSES AND DEPRESSIVE DISORDERS
Roxanne Pelletier, B.Sc, Kim L. Lavoie, Ph.D, Philippe Stébéune, B.Sc., Jennifer Gordon, B.Sc., Sandra Pelaze, M.Sc., Catherine Laurin, Ph.D, Bernard Meloche, André Arsensault, MD, Simon L. Bacon, Ph.D, Montreal Behavioural Medicine Centre, MHI / UQAM / Concordia / HSCM, Montreal, Quebec, Canada
Background: Mood disorders (MD) have been linked to cardiovascular diseases (CVD). While some authors claim that MD is a predictor of CVD, a newer hypothesis suggests that both MD and CVD are consequences of an increased inflammatory process. C-reactive protein (CRP) is known to be an inflammation marker, and increased levels of CRP are associated with CVD development and progression. However, little is still known about the potential role of CRP in the aetiology of MD. The objective of the present study was to assess the relationship between CRP levels and the presence of MD. Method: 293 patients referred for myocardial perfusion (SPECT) exercise stress testing at the Montreal Heart Institute (MHI) underwent a brief, structured psychiatric interview (PRIME-MD) to assess MD. All patients then underwent endothelial function testing, in which blood samples were collected to assess CRP levels. To look at the impact of CRP levels on MD status, a logistic regression analysis, controlling for age, sex, presence of CVD, and statins, ACE-inhibitors, and antiplatelet usage, was performed. Results: Analyses showed that 43 patients (15%) had a MD. It also revealed that CRP levels were significantly (p = .010) associated with the presence of a MD, among patients. Specifically, for each point increment in CRP level, the probability of suffering from a MD increased of 1.15, 95% CI 1.03-1.28). Conclusion: The present results show that increased inflammatory processes are associated with the presence of MD, suggesting that their development
might, at least partially, be explained by an impaired inflammatory regulation. Prospective studies are needed to explore the causal relationship between these variables.

162) Abstract 1684

CNS ACTIVATION DURING MENTAL STRESS IN DEPRESSED AND ANXIOUS PATIENTS WITH CORONARY ARTERY DISEASE

Elisabeth J. Martens, PhD, Medical Psychology, Tilburg University, Tilburg, Brabant, The Netherlands, Matthew M. Burg, PhD, Section of Cardiovascular Medicine, Yale University School of Medicine, New Haven, CT, Peter J. Gianaros, PhD, Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA, Joyce Liu, MA, Aaron Soufer, MA, Robert Soufer, PhD, Section of Cardiovascular Medicine, Yale University School of Medicine, New Haven, CT

Depression and anxiety, often co-morbid, increase mortality risk in patients with coronary disease (CAD), and can trigger catastrophic events. Heightened stress responsivity may link depression and anxiety to survival. CNS activation during mental stress in CAD patients may reveal how stress contributes to depression and anxiety associated adverse prognoses. Methods: 115 CAD patients (age 63±8) completed MMPI assessment of depression (D) (range 12-38) and Spielberger assessment of anxiety (Anx) (range 10-34). Lower and upper quartiles for D (quartile 1-24) and Anx (lower<13, upper>19) defined 4 anxiety groups (HI/Lo-D by Hi/Lo-Anx). Sequential resting (R), counting control (CC), and mental arithmetic (MA) was performed during positron emission tomography (PET) scanning of CNS activation with 15O\[^{15}O\]H2O. Brain images analyzed with Statistical Parametric Mapping were compared during conditions between groups (threshold p < .001). Results: Groups did not differ on baseline medical characteristics and showed comparable significant increases in heart rate and blood pressure from R to MA (all p<.0001). PET CNS images of Hi-D/Hi-Anx and Lo-D/Lo-Anx groups during MA revealed relatively greater activity in limbic regions for the Hi/Hi group, indicating greater emotional reactivity, and greater activity in the prefrontal, orbitofrontal and visual cortices for the Lo/Lo group, indicating cognitive flexibility and better stress modulation. The importance of Anx to D to stress responsiveness was revealed by relatively higher activity in limbic regions during both MA and CC for Hi-D/Hi-Anx vs Hi-D/Lo-Anx, and the absence of any differences between Hi-D/Hi-Anx and Lo-D/Hi-Anx during either MA or CC. Conclusions: Comorbid depression and anxiety are associated with greater CNS emotional response and less cognitive flexibility during stress. Anxiety has a greater effect on CNS stress response than depression. These findings may help explain the role of stress in CAD mortality risk associated with these factors.

163) Abstract 1676

RACIAL IDENTITY AND CARDIOVASCULAR PSYCHOPHYSIOLOGY

Enrique W. Nebbett, Jr., Ph.D., Jules P. Harrell, PhD, Psychology, Howard University, Washington, DC

Health-disparity researchers have become increasingly concerned with the role of racism in African Americans. In light of evidence that racism-related stress is associated with blood pressure (Harrell et al. 2003) and other health indicators (Mays et al., 2007), more work is necessary to identify potential factors that protect against the effects of racism on disease morbidity and mortality. In this study, we examined the relations among one such factor, racial identity, and several indices of cardiovascular psychophysiology. For example, 18 (11 males, 32 females) completed a measure of racial identity (Sellers et al., 1998) and an impedance cardiography (ICG) experimental protocol involving imagery analogs of racism experiences. We examined the relations between racial identity and cardiovascular functioning during a two-minute initial- and final-rest period immediately preceding and following the imagery conditions. Individuals who felt that others viewed Blacks more favorably were likely to have higher diastolic blood pressure (DBP, r=-.47, p<.05) and mean arterial pressure (MAP, r=-.48, p < .05) in the final rest period. Individuals who endorsed a nationalist ideology (i.e., emphasizing the uniqueness of the African American experience) were more likely to experience greater heart-rate variability during the final-rest period (r=-.61, p < .05), increased interbeat intervals (IBI, r=-.55, p<.05), and overall decreases in sympathetic tone (r=-.55, p<.05). Finally, ideologically liberal views emphasizing similarities between Blacks and all Americans) was associated with greater lower initial- (r=-.71, p < .05) and final-rest heart rate variability (r=-.55, p<.05). These results provide preliminary evidence that the significance and meaning that individuals ascribe to race are associated with several markers of cardiovascular psychophysiology that have been linked with disease and wellness. For example, heart-rate variability has been identified as an important predictor of survival after heart-attack. In light of evidence that particular racial attitudes and values are related to blood pressure and indices of sympathetic and parasympathetic tone, the current findings may have implications for psychosocial cardiac disease interventions.

Experimental stress

164) Abstract 1640

PERSONALITY IS NOT RELATED TO CARDIOVASCULAR AND IMMUNE RESPONSES TO LABORATORY STRESS

Gonneke Willemse, PhD, Biological Psychology, VU University Amsterdam, Amsterdam, The Netherlands, Douglas Carroll, PhD, Christopher M. Ring, PhD, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom

One mechanism by which personality may be related to later disease development is through its influence on an individual’s response to stress. The present study examined the association between personality traits and the degree of cardiovascular and immune responding to laboratory stress. Data on five main personality traits (neuroticism, openness, agreeableness, conscientiousness and extroversion) as well as hostility were available for 75 men and 76 women who also underwent stress testing. In a laboratory session, cardiovascular (heart rate, diastolic and systolic blood pressure, pre-ejection period, cardiac output and total peripheral resistance), cellular immune (cell counts of white blood cells, T lymphocytes, CD4 and CD8 T cells, and natural killer cells) and mucosal immune parameters (sIgA concentration and secretion rate) were measured during a baseline period, mental arithmetic and a cold pressor test. For men and women separately, Pearson correlations were calculated between the personality scores and the physiological baseline levels and stress responses (defined as task level minus baseline secretion rate) were measured during a baseline period, mental arithmetic and a cold pressor test. For men and women separately, Pearson correlations were calculated between the personality scores and the physiological baseline levels and stress responses. Overall, correlations were low, mostly between -.15 and .15 and, with a few exceptions, were not significant. In conclusion, personality traits do not seem to be related to the cardiovascular and immune response to short-lasting laboratory stressors.

165) Abstract 1284

DISPOSITIONAL HOSTILITY AND GENDER: AN EXAMINATION OF BLOOD PRESSURE AND HEART RATE VARIABILITY ACROSS COGNITIVE AND EMOTIONAL LABORATORY TASKS

David K. Chatkoff, Ph.D., Psychology, University of Michigan - Dearborn, Dearborn, MI, Karl J. Maier, Ph.D., Psychology, Salisbury University, Salisbury, MD, Mohammad K. Hammoud, Pallavi Munkrishna, M.S., Olga Karasina, Kristen L. Ayers, B.S., Psychology, University of Michigan - Dearborn, Dearborn, MI

We investigated the relation of dispositional hostility and sex to cardiovascular reactivity (CVR) and recovery of heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), and HR variability to a cognitive and an emotional laboratory task without harassment. A healthy sample of 93 adults (54 female; 53 White, 21 Arab, 8 African American, 6 Asian, 2 Hispanic), 18 to 33 years of age (M = 19.6, SD = 2.8), completed the Cook-Medley Hostility Scale after completing a mental arithmetic (MA) task and a stress recall (SR) task. Physiological data, self-reported affect, and degree of interest (i.e., task engagement) were collected at baseline, MA, pre-SR rest, SR, and recovery. Repeated-measures ANOVAs indicated that the tasks elicited significant group differences for both males and females (p’s < .001). Partial correlations controlling for initial values were used to examine the
relation between hostility and CVR/recovery, with a Fisher’s z test to examine sex differences. For males, hostility was related to HR (r = -.35, p < .05), RMSSD (r = .33) (p’s < .05) during MA, and related to SBP (r = -.50) and DBP (r = -.47) (p’s < .05) during SR. For females, hostility was associated with SBP during SR (r = .31, p < .05). At recovery, greater hostility was associated with lesser recovery of RMSSD (r = -.34, p < .05) for males, and lesser recovery of SBP (r = -.28) and DBP (r = -.36) (p’s < .05) for females. Other than RMSSD reactivity and recovery, all associations differed significantly by sex (p’s < .05). For the SR task, hostility was associated with less interest for men (r = -.37) than women (r = .29) (p’s < .05) (z < .05). There was a n.s. trend of hostility correlating inversely with interest during the MA task for females only. In conclusion, hostility only in males predicted lesser CVR and recovery. It is suggested that hostile males may be more likely than hostile females to disengage during emotionally relevant tasks, and show attenuated CVR and recovery to both cognitive and emotional tasks in the absence of harassment.

166) Abstract 1575
BIOMARKERS, MEMORY AND PERFORMANCE IN POLICE OFFICERS EXPOSED TO A POTENT, ECOLOGICALLY VALID STRESSOR
Dana C. Nevedal, M.Ed, Mark A. Lamley, Ph.D, Psychology, Wayne State University, Detroit, MI, Lena Backman, MSc, Stockholm Centre for Public Health, Stockholm, Sweden, Ake Llublin, MD, Red Cross Hospital, Stockholm, Sweden, Bengt B. Arnetz, Ph.D, Family Medicine & Public Health Sciences, Wayne State University School of Medicine, Detroit, MI

First responders are at risk for critical incident exposure, but vary in how they perform their duties and their memory of the situation. We examined several biomarkers as predictors of performance and memory of the situation. We tested the hypothesis that higher cortisol (ACTH, HDL, and LDL-cholesterol, triglycerides) were sampled pre- and post-exposure to the potent reenactment stressor (mean peak HR increase: 90 BPM). Officers’ performance of key police actions in the reenactment was rated by an expert observer, and officers’ memory of event details was rated by an expert observer, and officers’ memory of event details was rated by an expert observer. Partial correlations tested relationships of biomarkers with performance and memory, controlling for variation in critical incident training. Better objective performance was predicted by markers of greater activation: higher mean HR (pr = .52, p = .03), higher mean ACTH (pr = .56, p = .02), and higher mean HDL (pr = .44, p = .07). Additionally, increasing LDL (pr = .42, p = .09) and diminishing triglycerides (pr = -.36, p = .15) tended to predict better performance. Conversely, memory was predicted by lower activation: lower mean HR (pr = -.64, p = .01) and lower mean HDL (pr = -.33, p = .19). Additionally, LDL decreases (pr = -.32, p = .20) and triglyceride increases (r = .37, p = .15) tended to predict better memory. Critical incident memory recall may be impaired in first responders experiencing high levels of activation, but this activation may facilitate behavioral performance. These findings suggest that there may be a biological trade-off in ability to perform challenging duties, versus noticing and encoding details of the event during intense stress. Future research should examine differences between critical incident professionals and trauma-exposed civilians, who may encode vivid memories, yet be unable to act.

167) Abstract 1280
THE ROLE OF COPING FLEXIBILITY IN PSYCHOPHYSIOLOGICAL REACTIVITY FROM A STRESSFUL LABORATORY TASK
Jessica K. Gerfen, B.A., Psychology, Rosalind Franklin University of Medicine and Science, North Chicago, IL, Sandra G. Zakowski, PhD, Psychology, Argosy University, Chicago Campus, Chicago, IL

Coping flexibility has been suggested by some researchers to explain how individuals choose and adjust coping strategies given the demands of the stressor. There is limited research available that suggest a link between coping flexibility and psychophysiological responses to stressors. The purpose of the current study is to examine whether coping flexibility is associated with psychophysiological reactivity to a public speaking task. It is hypothesized that high flexible copers will exhibit lower psychophysiological reactivity as evidenced by lower heart rate (HR), systolic (SBP), diastolic blood pressure (DBP), and less distress as compared to rigid copers. Every 60 seconds, participants’ HR, SBP, and DBP was obtained. A rating scale of distress was administered before and after the stressor and the Flex was used to assess coping flexibility. The final sample included 60 male and 69 female participants ranging from 18 to 48 years of age with a mean age of 24.7 (SD = 4.0). Most participants were medical students (52%) in their first year of training (64.8%), were single (84%), and Caucasian (63.2%). Males had significantly higher Flex scores than females, t(129) = 2.020, p = .045. A significant positive relationship was found between coping flexibility scores and HR residualized scores (r = .197, p = .028) and SBP residualized scores (r = .216, p = .015). Additionally, a significant negative relationship was found between coping flexibility scores and distress residualized scores (r = -.179; p = .046). Therefore, as coping flexibility scores increased, HR and SBP increased while distress decreased in response to the speech task. A possible explanation for the findings may be that while high flexible copers are ultimately coping effectively, they may also be over-adjusting their coping strategies in the process, which in turn may heighten their physiological arousal.

168) Abstract 1631
TEMPORAL STABILITY OF CARdiovascular AND IMMUNE RESPONSES TO LABORATORY STRESS IN MEN AND WOMEN
Guusje Willemsen, PhD, Biological Psychology, VU University Amsterdam, Amsterdam, The Netherlands, Christopher M. Ring, PhD, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom, Bianca Buis, BSc, Biological Psychology, VU University Amsterdam, Amsterdam, The Netherlands, Douglas Carroll, PhD, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom

The aim of this study was to determine the temporal stability of cardiovascular and immune responses to acute stress in men and women, while taking into account the effect of hemocoagulation. To this goal, 77 men and 78 women participated in two laboratory sessions four weeks apart. During each session, cardiovascular (heart rate, diastolic blood pressure, systolic blood pressure, pre-ejection period, cardiac output, total peripheral resistance), cellular immune (white blood cell count, lymphocytes, CD3+, CD4+, CD8+, CD38+, natural killer cells) and mucosal immune responses (saliva volume, sIgA concentration and secretion rate) were measured during a baseline period, mental arithmetic and a cold press test. Pearson correlations across the two occasions were calculated separately for men and women and Condition (3) x Session (2) x Gender (2) analyses of variance were conducted for all variables. Analyses were also performed on levels corrected for hemoconcentration. Results showed a moderate to high temporal stability for the cardiovascular (r = .50 - .89, p < .01), cellular immune (r = .49 - .93, p < .01) and mucosal immune responses (r = .36 - .77, p < .01). Correlations across the two occasions were similar in men and women for cardiovascular and mucosal immune responses, while somewhat higher correlations for the cellular immune responses were found in women (r = .61 - .95, p < .01) compared to the men (.54 - .92, p < .01). However, no significant 3-way interactions were found in the analyses of variance. Sex differences were evident for basal levels with women having higher heart rate, lower systolic blood pressure, higher T cell counts and lower NK cell counts than men, but men and women did not differ in their cardiovascular and immune responses to acute stress. The correction for hemoconcentration did not significantly alter these results. In conclusion, cardiovascular and immune responses to acute laboratory stress represent a stable individual characteristic.

169) Abstract 1255
ATTENUATED BETA ENDORPHIN RESPONSE TO ACUTE STRESS IS ASSOCIATED WITH SMOKING RELAPSE
Darcy D. Shaw, BS, Mustafa al’Absi, PhD, Behavioral Sciences, University of Minnesota Medical School, Duluth, MN

Stress has been cited as an important precipitant of smoking relapse. Dysregulation of neurobiological pathways related to stress might mediate effects of stress on smoking relapse. This study assessed the extent to which beta endorphin response to stress is associated with early smoking relapse. Forty-five smokers interested in smoking cessation were recruited and attended a laboratory session 24 h following the beginning of their abstinence period. During this session beta endorphin samples were collected before and after performing two acute stressors (public
speaking and cognitive tasks). Participants also attended four weekly follow-up sessions to assess their smoking status. The acute stressors were associated with significant increases in measures of craving and withdrawal symptoms (ps < 0.01). While baseline measures of beta endorphin did not differ between relapers and successful abstainers (F < 1), results demonstrated that smokers who relapsed over the follow-up period exhibited attenuated beta endorphin response to the two stressors relative to those who maintained abstinence over the entire period (ps < 0.05). These results support recent evidence indicating that a dysregulated stress response is a key component in predicting smoking relapse.

170) Abstract 1681
ANGRY RESPONSES TO AN ACUTE PSYCHOLOGICAL STRESSOR PREDICT INTERLEUKIN(IL)-6 REACTIVITY
Judith E. Carroll, M.S., Aric A. Prather, M.S., Jackie M. Fury, B.S., Kevin K. McDade, M.S., Diana C. Ross, R.N., M.S., Anna L. Marsland, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA
Although evidence suggests that antagonistic dispositions are positively associated with systemic inflammation, little is known about inflammatory concomitants of more transient anger states. In this study we evaluate whether angry responses to acute experimental stress are associated with the magnitude of stress-related inflammation, providing new insights into observed interindividual variability of inflammatory reactions to acute stress. For this purpose, 102 community volunteers (58.8% female, 91.2% Caucasian) between ages 40 and 60 performed an acute stress protocol consisting of a 30-min resting baseline, a 5-min evaluative public speaking task, and a 30-min recovery period. Blood was drawn at the end of each period for the measurement of plasma inflammatory biomarkers. Initial repeated-measures ANOVA revealed an association between anger-related increases in cytokine IL-6 and baseline-to-recovery increases in IL-6 (b = .28, p < .01). A more dispositional measure of antagonism (using the Positive and Negative Affect Schedule), obtained immediately before the laboratory session, was not associated with the magnitude of inflammatory response; however, trait antagonism was positively associated with more angry responses to the task (b = .36, p < .001). These findings suggest that variability of individuals’ inflammatory reactions to acute stress partially reflect individual differences in emotional response, with acute anger responses being associated with greater increases in inflammation (Supported by grant NR008237 (ALM)).

171) Abstract 1649
SOCIAL SUPPORT, SOCIAL INTIMACY, AND CARDIOVASCULAR REACTIONS TO ACUTE PSYCHOLOGICAL STRESS
Anna C. Phillips, PhD, Stephen Gallagher, PhD, A-57
The purpose of the present study was to examine the impact of: active support, support from a friend versus a stranger, and the sex of the supporter on cardiovascular reactions to an acute stress task in 48 young healthy women. The stress task was time-pressured mental arithmetic, during which the participant received either no input or a series of supportive prompts from the stranger/friend present. Blood pressure and heart rate measurements were taken every 2 minutes during baseline and the task. Active rather than passive support was associated with attenuated systolic blood pressure reactivity, but only when the active supporter was a male friend, F(1,39) = 4.68, p = .04, eta-squared = .107. Active support was also related to reduced heart rate reactivity, except where it was provided by a female friend, F(1,39) = 5.40, p = .03, eta-squared = .122. Diastolic blood pressure reactivity was attenuated in the presence of active support but only when the active supporter was a male, F(1,39) = 5.70, p = .02, eta-squared = .121. The interaction between the effects of the nature of the support, and the intimacy and sex of the supporter on cardiovascular reactivity extends the findings of previous laboratory studies of social support.

172) Abstract 1535
CHANGES IN PERIPHERAL BLOOD GENE EXPRESSION PATHWAYS DUE TO ACUTE PSYCHOSOCIAL STRESS
Urs M. Nater, PhD, Toni Whistler, PhD, William Lonergan, PhD, Suzanne D. Vernon, PhD, Chronic Viral Diseases Branch, Centers for Disease Control & Prevention, Atlanta, GA, Christine Heim, PhD, Psychiatry & Behavioral Sciences, Emory University School of Medicine, Atlanta, GA
It is widely documented that acute psychological stress is associated with endocrine and immune activation which is mediated through gene regulation. This is the first study to assess changes in gene expression pathways due to an acute laboratory stressor in humans. We hypothesized that transcriptional responses of peripheral blood mononuclear cells (PBMCs) to acute psychological stress will be reflected in biological pathways relevant to stress. A standardized psychosocial stress test was performed on 10 healthy male subjects. Blood samples were obtained before (0 minutes), and after the stress exposure (30 and 60 minutes). Total RNA was extracted from the mononuclear cells and the signal intensity of the labeled cDNA hybridized to a 20,000-gene oligonucleotide microarray was measured.
Comparison between baseline and stress revealed that 32 biological pathways were significantly changed from baseline immediately after the stressor (P < 0.05). These pathways involved in natural and specific immunity, as well as apoptosis and glyceroipilid metabolism. The comparison between stress and recovery time points showed 22 pathways were significantly changing (P < 0.05) mostly involving cell signaling and proliferation. At the single gene level, our findings reflect evidence that acute psychological stress leads to transcriptional changes which can be measured in PBMCs. The major themes emerging from our analysis involve changes in immune regulation, apoptosis, and cell signaling. Although this study should be considered a pilot study, we were able to show even in a small sample of healthy volunteers that effects of acute psychological stress are reflected in gene expression changes in peripheral blood.

173) Abstract 1660
THE VALENCE OF AUDIENCE FEEDBACK AND CORTISOL REACTIVITY TO SOCIAL-EVALUATIVE THREAT
Sally S. Dickerson, PhD, Psychology & Social Behavior, University of California, Irvine, Irvine, CA, Megan L. Robbins, BA, Psychology, University of Arizona, Tucson, Arizona, Eden B. Epstein, MA, Peggy J. Mycek, MA, Psychology & Social Behavior, University of California, Irvine, Irvine, CA, Frank P. Zaldivar, PhD, Pediatrics, School of Medicine, University of California, Irvine, Orange, CA
Previous studies have demonstrated that social-evaluative threat provides one condition capable of eliciting cortisol responses; it is less clear what component of the social-evaluative context is responsible for triggering reactivity. In most social-evaluative stressors, audience members provide negative performance feedback to the participants by acting bored, disinterested, or even hostile throughout the stressor. We tested whether negative nonverbal performance feedback is necessary to elicit cortisol changes, or whether the presence of others in an evaluative mode (regardless of the valence of feedback) elicits this response. 146 healthy undergraduate participants delivered a 5-minute speech in front of two female panelists. Participants were randomly assigned to one of three conditions: negative performance feedback (both panelists scowling, stern during the speech), positive performance feedback (both panelists smiling, nodding during the speech), or mixed performance feedback (one panelist provided positive feedback, one negative feedback). Salivary cortisol was assessed at five time points to capture peak reactivity and recovery; psychological responses were assessed immediately post-task. We hypothesized that all conditions would show increases in cortisol, since all were performing in a social-evaluative context; however, we predicted that cortisol reactivity would be attenuated (but not eliminated) in the positive feedback condition. Across the conditions, cortisol increased as a result of delivering a social-evaluative speech [F(4, 130) = 8.17, p < .01]. However, responses were not significantly different between the three groups (time x condition; p > .20).
evaluative, with no differences between the conditions (p > .20). These results suggest that the valence of nonverbal feedback is less important than the perception that others are evaluating task performance for triggering cortisol reactivity in the laboratory.

174) Abstract 1116
EXAGGERATED NEUROIMMUNOLOGICAL RESPONSIVENESS OF DEPRESSED INDIVIDUALS TO ACUTE MENTAL STRESS
Ali A. Weinstein, Ph.D., Center for Study of Chronic Illness and Disability, George Mason University, Fairfax, VA; Patricia A. Deuster, Ph.D., Military and Emergency Medicine, Jennifer L. Francis, Ph.D., Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD, Willem J. Kop, Ph.D., Cardiology, University of Maryland Medical Center, Baltimore, MD
Individuals with depression are at an increased risk for cardiovascular morbidity and mortality. Little is known regarding the possible mechanisms to explain this relationship. One of the possible pathways includes exaggerated responsiveness of neuro-immunological parameters to challenge in depressed individuals.

Reactivity to mental challenge (mental arithmetic and anger recall) was assessed in 14 depressed (age: 42 ± 10; 50% female) and 16 non-depressed control participants (age: 38 ± 6; 50% female). Neurohormonal (adrenocorticotropic hormone (ACTH), norepinephrine (NE), epinephrine (Epi), and cortisol), and inflammatory (interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-alpha), and C-reactive protein (CRP)) responses to mental challenge were assessed at baseline, immediately post challenge (post), and after a 30-minute recovery period (recovery).

Depressed participants displayed higher reactivity of neurohormonal and inflammatory measures to mental challenge tasks. This study demonstrates that depressed individuals display hyper-reactivity of neurohormonal and inflammatory measures to mental challenge tasks. Future research is needed to determine whether hyper-reactivity leads to the development of adverse cardiovascular health outcomes.

175) Abstract 1733
DAILY CAFFEINE USE IMPACTS NEUROENDOCRINE AND CARDIOVASCULAR RESPONSES TO LABORATORY STRESS IN HEALTHY MEN
Laura Cousino Klein, Ph.D., Jeanette M. Bennett, M.S., Courtney A. Whetzel, M.S., Biobehavioral Health, Frank E. Ritter, Ph.D., School of Information Sciences and Technology, The Pennsylvania State University, University Park, PA
The impact of daily caffeine consumption on cardiovascular and neuroendocrine responses to laboratory stress was examined in 45 healthy men (18-30 yrs old). Participants were daily caffeine consumers, were not using nicotine products or any medications, and did not have a condition that might alter measured measures. Participants were asked to abstain from caffeine intake 4 hrs prior to their 1 PM lab session where they were administered one of three doses of caffeine: none (placebo), 200 mg caffeine (about 1-2, 8oz cups of coffee), or 400 mg caffeine (about 3-4, 8oz cups of coffee). Next, participants were administered a 25 min serial subtraction stressor. Blood pressure and heart rate were collected throughout the study; saliva was collected before and 15-min after the stressor to determine cortisol, dehydroepiandrosterone-sulfate (DHEA-S), and alpha amylase (AA) responses to the challenge. Self-reported (mg caffeine/day) daily caffeine use was verified by salivary caffeine levels (ng/mL) taken at the beginning of the study, prior to drug and stressor administration. Self-reported daily caffeine intake and baseline caffeine levels were not correlated (R=0.04). Linear regression models indicated self-reported daily caffeine use significantly predicted baseline heart rate and AA, a surrogate biomarker of sympathetic activity (R²=0.29, Ps<0.05). However, baseline salivary caffeine levels did not alter baseline cardiovascular or neuroendocrine levels. With regard to stress reactivity, laboratory administered caffeine (as indexed by salivary caffeine levels) was an important predictor of participants’ neuroendocrine (cortisol, DHEA-S, AA) but not cardiovascular (blood pressure, heart rate) stress responses (Rs=+0.38, Ps<0.05). Baseline neuroendocrine levels and self-reported daily caffeine use were not important predictors of neuroendocrine or cardiovascular stress reactivity. Many laboratory stress studies do not measure participants’ daily caffeine intake yet these data are important because they suggest that daily caffeine intake can alter baseline physiological measures.

176) Abstract 1745
INTERPERSONAL DEPENDENCY: DOES HEALTHINESS OF DEPENDENCY AFFECT BLOOD PRESSURE REACTIVITY?
Brian J. Richards, B.S, H. Mei Ng, M.S, Regina M. Wurfel, B.S, Kathi L. Heffner, Ph.D, Psychology, Ohio University, Athens, Ohio
In a current study by our group, female participants demonstrated different degrees of physiological responding while viewing a film about interpersonal loss depending on their levels of general interpersonal dependence as well as healthy dependence. Findings indicated greater physiological reactivity among those demonstrating higher overall interpersonal dependence, as measured by the Interpersonal Dependency Inventory (IDI) and lower healthy dependence, as measured by the Relationship Profile Test (RPT). Interpersonal dependence has been implicated to have negative effects on both psychological and physical well-being. However, the construct of interpersonal dependence may have positive components that have been overlooked due to the historically negative implications of dependence. For example, healthy dependence is a form of dependency that may actually benefit physical health. The purpose of the current study is to examine the possibility of buffering effects of healthy dependence on physiological reactivity among those high in overall interpersonal dependence. 73 women completed both the IDI and the RPT. Then, following a rest period, they viewed the 5-minute film clip depicting intense sadness felt by a mother upon the death of her adult daughter. Systolic (SBP) and diastolic (DBP) blood pressure were continuously assessed throughout the rest period and film. Results indicated that among women with high levels of overall dependency (IDI), only women with low levels of healthy dependency (RPT) demonstrated increases in SBP (p < .05) from baseline during the viewing of the film clip, whereas women with high levels of healthy dependency (RPT) demonstrated no significant changes. These findings suggest that a high score on the IDI may not always have negative health implications because the IDI may overlook positive components of dependency.

177) Abstract 1751
EFFECTS OF UNSATURATED FATTY ACIDS FROM PISTACHIOS, WALNUTS, AND FLAX ON HEMODYNAMIC REACTIVITY TO STRESS
Sheila G. West, PhD, Biobehavioral Health, Sarah K. Gebauer, PhD, Nutritional Sciences, Colleen D. Kay, PhD, Biobehavioral Health and Nutritional Sciences, Penny M. Kris-Etherton, PhD, RD, Nutritional Sciences, Pennsylvania State University, University Park, PA
Health psychologists have conducted hundreds of studies examining individual differences in cardiovascular (CV) and neuroendocrine reactivity to stress in order to better understand the group differences in CVDR risk. In contrast to the view of lab-based CV reactivity as a relatively stable trait, we have shown that conditions that simulate the laboratory stress to stress are very sensitive to changes in diet. In a series of randomized, crossover, controlled feeding-studies in which all meals were provided to participants, we found that altering the fatty acid composition of the diet by exchanging foods high in saturated fats for foods containing unsaturated fat or carbohydrates produces substantial changes in the pattern and magnitude of hemodynamic responses to stress. For example, we observed dose-dependent decreases in LDL cholesterol when increasing doses of pistachios (ranging from 1.5 - 3.0 oz) were added to an otherwise low-fat diet. At the end of each 4 wk diet period, systemic hemodynamics were measured during rest, a math task, and the cold pressor. Both pistachio diets reduced mean systolic BP (P < 0.05), although the magnitude of this effect was larger on the 1.5 oz diet (change in SBP = −2.4 vs −4.7 mm Hg). In contrast, the 3 oz diet significantly reduced total peripheral resistance, and these changes were offset by increases in stroke volume and cardiac output.
output. Thus, the higher pistachio diet shifted the hemodynamic profile in the direction of reduced peripheral resistance and increased cardiac contractility. Given the evidence that even a single high fat meal can affect hemodynamic reactivity, psychophysicologists should account for differences in dietary habits when comparing reactivity across ethnic and gender groups. Supported by: California Pistachio Commission Partial support by: GCRC, PSU (NIH grant M01RR10732)

178) Abstract 1608
HEALTHY AND UNHEALTHY INTERPERSONAL DEPENDENCE: DEMONSTRATION OF DIFFERENCES IN PHYSIOLOGICAL REACTIVITY
H. Mei Ng, M.S., Regina M. Warfel, B.S., Brian J. Richards, B.S., Kathi L. Heffner, Ph.D. Psychology, Ohio University, Athens, Ohio
In a previous study reported by our group, 23 female participants demonstrated different degrees of physiological responding to viewing a film about interpersonal loss depending on their levels of interpersonal dependence as measured by the Interpersonal Dependency Inventory (IDI). Findings indicated greater physiological reactivity among those demonstrating higher interpersonal dependence. The purpose of the current study is to replicate these findings with a larger sample of women as well as extend the exploration of dependence as an important modulator of physiological reactivity. Interpersonal dependence as measured by the IDI is traditionally characterized as an individual difference having negative implications for psychological well-being. However, others have suggested the potential for a positive form of interdependence, namely, healthy dependency, which is measured by the Relationship Profile Test (RPT). Healthy dependence may itself have implications for physiological reactivity. 73 women completed both the IDI and the RPT. Prior to the administration of the RPT, women viewed a 5-minute film depicting intense sadness felt by a mother upon the death of her adult daughter. Heart rate, systolic (SBP) and diastolic (DBP) blood pressure, and respiratory sinus arrhythmia (RSA), indexing parasympathetic influences on heart rate, were continuously assessed throughout the rest period and the film. Results indicated that women with high levels of dependency (IDI) demonstrated increases in SBP (p < .05) and DBP (p < .05) and decreases in RSA (p < .05) from baseline during the viewing of the film clip, whereas women with low levels of dependency only demonstrated increases in SBP (p < .05). Similarly, women with low levels of healthy dependence (RPT) demonstrated increases in SBP and DBP (ps < .05) from baseline during the viewing of the film clip, whereas women with high levels of healthy dependence demonstrated no significant changes. These findings suggest that interpersonal dependence have both, positive and negative aspects that in turn have physiological implications.

179) Abstract 1190
SOCIAL SUPPORT AND SOCIAL ANXIETY EFFECTS ON PHYSIOLOGICAL REACTIVITY
Amy R. Borchardt, B.S., Kathi L. Heffner, Ph.D, Psychology, Ohio University, Athens, OH
The buffering hypothesis suggests that social support benefits health by reducing physiological stress reactivity, possibly reducing the risk of developing cardiovascular disease. Less is known regarding who likely benefits from social support. We examined whether priming thoughts about social support was more beneficial for highly socially anxious individuals during social evaluation compared to those low in social anxiety. Sixty participants completed the Personal Report of Psychological Reactivity (PRPT) in the laboratory after being randomly assigned to one of three conditions: (1) high resolution manometry (HRM), (2) esophageal balloon distensions using barostat, and (3) End of Day with a paper diary (EOD_PD; the standard administration of the CDAI self-report questions). Participants completed questions on diaries for 7 days: EMA_ED reported current pain 6 times a day, EOD_ED & EOD_PD reported the previous 24 hours pain once a day before bed. On day 8 they returned to the clinic to report their abdominal pain for the past 7 days. As expected, recalled abdominal pain was significantly higher than the mean of the EMA ED diary assessments (p<.01). Recalled abdominal pain for the EOD ED group was higher than the mean of the diary entries, but this finding was not significant. Finally for the EOD PD group the mean of the diary ratings was not significantly different from the recall question, in fact recall was lower. These findings suggest that the PD group may not have completed the diary questions prospectively. Using an ED to assess pain in patients with CD may be worth the investment because it is important to get an accurate picture of patients’ daily symptoms in order to choose the most appropriate treatments.

180) Abstract 1637
COMPARISON OF DIARIES VERSUS A RECALL QUESTION TO ASSESSMENT ABDOMINAL PAIN IN CROHN’S DISEASE
Leighann Litcher-Kelly, Ph.D., Arthur A. Stone, Ph.D, Psychiatry and Behavioral Sciences, Stony Brook University, Stony Brook, NY
The Crohn’s Disease Activity Index (CDAI) is the gold-standard measure for assessing disease activity. It incorporates a paper diary to assess 3 self-report questions abdominal pain, well-being and bowel movements. A criticism of the CDAI is non-compliance with the paper diary; a potential problem because past research has shown that recalled pain may be reported higher than momentary pain. Thus this study compares abdominal pain ratings on a recall diary to a recall question in a sample of patients with Crohn’s disease (CD). Ecological Momentary Assessment (EMA) uses diaries to assess momentary questions multiple times per day over several days. While EMA protocols are more demanding they may reduce recall bias and give clinicians/researchers a more accurate picture of patients’ daily lives. Fifty participants with CD were randomly assigned to 1 of 3 diary groups: EMA with an electronic diary (EMA_ED), EOD_PD, or End of Day with a paper diary (EOD_ED). Results indicated that women with high levels of healthy dependency demonstrated increases in SBP (p < .05). Similarly, women with low levels of healthy dependence (RPT) demonstrated increases in SBP and DBP (ps < .05) from baseline during the viewing of the film clip, whereas women with high levels of healthy dependence demonstrated no significant changes. These findings suggest that interpersonal dependence have both, positive and negative aspects that in turn have physiological implications.

Gastrointestinal

181) Abstract 1412
ARE DIAGNOSTIC AND EMPIRICAL ESOPHAGEAL PROCEDURES STRESSFUL?
Kathrin A. Suárez-Hitz, lic.phil., Ulrike Ehler, Professor, Clinical Psychology and Psychotherapy, University of Zurich, Zürich, Switzerland, Radu Tutuian, PD, Michael Fried, Professor, Daniel Pohl, Gastroenterology and Hepatology, University Hospital Zurich, Zurich, Switzerland
Background: A variety of common esophageal procedures are considered to be minimally invasive. So far there is no accurate information on the psychobiological stress response induced by high resolution manometry, barostat testing and pH-reflux monitoring. Aims: Evaluation of the psychobiological stress response of healthy volunteers to a battery of esophageal procedures. Test if an additional psychological stressor produces a different stress response. Methods: 20 healthy male volunteers (18-45 years) underwent during one afternoon blood sampling over a period of 165 min (baseline condition). Matched esophageal diaries (EMA_ED) on two additional afternoons during which the volunteers took part in (1) high resolution manometry (HRM), (2) esophageal balloon distensions using barostat, (3) impedance-pH monitoring after consuming a refluxogenic meal. Subjects were randomly assigned to undergo these tests under neutral conditions or after a psychosocial stress test. To evaluate individual stress response, serum cortisol levels and psychological ratings were measured. Results: At baseline average cortisol level was 70.29 ng/ml. Esophageal measurements alone significantly increased (p<0.01) cortisol levels (105 ± 43ng/ml) while the combination of esophageal measurements + TSST increased cortisol levels to 131 ± 55 ng/ml. The difference between the two intervention afternoons did not reach statistical significance. Cortisol levels rose after each esophageal intubation although the increase relative to the baseline
declined over time. Subjective psychological ratings showed no differences between the two study-days. Results were calculated with ANOVA for repeated measures and t-tests for dependent samples (SPSS 14). Summary/Conclusions: Common esophageal procedures induce significant psychobiological stress responses in healthy volunteers. The additional psychosocial stressor enhances cortisol secretion, however the difference between the two interventions, does not reach statistically significance. The observed decline of maximal cortisol response during successive esophageal intubations, suggests a habituation to unpleasant stimuli over the time.

182) Abstract 1306
IMPACT OF PATIENT-PHYSICIAN DISCORDANCE ON RECEIPT OF A COLORECTAL CANCER SCREENING REFERRAL
Maïda J. Sewitch, Ph.D., Medicine, McGill University, Montreal, Quebec, Canada, Caroline Fournier, MSc, Clinical Epidemiology, McGill University Health Center, Montreal, Quebec, Canada
Purpose. Patient-physician communication may affect health outcomes. We aimed to assess the relationship between patient-physician discordance and receipt of a colorectal cancer (CRC) screening referral. Discordance measures the difference between patient and physician perceptions of the clinical encounter.
Methods. A prospective study was conducted of primary care physicians and their patients (aged 50-80 years, without past/current CRC). Discordance was assessed using the Patient-Physician Discordance Scale; patients and physicians provided independent ratings of 10 health-related items immediately following an index office visit. Higher scores reflect greater discordance. The outcome, receipt of a CRC screening referral, was assessed after the index office visit by a physician questionnaire, and included referral for one of either: fecal occult blood test (FOBT), colonoscopy, double contrast barium enema (DCBE) or flexible sigmoidoscopy (FS). Matched on modality was defined as receipt of a referral for either the screening modality of preference or having no modality preference. Results. In total, 43 physicians and 605 patients participated. Of these, 203 (34%) patients received a CRC screening referral (46% FOBT; 53% colonoscopy; 5% DCBE; 57% FS) matched on modality. Patients who received a CRC screening referral had lower mean discordance compared to those who did not receive a screening referral (0.59 vs. 0.68, p=0.0014). Generalized estimating equations regression revealed that greater discordance was associated with a lower likelihood of receiving a CRC screening referral (OR=0.36; 95% CI=0.19-0.71). Among patients who received a CRC screening referral, those matched on modality had lower mean discordance compared to patients not matched on modality (0.55 vs. 0.68, p=0.0046). Conclusions. Improved patient-physician communication may lower discordance and boost physician CRC screening referrals. Findings advocate for shared decision making in CRC screening.

183) Abstract 1413
THE CYTOPROTECTIVE AND ANTISECRETORY EFFECTS OF LIPIN ON GASTRIC PARIETAL CELLS UNDER STRESS-INDUCED ULCER STOMACH
Evgeniya A. Strotska, post-graduate, Biochemistry, Biological faculty, Ludmila I. Ostapchenko, professor, Biochemistry, Biological Faculty, Taras Shevchenko National University, Kyiv, Ukraine
Stress ulcers are common complications of severe brain trauma and psychogenic stress in clinical practice. It is commonly accepted that gastric acid secretion plays a critical role in the pathogenesis and healing of ulcer disease. Gastric acidification is mediated by H+,K+-ATPase, which is an integral protein of parietal cell apical membranes. However, modern acid blockers don't have membrane-protective effects during the healing process of stress-induced ulceration. In the present study, we investigated the influence of Ukrainian preparation Lipin, which has an active ingredient - phosphatidylcholin, on H+,K+-ATPase activity in the gastric parietal cell membranes of rats. Experimental models of stress-induced stomach ulcers were performed using immobilization stress. Animals were divided into 3 groups: 1) control group, 2) animals with stress-induced ulcers, 3) animals with stress ulcers and treatment with Lipin. The Lipin was administrated intraperitoneally in doses of 15 mg/ml within 7 days twice per day. H+,K+-ATPase-containing membranes were prepared from the rats’ gastric parietal cells by sucrose gradient centrifugation. H+,K+-ATPase activity was measured using standard enzymatic methods. The significance was calculated using STATISTICA 5.0, with p set at 0.05. The results showed that the H+,K+-ATPase activity of parietal cells essentially increased 4-fold in the stress group compared to the control group. The treatment by Lipin in rats caused a 2.8 fold decrease of enzyme activity compared to the ulcer group. These results suggest that Lipin improves the restoration of the morphofunctional properties of gastric parietal cell membranes induced by stress ulceration. Lipin resulted in the relative normalization of acid secretion in parietal cells in ulcer disease. This data demonstrated that the Ukrainian preparation of Lipin can be used in the treatment of gastric ulcer.

184) Abstract 1428
MEASUREMENT OF GASTRIC H+,K+-ATPASE ACTIVITIES IN PATIENTS WITH OR WITHOUT HELICOBACTER PYLORI-ASSOCIATED DUODENAL ULCER IN ACUTE AND REMISSION OF DISEASE
Tatiana I. Galenova, student, Biochemistry, Taras Shevchenko National University, Kyiv, student, Ukraine, Evgeniya A. Strotska, post-graduate, Biochemistry, Taras Shevchenko National University, Kyiv, post-graduate, Ukraine, Ludmila I. Ostapchenko, Professor, Biochemistry, Taras Shevchenko National University, Kyiv, Dean of Biological faculty, Ukraine, Mariana S. Romanenko, post-graduate, Gastroenterology, Ukraine Institute of Gerontology AMSU, Kyiv, Doctor, Ukraine
Helicobacter pylori (H. pylori) infection could potentially lead to duodenal or gastric ulcer disease. Despite the fact that, chronic H. pylori infection stimulates acid secretion, role infection with H. pylori in gastric acid secretion of patients with duodenal ulcer disease remains controversial. Gastric acidification is mediated by H+,K+-ATPase, an integral protein of parietal cell apical membranes. In this connection, aim of the research was to study role of H. pylori infection in activity of the H+,K+-ATPase in patients with or without H. pylori associated duodenal localization of ulcerous defect in acute and remission of disease. The investigation was carried out in gastric fundus biopsy materials, isolated from patients with Helicobacter pylori-associated (H.pylori-positive group) and without H. pylori infection duodenal ulcer (H.pylori-negative group) 22 patients (15 female: 7 male; 7 patients matched on modality) were examined. The diagnosis was verified by fibrogastrroduodenoscopy. H. pylori status was assessed by urease test and histology. H+,K+-ATPase activity was measured using standard enzymatic method. In the present study, we found that activity level of gastric H+,K+-ATPase in H.pylori-positive group was higher (1.3-fold) than that in H.pylori-negative group patients with duodenal ulcer in acute stage of disease. Also, similar difference was observed in patients with duodenal ulcer in remission stage of disease. These results suggest, that gastric H+,K+-ATPase activities are associated slightly with H. pylori infection in patients with duodenal ulcer.

185) Abstract 1429
INDIVIDUAL DIFFERENCES IN WORK OVERLOAD PREDICT THE RESPONSE OF THE ROSTRAL ANTERIOR CINGULATE CORTEX TO ACUTE INTEROCEPTIVE STRESSOR
Satoshi Watanahe, Ph.D., Motoyori Kanazawa, M.D., Ph.D., Takahiro Terui, M.D., Hirotaoka Mine, M.S., Toyohiro Hamaguchi, Ph.D., Behavioral Medicine, Kazushiko Yanai, M.D., Ph.D., Pharmacology, Masatoishi Inoh, M.D., Ph.D., Cyclotron and Radiosotope Center, Shigeru Sakudo, M.D., Ph.D., Behavioral Medicine, Tohoku University, Sendai, Japan
Work overload has emerged as a major psychosocial influence on physical and mental health over recent decades. Chronic work overload can have long-lasting consequences on the brain dysfunction and behavior. We hypothesized that individual differences in daily workload would be associated with increased activation in the specific brain regions induced by interoceptive stressor. Subjects were 24 individuals (10 males and 14 females) without any organic diseases. Among them, 14 had no gastrointestinal symptoms and 10 met Rome III criteria of irritable bowel syndrome. Chronic work overload was measured with Job Contents Questionnaire (Karasek R et al., 1990). A barostat bag was inserted in the rectum and intermittently inflated with 0, 20, or 40 mmHg at random for 80 seconds. H215O positron emission tomography of the brain was performed. Changes in regional cerebral blood flow (rCBF) were analyzed using statistical parametric mapping.
After controlling for other individual difference measures, job strain score were positively correlated with rCBF in greater widespread rostral anterior cingulate cortex (rACC) (p < .001, uncorrected) and lateral orbitofrontal cortex (p < .001, uncorrected) during acute rectal distention, compared with the non-distention condition. On the other hand, job strain score negatively correlated with rCBF in the right precuneus (p < .001, uncorrected). These findings suggest that ACC and the other association cortices may be the key components of physical and/or mental disorders induced by work overload.

186) Abstract 1445
INFLUENCE OF STRESS ON THE PROTEIN KINASES ACTIVITY IN DIFFERENT FRACTIONS OF GASTRIC MUCOSA DURING THE ULCERATION
Iaroslav Rudenko,, Viktoria Kovalyova, PhD, Larisa Gavrish, PhD, Ludmila Ostapchenko, PhD, Biology, National Taras Shevchenko University of Kyiv, Kyiv, Ukraine.
One of the most relevant problems in modern biochemistry in the gastroenterology branch is exploration of biochemical features of stomach ulcer. Stomach ulcer is one of the most common digestive apparatus diseases in every country in the world. In spite of more than a century of exploration, causes and mechanisms of this disease are still poorly understood. Frequent stress is argued to play the key role in the development of ulcers. The goal of our work was to explore possible molecular mechanisms of this disease by exploring changes in protein kinase system in plasma membranes and cytosol of gastric mucosal cells. To induce ulceration, we used social immobilizing stress (Groisman, Carevina). Cyclonucleotide-, calcium-, and phospholipid-dependent protein kinase activity was evaluated by insertion of phosphorus radioactive isotopes in H2B histone. Tyrosine protein kinase activity was evaluated by insertion of radioactive phosphorus in angiotensin II. Radioactivity was evaluated in tolune scintillator on counter Delta-300 (USA). Our results show that the activity of all explored protein kinases in plasma membrane fractions is increased under ulceration. In cytosol, there was no significant change in the activity of cyclonucleotide-, calcium-, and phospholipid-dependent protein kinases compared to control. Tyrosine protein kinase activity in this region of gastric mucosal cells was increased. Increased activity of tyrosine protein kinase causes a misbalance in the normal cell growth system, which may cause their transformation or apoptosis. Thus, violations in the interaction between EGF and its membrane receptors may occur. This may result in further inflammation, may cause damaging of the cells, and may lead to a disruption in the regulation of gastric mucosa regeneration. Results of this study show that protein kinases are involved in metabolic pathways and signal transduction cascades that are used during the ulceration process under stress. Violations in these pathways may lead to development of this pathology.

187) Abstract 1195
COMPARISON OF NEUROPSYCHIATRIC MEASURES DURING TREATMENT WITH PEGYLATED INTERFERON ALFA-2A OR ALFA-2B IN VETERANS WITH CHRONIC HEPATITIS C
Amy Webb, MD, Isela Poy, MD, Olga Ali, PA-C, Anastacio Hoyumpa, MD, Gastroenterology, Robin Hilseback, Ph.D., Paul Ingmundson, Ph.D., Anna Dematatis, Ph.D., Geoffrey Hutchinson, Ph.D., Kenneth Major, ph, Emma Mata-Galan, Ph.D., Psychology, Shuko Lee,, Laurel Copeland, Ph.D., VERDICT Research and Development, Angela Casas,, Shawn Chan,, Marcus Javier Pedreño, Stephen Stein, PhD, Psychiatry, South Texas Veterans Healthcare System, San Antonio, TX
Peginterferon (PI) alfa and ribavirin effectively treat chronic hepatitis C (HCV) but can cause depression, cognitive impairment, fatigue, and sleep disturbance. Our goal was to compare rates of these side effects for the two types of PI alfa in 72 veterans aged 42-64 treated for HCV. Patients in this VHA-funded study were begun on ribavirin and PI alfa-2a (2a) (n=35) or PI alfa-2b (2b) (n=37) and reassessed 1, 3, and 6 months later. They received standard care for any neuropsychiatric or physical symptoms. Primary measures were the Center for Epidemiologic Studies Depression Scale (CES-D), Automated Neuropsychological Assessment Metrics (ANAM) to assess cognitive function, Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF), and Pittsburgh Sleep Quality Index (PSQI). Statistical analysis included repeated measures analysis. At baseline there was no difference between the 2a and 2b groups on any of the above measures, age, sex, race, education, stage of hepatic fibrosis, or viral genotype. Over the first 3 months of treatment there was less of an increase in CES-D scores in the 2a (12.9 to 15.1) than the 2b group (17.1 to 26.3) (p < .001) and less of an increase on the emotional (depression and anxiety) subscale of the MFSI-SF (2a: 3.50 to 3.94; 2b: 5.22 to 8.68), p < .01. Throughout the study there was no difference between the groups in the other MFSI-SF subscales, ANAM, PSQI, or viral response. In conclusion, use of 2a may be associated with less of an increase in depressive symptoms than 2b early in hepatitis C treatment, which might make 2a a better choice for patients at greater risk of depression.

188) Abstract 1508
ADAPTIVE AND MALADAPTIVE COPING STRATEGIES FOR THE MANAGEMENT OF VESTION-INDUCED NAUSEA AND MOTION SICKNESS
Max E. Levine, PhD, Psychology, Siena College, Loudonville, NY, Robert M. Stern, PhD, Psychology, Penn State University, University Park, PA, Kenneth L. Koch, MD, Internal Medicine/Gastroenterology, Wake Forest University School of Medicine, Winston-Salem, NC
Effective adjustment to stress, including stimulation that provokes nausea and motion sickness, requires an appropriate coping response. Depending on the stressor involved, stimulus-focused or emotion-focused coping may be more adaptive for an individual to employ. Problem-focused coping consists of directly engaging the source of the stress to reduce its threatening qualities, and is presumed to be more adaptive for controllable stressors. Emotion-focused coping involves dealing with the emotional consequences of enduring a stressful situation, and is allegedly a better choice for passive stressors. Given that exposure to nauseogenic stimulation can represent a form of passive stress, emotion-focused coping strategies should presumably facilitate the management of nausea and motion sickness. Relationships between the employment of various coping strategies and the development of nausea and motion sickness were explored. Subjective symptoms of motion sickness (SSMS) and electrocogato&gs were obtained from 75 participants exposed to a rotating optokinetic drum. Participants completed the COPE scale. Increased subjective nausea and motion sickness were observed. Significant positive relationships were observed between SSMS scores and active coping (p<.001), planning (p<.001), suppression of competing activities (p<.01), and restraint coping (p<.01). Each of these strategies is considered to be problem-focused. A significant negative relationship was observed between SSMS scores and acceptance (p<.001), which is considered to be an emotion-focused strategy. The development of gastric tachyarrhythmia, abnormal activity of the stomach that normally accompanies nausea, and motion sickness, requires an appropriate coping response. The employment of several problem-focused coping strategies was accompanied by the development of more severe symptoms of nausea and motion sickness and gastric dysrhythmia, while the use of an emotion-focused strategy was associated with less severe symptoms during exposure to the rotating drum. These results could have implications for patients coping with unmanageable medical conditions.

189) Abstract 1159
PSYCHIATRIC OUTCOMES IN A RESIDENT-RUN MULTIDISCIPLINARY HEPATITIS C CLINIC
Nicole M. Agostino, DO, Internal Medicine, Edward R. Norris, MD, Psychiatry, Joseph L. Yozviak,, Charles M. Brooks, MD, Eric J. Gartner, MD, Internal Medicine, Michael W. Kaufmann, MD, Psychiatry, Lehigh Valley Hospital and Health Network, Allentown, PA
In this study, we evaluate the effects of peginterferon-alpha 2a (IFN) on the course of psychiatric illness in Hepatitis C virus (HCV) positive patients with established psychiatric diagnoses.

Internal medicine residents in the HCV clinic are precepted by an attending gastroenterologist and psychiatrist and are supported by a registered nurse coordinator. Treatment for HCV with IFN and ribavirin is guided by evidence-based protocols within the confines of managed care formularies. A retrospective chart review was performed.

Twenty-one HCV patients had significant psychiatric diagnoses which included 7 with Major Depressive Disorder, 3 with Bipolar Disorder, 3 with Generalized Anxiety Disorder, 3 with Schizophrenia and 4 with...
Schizoaffective Disorder. Twelve had co-morbid substance abuse disorders. One patient had a substance abuse disorder as his/her only diagnosis. Throughout treatment with IFN, all patients were maintained on their psychiatric medications. Rarely, these medications were adjusted. Two patients needed an increase in their antidepressant dose, 3 patients needed antidepressant medication added to their regimen, and 16 had no changes in their antidepressants. Three patients needed addition and addition of a mood stabilizing/antipsychotic medication, and 18 patient required no addition of mood stabilizing/antipsychotic medication. One patient had an increase in his anti-anxiety medication, while 20 had no change in their anti-anxiety medication. One patient had a psychiatric hospitalization due to bizarre behavior after taking a combination of narcotics and benzodiazepines, but IFN treatment was not discontinued.

Treatment was discontinued in 1 patient who became homeless, had an ulcerative colitis flare, relapsed on polysubstance abuse, and had suicidal ideations.

During treatment of under/uninsured patients with HCV via a resident-run multidisciplinary clinic, there were no significant changes in psychiatric symptoms in 20 of 21 patients with prior psychiatric diagnosis who underwent treatment with IFN. An integrative clinic can safely manage psychiatric co-morbidities and IFN treatment to expand access to care.

190) Abstract 1108
RELATIONSHIP BETWEEN COGNITIVE APPRAISALS, EMOTIONS, AND ABDOMINAL SYMPTOMS IN INDIVIDUALS WITH IRRITABLE BOWEL SYNDROME
Naogisa Sugaya, Graduate school of human sciences, Waseda University, Tokorozawa, Saitama, Japan, Shinobu Nomura, Faculty of Human Sciences, Waseda University, Tokorozawa, Saitama, Japan.

We conducted a study of the relationships between cognitive appraisal of irritable bowel syndrome (IBS) symptoms and negative mood for the subtypes of IBS. The participants were 1087 college students who completed a questionnaire that included the Rome II Modular Questionnaire, Cognitive Appraisal Rating Scale, 4 subscales: coping, appraisal of effect, and controllability, and the Hospital Anxiety and Depression Scale. The participants included 206 individuals with IBS; 61 had diarrhea-predominant IBS (IBSD) and 45 had constipation-predominant IBS (IBSC). The IBSD and IBSC groups each had significantly higher scores for anxiety (p<0.001, ANOVA). There were no significant differences between the IBSD and IBSC groups in the cognitive appraisal of IBS symptoms (t-test). For the IBGD group, anxiety was significantly positively correlated with commitment, effect, and threat, and depression was significantly negatively correlated with controllability (p<0.05, Pearson’s product-moment correlation coefficient). Multiple regression analyses with abdominal symptoms as dependent variables and cognitive appraisals as independent variables showed that for the IBGD group, abdominal pain was significantly positively correlated with commitment (p<0.001), and abdominal discomfort was significantly positively correlated with effect (p=0.001) and threat (p<0.01). For the IBSC group, abdominal pain (p=0.01) and hard stool (p=0.05) were significantly positively correlated with commitment, and abdominal discomfort was significantly positively correlated with effect (p<0.001) and threat (p<0.01). IBSD and IBSC are both associated with high anxiety. For the IBSD, anxiety was associated with cognitive appraisals, but this association was not found for the IBSC. These groups did not differ in their associated cognitive appraisals, and are similar in terms of the positive relationships between abdominal pain and discomfort and the cognitive appraisals of coping.

191) Abstract 1561
VERY LOW CARBOHYDRATE DIET LEADS TO CLINICALLY AND STATISTICALLY SIGNIFICANT ABDOMINAL PAIN REDUCTION IN PATIENTS WITH DIARRHEA PREDOMINANT - IBS
Stephan R. Weinland, Ph.D., Department of Medicine, UNC Center for Functional GI & Motility Disorders, Chapel Hill, NC, Gregory Austin, MD, MPH, Gastroenterology and Hepatology, University of Colorado Health Sciences Center, Denver, CO, Carolyn B. Morris, MS, UNC Center for Functional GI & Motility Disorders, UNC Chapel Hill, Chapel Hill, NC, Duane Webb, MD, Gastroenterology & Hepatology, The Vancouver Clinic, Vancouver, WA, Eric C. Westman, MD, William Yancy, MD, General Internal Medicine, Duke University, Durham, NC, Christine B. Dalton, PAC, Department of Medicine, UNC Center for Functional GI & Motility Disorders, Chapel Hill, NC, Robin C. Spiller, MD, Wolfson Digestive Diseases Centre, Nottingham University Hospital, Nottingham, England, United Kingdom, Jane M. Hankins, MA, Kim B. Meyer, BS, Douglas A. Drossman, MD, Department of Medicine, UNC Center for Functional GI & Motility Disorders, Chapel Hill, NC.

Participants with irritable bowel syndrome - diarrhea predominant (n=17) entered an open label prospective pilot study looking at the effect of a very low carbohydrate diet ( Atkins Diet) on their symptoms. Participants ate a predetermined normal carbohydrate diet for the first two weeks, followed by a very low carbohydrate diet for four weeks. Pain was measured throughout the study via daily diary card VAS assessment, and treatment efficacy was measured via TEQ. Repeated measures analysis of variance was performed on weekly average pain ratings by study participants. All participants who completed the study (n=14) reported a positive treatment response. Abdominal pain ratings decreased significantly from 23.37±2.96 to 7.48 ± 3.11 (0-100 range)(t = 4.95, p<.0001) by the second week of the very low carbohydrate diet and remained low for the remainder of the time on the diet. Quality of life improved clinically and statistically with pain predicting 73% of variance in QOL, and without effect with improvement in stool frequency or stool consistency. These data suggest that patients who are experiencing symptoms of abdominal pain associated with IBS-D could experience significant reduction in pain symptoms and improvement in quality of life after following a very low carbohydrate diet for as little as two weeks.
193) Abstract 1189
MODERATING EFFECTS OF SOCIAL SUPPORT ON SEROSTATUS DISCLOSURE TO FAMILY MEMBERS AND STRESS AND DISTRESS IN HIV+ MINORITY WOMEN
Erin Fekete, PhD, Michael Antoni, PhD, University of Miami, Coral Gables, FL, Ron Duran, PhD, Alliant International University, Los Angeles, Alhambra, CA, Brenda Stoelb, PhD, University of Washington, Seattle, WA, Mathendra Kumar, PhD, University of Miami, Miami, Florida, Neil Schneiderman, PhD, University of Miami, Coral Gables, FL.
HIV serostatus disclosure is a stressful interpersonal event, but perceptions of a supportive family environment may buffer the experience. We hypothesized that social support would moderate the relationship between serostatus disclosure and objective stress (24-h urinary cortisol) and subjective distress (depressed mood) in 84 HIV+ women. Women (88.0% non-Hispanic Black) were on average 38.6 years of age and had been HIV-positive for 7.7 years. Self-report measures assessed the percentage of family members women had disclosed their serostatus to, perceived HIV-related social support from family members, and depressive symptoms. Cortisol was measured via 24-hour urinary collection using radioimmunoassay. Regressions revealed that serostatus disclosure to mothers and children explained lower cortisol levels (B = -.31, p < .05 for mothers; B = -.32, p < .05 for children), but disclosure did not explain depressed mood. Additionally, serostatus disclosure to mothers interacted with support to explain cortisol levels (B = -.28, p < .05) and depressed mood (B = -.30, p < .05). At high levels of support, disclosure to mothers explained lower cortisol levels (t(60) = -4.41, p < .05) and at low levels of support, disclosure to mothers explained higher depressed mood (t(60) = 5.84, p < .05). Disclosure to children also interacted with support to explain depressed mood (B = -.26, p < .05); however, disclosure to children explained higher, rather than lower, depressed mood at high levels of support (t(67) = 2.39, p < .05). Results suggest that the effects of serostatus disclosure on stress and distress are dependent, in part, on the social context in which disclosure occurs.

194) Abstract 1185
EFFECTS OF DEPRESSIVE SYMPTOMS ON ADHERENCE TO ANTI-RETROVIRAL (ARV) AND PSYCHOTROPIC MEDICATION AMONG HIV-POSITIVE MEN AND WOMEN
Dean G. Cruess, PhD, Seth C. Kalichman, PhD, Psychology, University of Connecticut, Storrs, Connecticut
Purpose of study: The primary aims were to examine the association between adherence to anti-retroviral (ARV) and psychotropic medication among a community sample of HIV-positive men and women and to examine how depressive symptoms might impact ARV and psychotropic medication adherence behaviors.

Subject sample and statement of methods: We screened 246 HIV-positive participants in-person via computerized assessment, of which 180 (73.2%) were men and 66 (26.8%) were women. The average age was 43.99 (SD = 6.95) years. The majority of the sample (219 or 89.0%) was African-American. Self-reported CD4 cell counts averaged 429.63 (SD = 292.07) cells/mm3 and 88 (35.8%) reported a detectable viral load. We were able to contact 192 (78.05%) participants during the subsequent three months to conduct monthly follow-up evaluations of depression using the Center for Epidemiological Studies-Depression (CES-D) scale and medication adherence using unannounced, phone-based participant pill counts.

Summary of results: The average ARV and psychotropic medication adherence rates were 83% (SD = 0.22) and 75% (SD = 0.24) pills taken, respectively. Adherence to psychotropic medications was significantly lower than adherence to ARV medication (t = -3.48, p = .001). There was also a significant association between adherence to ARV and psychotropic medication (ß = 0.61, p < .0001) among the 81 individuals with both ARV and psychotropic adherence data. The mean CES-D score across the three-month period was 17.09 (SD = 5.84). There was a significant inverse association between mean CES-D score and mean adherence to ARV medication (ß = -0.20, n = 169, p = .008) and mean adherence to psychotropic medication (ß = -0.20, n = 96, p = .046). These results demonstrate that a sizeable number of HIV-positive individuals are also prescribed psychotropic medications in addition to ARV medications, and that adherence rates to both classes of medication are related. Furthermore, depressive symptoms seem to impact both ARV and psychotropic medication adherence rates which suggests that interventions to enhance adherence to ARV medications should consider both the impact of depressive symptoms and the concurrent use of psychotropic medications.

195) Abstract 1058
PREDICTING NON-ADHERENCE TO HIV MEDICATIONS: THE ROLE OF STRESSFUL LIFE EVENTS
Jane Leserman, PhD, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, Gail Ironson, MD, Psychology, University of Miami, Coral Gables, FL, Conall O’Cleirigh, PhD, Psychiatry, Harvard Medical School, Boston, MA, Joanne Fordiani, PhD, Psychology, University of Miami, Coral Gables, FL.
Despite simplified medication regimens, adherence to HIV therapies continues to be problematic; non-adherence leads to drug resistance and clinical progression of disease. The current study examines how recent stressful events, depression and health habits are related to non-adherence of antiretroviral medications. We gathered cross-sectional data on 105 HIV seropositive men and women in a south Florida metropolitan area. Most were minorities (82%), 61% were males, about half had a high school education or less, and the mean age was 44. In the group as a whole, 45% skipped their medications in the past two weeks, and 22% missed a dose in the previous weekend. Logistic regression prediction models showed that having recent stressors having recent stressful events had greater risk of skipping their medications in the past two weeks (OR=1.36, CI1.12-1.64, p<.002), and the previous weekend (OR=1.51, CI=1.19-1.91, p=.0007). For every 3-point (median) increase in stress, the risk of non-adherence in the past two weeks was increased 2.5 times. Fully, 86.7% of those with six or more stressors were non-adherent during the prior two-weeks compared to 22.8% of those with no stressors. The regression analyses controlled for demographic and health behavior variables related to the adherence measures (e.g., being gay, age, smoking). Depressive symptoms, alcohol consumption and illicit drug use were significantly related to non-adherence in bivariate analyses (p<.05), but they became non-significant when number of stressors was in the models. These findings lend credence to considering cognitive behavioral interventions that address issues of stress and coping as an adjunct treatment for patients who are non-adherent with their medication regimens. Screening for stressful events and providing appropriate referrals need to be part of standard HIV care.

196) Abstract 1652
DOES SELF ESTEEM ADD TO OR BUFFER THE EFFECTS OF LIFE EVENTS ON MOOD, BEHAVIORS, AND SYMPTOMS IN HIV?
Elizabeth Balbin, MA, Gail Ironson, MD, PhD, Neil Schneiderman, PhD, Psychology, Behavioral Medicine, University of Miami, Coral Gables, FL.
Stressful Life Events have played a central role in the investigation of the relationship between psychosocial variables and health in HIV. The purpose of this study was to investigate whether self esteem would add to these relationships. Variables measured included Sarason's Life Events, the Rosenberg Self Esteem Scale, psychological health (the Beck Depression Inventory, the Beck Hopelessness Scale), health behaviors (adherence via the ACTG, cocaine use via questionnaire), and health (category B symptoms over 6 months). The sample were 104 HIV positive subjects (28% women) with diverse ethnic backgrounds. Results: Stressful Life Events were significantly related to higher depression (ß = .44**, less hopelessness (ß = .30**), more missed doses of antiretroviral medication (ß = .17*), and more Category B symptoms over the subsequent six months (ß = .21*). Higher self-esteem was significantly related to lower depression (ß = -.40**, less hopelessness (ß = -.43**), less cocaine use (ß = -.26**), fewer missed doses (ß = -.23*), and fewer symptoms (ß = -.16*). Regression analysis showed that self esteem added over and above life events in the prediction of depression (ß = .385, p<.01), hopelessness (ß = -.428, p<.01), cocaine use (ß = -.214, p<.04), and adherence (ß = .210, p<.05), but not in the prediction of symptoms. However, self esteem did moderate/buffer the effect of Life Events on symptoms (cross-products term ß = .215, p = .03). Conclusion: Self-esteem may be a useful adjunct to measuring Life Events in stress-health relationships.
197) Abstract 1642
DYSREGULATED IL-6 AND MIP-1 ALPHA PRODUCTION ARE ASSOCIATED WITH TYPE C (MALADAPTIVE) COPING IN HIV-INFECTED OUTPATIENTS
Lydia R. Temoshok, Ph.D., Rebecca L. Wald, Ph.D., Alfredo Garzino-Demo, Ph.D., Institute of Human Virology, University of Maryland School of Medicine, Baltimore, MD; James A. Wiley, Ph.D., Health Policy Institute, San Francisco State University, San Francisco, CA
Our 2002 finding, that HIV progression at 6 and 12 months was significantly predicted by higher baseline Type C coping in 102 asymptomatic HIV patients with CD4 counts <500, suggested our current longitudinal investigation into potential mediating mechanisms. We hypothesized that Type C coping, which allows unrecognized emotions and underlying depression to remain as chronic stressors, may be mediated by (a) lower production of the HIV inhibiting β-chemokines MIP-1α/β that block HIV cell entry via the co-receptor CCR5 (previously reported); and (b) enhanced production of proinflammatory cytokines, particularly interleukin-6 (IL-6), which amplifies immune activation implicated in HIV pathogenesis. Participants were 200 HIV+ outpatients (92% African-American, 53% male, mean age 45). Type C Coping was assessed by the Vignette Similarity Rating Method. In vitro production of IL-6 and MIP-1α/β and was measured in response to Candida, PHA, and HIV p24. Supernatants were collected on days 3 and 6 and assayed by ELISA. A Stimulation Index (SI) was defined as antigen-stimulated chemokine/IL-6 production compared to unstimulated controls. At baseline, controlling for CD4+ cell count, stronger Type C coping was significantly related to the IL-6 SI to Candida (r=.199, p<.01), and PHA (r=.188, p<.01), with a trend for p24 (r=.13, p=.079). When Type C, IL-6 SI, and MIP-1 SI to HIV p24 (the most relevant antigen) are dichotomized at respective medians and depicted by "the most favorable" (anti-HIV) immunologic (high MIP-1α and low IL-6) had the most participants with high Type C scores, while the "most unfavorable" combination (low MIP-1α and high IL-6) had the most participants with high Type C scores (F(172,175) =2.21, p=.089). Findings suggest that the chronic stress sustained by Type C coping results in immune dysregulation, allowing enhanced production of IL-6 and corresponding restraints on MIP-1α production, a synergistic combination that promotes HIV progression.

198) Abstract 1764
PTSD SYMPTOM SEVERITY IS RELATED TO FUNCTIONAL HEALTH STATUS AND HEALTH CARE UTILIZATION IN HIV-INFECTED MEN WHO HAVE SEX WITH MEN
Consortium of Clinics of Excellence in HIV/AIDS Research, Fenway Institute/MGH/Harvard Medical School, Boston, MA; Kenneth Mayer, M.D., Medicine, Brown School of Medicine/Fenway Institute, Boston, MA; Charles Covehay, B.A., Chris Grasso, MPH, Rodney Vanderwarker, B.A., Research, Fenway Institute, Boston, MA; Steven Safran, Ph.D., Psychiatry, Fenway Institute/MGH/Harvard Medical School, Boston, MA
Life event stress and trauma have been related to functional health status and health care utilization in patients with HIV in the rural South (Leserman et al 2005). The purpose of this study was to examine these relationships in an urban sample of relatively healthy HIV-infected MSM. 410 MSM screened for a HIV prevention study completed psychosocial assessments (ie, health related QOL (ACTG QOL Survey), PTSD symptoms (SPAN)). Medical visits (6 mths), CD4 and HIV viral load (VL) values were extracted from the medical record. Associations were assessed via linear regression models controlling for ART, CD4 cells and VL. Outcomes were composites of general health, and pain, activity, and work related impairments. The mean age was 41.9 years (sd = 8.32) and the sample was 75% Caucasian. More than 90% had graduated high school. Mean time since HIV diagnosis was 8.9 years (sd = 6.4). Mean estimates of CD4 cells (mean = 530; sd = 385) VL (mean 13,708; sd = 45,880) and general health (68.84; sd = 19.10) identified the sample as relatively healthy. Similarly, mean estimates of impairment were all low. Results indicated that the covariates CD4 number, log VL and ART accounted for significant variation in general health (R2 = .06, F (3, 403) = 8.59, p <.001). PTSD symptom severity accounted for more variation in health status outcomes than ART, CD4 and VL combined, including general health (R2 = .09, F Change (2, 401)= 21.74, p<.001), and impairment related to pain (R2 = .09, F(2, 401)=19.34, p<.001) and activity (R2 = .08, F(2, 401)= 17.36, p<.001). PTSD symptom severity also accounted for significant variation in health care utilization (R2 = .03, F Change (2, 401)= 6.85, p=.001), and ART and disease progression markers (R2 > .05). These results suggest that PTSD symptom severity is associated with poorer health related quality of life and greater health care utilization over and above the impact of HIV disease stage and treatment. These results provide important support for previous findings and do so in an urban sample of healthier HIV-infected MSM. These results suggest that an assessment of patients trauma history and PTSD symptoms may help inform patients reports of their health and impairment and point to the importance of PTSD treatment in this patient group.

199) Abstract 1610
POSITIVE AFFECT AND DEPRESSIVE SYMPTOMS ARE ASSOCIATED WITH DIFFERENT ASPECTS OF THE DIURNAL CORTISOL RHYTHM IN HIV-POSITIVE PERSONS
Adam W. Carrico, Ph.D., Psychiatry, Judith T. Moskowitz, Ph.D., Medicine, Elissa Epel, Ph.D., Psychiatry, Patricia Moran, Ph.D., Medicine, Margaret E. Kemeny, Ph.D., Psychiatry, Susan Folkman, Ph.D., Frederick M. Hecht, M.D., Medicine, University of California - San Francisco, San Francisco, CA
Studies have shown that positive affect independently predicts longevity while depressive symptoms predict more rapid CD4+ T-cell decline in HIV. The current study examined whether positive affect may be partially mediated by cortisol, as higher morning levels have been associated with more rapid progression. We examined the associations of positive affect (PANAS; Alpha = .93), affective symptoms of depression (BDI-Affective; Alpha = .88), and negative affect (PANAS; Alpha = .93) with salivary cortisol in a sample of 28 HIV+ persons. Data were collected at baseline of a randomized controlled trial of mindfulness-based stress reduction. At each time point, participants received kits with instructions to begin saliva sampling 4 days before their next visit. Participants returned and completed measures of affective states during the past week. The majority of participants were Caucasian (64%) gay men (96%). None were on anti-retroviral therapy. The median CD4+ T-cell count was 532 cells/mm3 and the median viral load was 22,545 copies/mL. We examined three measures of day-by-day average cortisol patterns: waking, stimulated (20 minutes after waking minus waking), and evening. Higher positive affect was associated with lower waking (r = - .38, p <.05) but was unrelated to stimulated (r = .22, p >.20) or evening (r = .14, p >.40) cortisol. Positive affect was associated with lower waking cortisol after controlling for affective symptoms of depression (r = -.38, p <.05) and negative affect (r = -.33, p = .10). Greater affective symptoms of depression were associated with decreased stimulated (r = -.38, p <.05), but were unrelated to waking (r = .09, p >.60) or evening (r = -.21, p >.20) cortisol. Negative affect was unrelated to cortisol (p >.20). Findings indicate positive affect is associated with lower waking cortisol while depressive symptoms are related to impaired stimulated cortisol responses after waking. Distinct effects of positive affect and depressive symptoms on cortisol patterns may independently influence HIV disease progression.

200) Abstract 1506
HIV-RELATED FATIGUE: THE ROLE OF TRAUMA, STRESSFUL LIFE EVENTS, AND DEPRESSION
Julie Barroso, PhD, School of Nursing, Brian W. Pence, PhD, Center for Health Policy, Na’ima Salahuddin, MSN, James L. Harmon, MSN, School of Nursing, Duke University, Durham, NC, Jane Leserman, PhD, Psychology, University of North Carolina at Chapel Hill, Chapel Hill, NC
Despite the fact that fatigue is a common and debilitating symptom among HIV-infected persons, we know little about the predictors of fatigue in this population. The goal of this cross-sectional study was to examine the effects of early childhood trauma, recent stressful life events, and depression on intensity and impairment of fatigue in HIV. We studied 128 HIV-infected men and women from one southern state. Fatigue was measured using the Fatigue Impact Scale (FIS), a 22-item measure that assesses fatigue-related (e.g. monthly income, years since diagnosis, CD4 count, HIV viral load, and
antiretroviral therapy), 2) trauma, 3) stressful events, and 4) depression. Men and African-Americans comprised two-thirds of the participants. The median age was 44, and the median education was 12 years. Analyses showed that patients with less income (STB=-0.26, p=.003), more childhood trauma (STB=-0.18, p=.05), more recent stressful events (STB=-0.25, p=.004), and more depressive symptoms (STB=-0.49, p<0.001) had greater fatigue intensity. Findings were virtually identical for fatigue-related impairment. These four variables (income, childhood trauma, stressful events and depression) accounted for 38% of the variance in fatigue intensity and 48% of the variance in fatigue impairment. One SD change in stressful events (equivalent to one severe stress) was associated with one-quarter of a SD increase in fatigue. None of the disease-related variables (e.g., CD4, viral load, antiretroviral use) predicted either fatigue measure. Although stress and trauma have been related to fatigue in other populations, this is the first study to examine the effects of trauma and recent stressful life events on fatigue in an HIV-infected sample. Given that psychosocial variables were more predictive of fatigue than physiological factors, and that people with HIV infection have very high rates of depression and stress, it is important that clinicians inquire about mood and stress in their fatigued patients.

201) Abstract 1551
SYSTOLIC BLOOD PRESSURE RECOVERY FOLLOWING MENTAL STRESS PREDICTS IMMUNE DYSREGULATION IN PERSONS WITH HIV
Stephen J. Synowski, Ph.D., Rebecca L. Wald, Ph.D., Alfredo Garzino-Demo, Ph.D., Lingling Sun, MD, Institute of Human Virology, University of Maryland School of Medicine, Baltimore, Maryland, Shari R. Waldstein, Ph.D., Psychology, University of Maryland Baltimore County, Baltimore, Maryland, Lydia R. Temoshok, Ph.D., Institute of Human Virology, University of Maryland School of Medicine, Baltimore, Maryland
Cardiovascular reactivity (CVR) to, and prolonged recovery from, mental stress have been associated with impaired immune function. In 128 HIV-infected patients enrolled in a longitudinal study of potential mechanisms of HIV progression, baseline analyses revealed that exaggerated CVR and poorer recovery production of the HIV-inhibiting β-chemokines MIP-1α (which block the HIV co-receptor CCR5 and thus, HIV entry into CD4+ T-cells). We hypothesized that these relations would be part of a chronic pattern of psychophysilogic dysregulation. At 6-month follow-up, participants were 95 HIV+ adults (92% African-American, 51% female, mean age 44.5). At baseline, systolic and diastolic blood pressure (SBP, DBP) and heart rate (HR) were monitored during emotion-provoking anger recall and role play tasks; each task was preceded by 10 minutes of rest and followed by 5 minutes of recovery. At 6 month follow-up, in vitro production of MIP-1α/β was assessed as stimulated by the core HIV protein p24. Supragnathants were collected on days 3 and 6, and assays performed by ELISA. Poorer recovery to resting SBP levels following role play (at baseline) predicted decreased 6-month production of MIP-1α (β=-0.21, p<.044, R2=0.74) and MIP-1β (β=-0.26, p<0.016, R2=0.63). Additionally, the relations between SBP reactivity (β=-0.18, p<.093, R2=0.67) and poorer recovery (β=-0.19, p<.079, R2=0.64) following anger recall and decreased MIP-1α production approached statistical significance. In sum, prolonged SBP recovery from mental stress at baseline significantly predicted decreased HIV-specific immune response at 6 month follow-up. These findings are consistent with previous results obtained at baseline, and suggest that a chronic pattern of psychophysiological dysregulation that promotes suppression of anti-HIV β-chemokine production, and thus, may be implicated in HIV progression.

202) Abstract 1541
LACK OF ASSOCIATION BETWEEN ANS MEASURES AND VIRAL LOAD, CD4+ T-CELL COUNT, AND AFFECT IN HIV INFECTION
Niamh E. Jacobs, MD, Psychiatry, Harvard University, Cambridge, MA
Stress and depression in HIV are associated with more rapid disease progression, whereas positive affect is associated with longer survival. Prior studies have shown a correlation between Autonomic Nervous System (ANS) reactivity and viral load. We analyzed baseline data from a clinical trial of Mindfulness Based Stress Reduction in HIV to test whether ANS activity in a resting state was associated with affect, CD4+ T-cell count (CD4), and Viral Load (VL). Participants consisted of persons with HIV who were not on antiretrovirals and had a CD4 count > 250 cells/µl. The sample was primarily male (98%) and Caucasian (63%). Baseline data was obtained prior to randomization. ANS measures were taken during 5 minutes resting. We used Respiratory Sinus Arrhythmia (RSA) as a measure of parasympathetic activity and Pre-Ejection Period (PEP) as a measure of sympathetic activity. Median CD4 and VL were 503 cells/µl and 22.902 copies/mL, respectively. Affect was measured using the Positive and Negative Affect Scale (PANAS) and the Beck Depression Inventory (BDI). Mean positive and negative affect scores were 18.4 (SD=7.3) and 12.4 (SD=8.3), respectively; mean BDI was 8.5 (SD=7). In the first 2 waves of participants (n=46), we found no significant associations between either RSA or PEP and BDI or PANAS (r < 0.2 and p > 0.2 for each association). We also found no association between either RSA or PEP and CD4 (r < 0.20 and p > 0.2 for each association). For VL, the correlation with RSA was not significant (r = -0.19, p > .2), while there was a trend toward significance with PEP (r = 0.26, p=0.09). In contrast to one earlier study which found associations between increased ANS responses to stressful stimuli and VL, we measured ANS at rest. These preliminary results suggest a lack of correlation between affect, CD4+ T-cell count, or VL and ANS measures at rest in this HIV infected population.

203) Abstract 1147
THE COST OF AN ENGAGED LIFE: POSITIVE EMOTIONS AND ALLOSTATIC LOAD
Paula M. Williams, BPsych, Psychology, Macquarie University, Sydney, NSW, Australia
Trait positive emotion contributes to the accumulation of psychological and social resources that promote adaptation to stress, and ameliorate risk for the development of stress-related illnesses such as cardiovascular disease. Research to date has not considered the possibility that the adaptive value of positive emotions may vary according to difference in cardiovascular regulation capacity, and attachment. As attachment is known to influence both the development of hypothalamic-pituitary-adrenal (HPA) axis functioning as well as cognitive biases that support the organisation of personality around particular patterns of discrete emotion experience, both temperament and attachment constructs provide a useful framework for clarifying the relative adaptive value of positive emotions. The present study examined the relationships between Attentional Control, Attachment Anxiety and Avoidance, trait Interest and joy, and Allostatic Load. Forty-four healthy adults (81% female, mean age of 41) completed a demographics questionnaire, the Differential Emotions Scale (DES), the Adult Temperament Questionnaire (ATQ), the Experiences in Close Relationships Inventory (ECR-R), the Positive and Negative Affect Schedule (PANAS), the Alpha Loci (AL) questionnaire, followed by a laboratory session where biological data was collected on ten biomarkers that constitute allostatic load. Individual biomarkers were plasma cortisol, urinary epinephrine and norepinephrine, DHEAs, systolic and diastolic blood pressure, waist-hip ratio, total and HDL cholesterol, and glycosylated haemoglobin. Preliminary analyses indicate that Allostatic Load was unrelated to either Interest or Joy, or Attachment Anxiety and Avoidance, but was positively related to Attentional Control (r = .36, p < .05). Attentional Control was inversely related to Attachment Anxiety (r = -.44, p < .01), unaltered to Attachment Avoidance, and positively associated with interest and Joy (r = .49, p < .01, and r = .30, p = .05 respectively). Only trait Joy was negatively related to Attachment Anxiety (r = -.32, p < .05). Conclude that the relationships between trait positive emotions and the physiological impact of stress are influenced by regulatory capacity in the present data and warrant further investigation.

204) Abstract 1719
INDIVIDUAL DIFFERENCES IN STRESS-RELATED PERSEVERATIVE COGNITION AND PRE-SLEEP AROUSAL
Paula G. Williams, Ph.D., Heather Gunn, M.S., Matthew Cribbet, B.S., Holly Rau, B.S., Psychology, University of Utah, Salt Lake City, UT
Prior research suggests that prolonged cognitive and physiological activation in response to stressors predict adverse mental and physical health outcomes. The current study examined individual differences that may confer vulnerability to stress-related perseverative cognition.
and pre-sleep arousal. The extent to which perseverative cognition mediated individual differences in stress-related increases in pre-sleep arousal was also examined. Seventy young-adults (50% male, 50% female; mean age = 22.7) completed the Social Competence Interview, a well-validated laboratory stress task that involves discussion of a recent personal stressor. Subjective mood ratings and physiological reactivity were recorded throughout the session. The Revised NEO Personality Inventory, the Penn State Worry Questionnaire, the Beck Depression Inventory-II, Beck Anxiety Inventory, and the Pittsburgh Sleep Quality Index, as well as ratings of the prior night sleep and pre-sleep arousal were also obtained. Following the laboratory session, participants completed an online questionnaire at bedtime assessing prolonged cognition and distress regarding the stress task, as well as pre-sleep arousal. Regression analyses indicated that neuroticism (B = .24), trait worry (B = .26), depressive symptoms (B = .38), and sleep quality (B = .51) all predicted pre- to post-stress increases in pre-sleep arousal (p < .05). These individual difference factors were also significantly related to ratings of prolonged cognition and distress (p < .05), which in turn were related to stress-related change in pre-sleep arousal (p < .05). In regression analyses that included both the individual difference factors and prolonged cognition, relations between neuroticism, worry, and sleep quality all dropped to non-significant levels, providing evidence of a mediated pathway. These findings fit with a framework to understand vulnerability to adverse stress responses and suggest that one pathway to negative physical and mental health outcomes may be via perseverative cognition and sleep disruption.

205) Abstract 1658 SOURCES OF STRESS AND DEPRESSIVE SYMPTOMS Piroshka Balog, PhD, Gabor Szabo., Maria S. Kopp, PhD, Semmelweis University, Institute of Behavioral Sciences, Budapest, Hungary Purpose of study: A primary aim of this study was to investigate the role of different sources of stress (work-, marital- and social relationships stress, and gender-role stress for men, work-family conflict for women) in connection with depressive symptoms. Subject sample and statement of methods: The study is based on Hungarian study in Epidemiological Science (2006 N=4524). We analyzed a subsample of N=1679, aged 18-65, actively working and living with partner (men 47.4% women 52.6%. Among them 17% men and 20% women reported elevated depression score (10 or higher on Shortened Beck Depression Scale). To measure sources of stress we used shortened versions of: Marital Stress Scale, Effort Reward Imbalance Questionnaire, Bergen Social Relationship Scale, Masculine-Gender Role Stress Scale, and one question for work-family conflict. Hierarchical logistic regression analyses were performed to study the effect of different sources of stress on depression, and we calculated odds ratios (OR) with 95% confidence intervals. Age and education were also included in the model. Summary of results: For women age (OR 1.05 (1.02-1.08), education (OR 0.84 (0.73-0.96), marital stress (OR 1.96 (1.23-3.12), work stress (OR 2.14 (1.49-3.12), and work-family conflict (OR 1.30 (1.06-1.58) were all related to elevated depression score. At step 3 when stress from social relationships was included in the model, age, education, marital stress, work stress were still significantly related to depression, but not the work-family conflict. We found stress from social relationships as a possible mediator between work-family conflict and depression (OR 1.34 (1.18-1.52). In men, at step 2 only marital stress (OR 1.90 (1.05-3.47) and work stress (OR 2.42 (1.59-3.66) was significantly related to depression. In the last model, where we added stress from only social relations, only work stress (OR 2.22 (1.44-3.42) remained significantly related to depression. In women all examined sources of stress were related to depression, but not in men, where in the last model only work stress has been found to be related to depression.

206) Abstract 1129 DO HEALTHY PEOPLE WORRY? MODERN HEALTH WORRIES, SUBJECTIVE HEALTH COMPLAINTS, PERCEIVED HEALTH, AND HEALTH CARE UTILIZATION Kelly B. Filipkowski, M.S., Joshua M. Smyth, Ph.D., Abraham M. Rutlich, Ph.D., Alecia M. Santuzzi, Ph.D., Psychology, Syracuse University, Syracuse, NY, Ad A. Kaptein, Ph.D., Medical Psychology, Leiden University, Leiden, The Netherlands, Keith J. Petrie, Ph.D., Medical and Health Services, The University of Auckland, Auckland, New Zealand, Meera Adya, Ph.D., Psychology, Syracuse University, Syracuse, NY Modern Health Worries (MHW) are concerns related to modern or technological features of daily life, and is predictive of subjective health complaints and health care use. Prior research, however, has primarily focused on students of health professions (e.g., medicine, nursing), and it is unclear if healthy individuals not selected on the basis of health or medical training would show this relationship. Additionally, as MHW may be culturally and contextually bound, we sought to extend previous work conducted in other countries to the USA. Healthy university students (n = 432; 60% female, 77% Caucasian; 61% first year students) completed assessments for MHW, subjective health complaints, perceptions of health, and health care visits. Factor analysis of the MHW scale revealed a factor structure consistent with that observed in other countries and samples. Although modern health worries were only marginally associated with health care visits (p = .072), they demonstrated positive relationships with reports of present health (p = .049) and the number of subjective health complaints (p < .001). In addition, they were negatively related to frequency of medication use (p = .005). The results obtained using young-adults without medical training emphasize the stability and generalizability of the Modern Health Worries scale among westernized cultures and young-adult populations.

207) Abstract 1557 PSYCHOSOCIAL PREDICTORS OF DEATH IN THE AGING POPULATION OF HUNGARY: A FOUR YEARS FOLLOW-UP STUDY Maria S. Kopp, MD, PhD, András Székely, MSc, Institute of Behavioral Sciences, Semmelweis University, Budapest, Hungary, Arpad Skrabski, PhD, Dept of Sociology, Apor Vilmos Catholic College, Budapest, Hungary The aim of the present study was to analyse the psychosocial predictors of death and survival in the aging Hungarian population, and to identify gender differences in this respect. Participants in the national representative Hungarostudy 2002 (aged = 69) who consented to be contacted for a follow-up study participated in the current study. Data from 263 men and 416 women were collected in 2006. By 2006, 67 men (25.5%) and 85 women (20.4%) had died. Socio-economic and psychosocial measures, self-rated health, depressive symptoms, WHO wellbeing, negative affect, self-efficacy, religious practice and health behavior factors were included in the analysis. In both genders, the following predictors of mortality were found: self-rated health (males OR = 2.05, females OR = 2.16), sub-clinical depression (BDI above 10) (males OR = 2.72, females OR = 2.29) and religiosity (males OR = 2.49, females OR = 1.59). Predictors of survival were: better WHO wellbeing (males OR = 1.94, females OR = 2.06), greater practice of sports activities (males OR = 4.31, females OR = 3.65) and having a car in the family (males OR = 3.76, females OR = 2.15). Hopelessness (OR = 2.14) and negative affect (OR = 2.18) predicted death only among men, while low subjective social status (OR = 1.82) and unhappiness (OR = 1.82) predicted death only among women. Self-efficacy (OR = 2.58) and satisfaction with personal relations (OR = 2.12) predicted survival among men, and religiosity (OR = 2.75) produced survival among women. Education, income, marital status, smoking and alcohol consumption in 2002 were not significantly related to death in this cohort. Psychosocial factors are strong predictors of survival in old age, but gender differences are less important among the elderly than in the younger population.

208) Abstract 1536 LOWER DECISION THRESHOLD FOR DOCTOR VISITS AS A PREDICTOR OF HEALTH CARE USE IN SOMATOFORM DISORDERS AND THE GENERAL POPULATION Ricarda Mewes, Psychologist, Winfried Rief, Professor, Clinical Psychology, University of Marburg, Marburg, Germany, Heide Gläser, Doctor, Medical Psychology and Sociology, University of Leipzig, Leipzig, Germany, Alexandra Martin, Assistant Professor, Clinical Psychology, University of Marburg, Marburg, Germany,
Elmar Brähler, Professor, Medical Psychology and Sociology, University of Leipzig, Leipzig, Germany

Background: Somatization is related to elevated health care utilization (HCU) and high health care costs with only modest improvement in many cases. Little is known about reasons for HCU in somatizers and non-somatizers in the general population. Methods: A representative sample of the German general population (N=2510) was screened for psychopathology and HCU in the past twelve months. The sample was subdivided into somatizers (N=372) and controls (N=1796) using the Patient Health Questionnaire (PHQ)-15. A general tendency to visit doctors even for minor reasons was assessed using a self-rating scale. Demographic and psychopathological variables (anxiety, depression, posttraumatic symptomatology) were additionally entered into stepwise linear regression analyses as independent variables to predict HCU for the whole investigated sample and the two sub-samples. Results: Somatizers were substantially more impaired in mental health (p<=.001) and physical health (p=.03) compared to controls, whereas married people showed elevated HCU in the somatizing group (p=.03). Conclusions: Psychopathological and demographic variables can predict HCU in somatizing persons. Somatizers have a general tendency to visit doctors even for minor reasons compared to controls. Future studies should investigate the influence of psychological mediators on HCU.

210) Abstract 1645
IDENTIFYING PREDICTORS OF HEALTH CARE UTILIZATION AND OTHER BEHAVIORS AMONG PATIENTS IDENTIFIED BY THEIR PRIMARY CARE PROVIDERS (PCPs) AS SUFFERING FROM MEDICALLY UNEXPLAINED PHYSICAL SYMPTOMS (MUPS)
Katharine M. Larsson, PhD (in nursing), Psychology and Nursing, Massachusetts School Professional Psychology, Boston, MA

The purpose of this study was to explore the meaning of the behaviors of patients who attended an outpatient urban primary care clinic and who were identified by their PCPs as suffering from MUPS. MUPS is a condition associated with health care utilization, health care disparities, and patient-provider frustration. Twenty patients from diverse cultural background were interviewed for 1 hour in their native languages of Spanish, Portuguese or English to uncover the meaning of their behaviors associated with their symptoms identified by their PCPs MUPS. Techniques implemented to verify the completeness, rigor, and accuracy of the data included confirming with the participants that the data accurately represented the meaning of their behaviors, and consultations with cultural brokers, and experts in MUPS and qualitative research. Participants were recruited from 2 urban primary care settings serving multi-cultural populations including immigrants from Latin America, South East Asia, and Eastern Europe, and migrants from within the contiguous US. The participants' narratives revealed their health seeking behaviors and symptom manifestation. The participants' identified their symptoms as a manifestation of the nexus of their somatic, emotional and social experiences. They revealed how the nature of their relationships with their PCPs was essential to how their symptoms manifested, including experiences of feeling cared for and connected. When relationships were deemed positive, the participants felt validated and better. If they felt their symptoms were objectified or their experiences of suffering were minimized, participants resorted to "re lentless seeking," a behavior they identified as an attempt to compensate for the lack of meaningful contact. Participants described somatoform symptoms have a general tendency to visit doctors even for minor reasons compared to controls. Future studies should investigate the influence of psychological mediators on HCU.

211) Abstract 1292
A NEGATIVE ASSOCIATION BETWEEN SOCIOECONOMIC STATUS (SES) AND BLOOD CADMIUM (Cd) IN CHILDREN: EXPLORING POTENTIAL RISKS FOR FUTURE ILL HEALTH USING PROTEOMICS
Brooks B. Gump, PhD, Psychology, Robert Birdsall, BS, Kestas Bendinskas, PhD, Chemistry, James A. MacKenzie, PhD, Biological Sciences, State University of New York at Oswego, Oswego, New York

The negative association between SES and ill health is well established. Environmental toxicant exposure represents one potentially important mechanism, having shown clear associations with both SES and ill health. In the present study, we considered the association between SES and heavy metal exposure (i.e., lead, mercury, and cadmium) in children (N = 40). In our study population, SES and Cd levels were significantly related (r = -.46, p < .01) after controlling for gender and body mass index (BMI). Following the determination of this association, we considered the effects of cadmium exposure on children using exploratory proteomics, which is a general term referring to the analysis of proteins in a subject. In our research two-dimensional electrophoresis (2DE) is utilized to separate proteins based on their mass and charge, which, along with intensity, provide the spectrum that makes up a distinctive signature of proteins. More abundant proteins are represented by a larger, and more intensely stained spot on the gel. Children's blood samples were run in triplicate, providing reliability data for each spot. We were able to simultaneously measure 38 proteins reliably (intra class correlation >= .75). Blood cadmium levels in children were significantly associated with 3 proteins (ps < .05) and marginally associated with 6 proteins (ps < .10). Positive identification of these proteins is ongoing using matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF). We conclude with a discussion the potential role for proteomics in behavioral medicine and specifically the ability of proteomics to explore potential mechanisms for psychosocial effects on health.

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212) Abstract 1593
SUBJECTIVE HEALTH COMPLAINTS IN MIDDLE-AGED POPULATION IN HUNGARY
Zoltan Cserhati, university, Adrienne Stauder, PhD, Maria S. Kopp, ScD, Institute of Behavioural Sciences, Semmelweis University Budapest, Budapest, Hungary

Objectives: Subjective health complaints influence functional status, and are generally associated with increased healthcare utilization. The
aim of this study was to define the most common somatic symptoms in the Hungarian population and to investigate the relationships between subjective health complaints and psychosocial factors. Methods: The study is based on Hungarian study Epidemiological Panel 2006 (N=4997) representing the adult Hungarian population according to age, sex and county. We analyzed the middle-aged (45-64 years) subsample, N=1661 (41.8% men, 58.2% women). Subjective health complaints in the past 4 weeks were assessed with the Patient Health Questionnaire-15 (PHQ 15). The Illness Intrusiveness Rating Scale (IIRS), WHO Well-being (WWB5) Scale, and Beck Depression Inventory (BDI) were also administered, as were scales for happiness and life satisfaction. Results: The most common subjective complaints were pain in arms, legs or joints (prevalence of 56.7%), back pain (54.9%), feeling tired (46.5%), trouble sleeping (34.7%) and headaches (34.6%). Greater somatic symptom severity (PHQ=10) was reported by 24.4% of women, and 11.8% of men (OR: 2.41, 95%CI: 1.83-3.17). PHQ-15 scores showed a strong correlation with illness intrusiveness (r=0.370, p<0.001), general health, vitality, social functioning and mental health. Research supported by the grants TS-049785/2004 and NKFP 1b/020/2004.

213) Abstract 1663
THE RELATION BETWEEN BODY MASS INDEX AND HEALTH RELATED QUALITY OF LIFE IN HEALTHY OLDER ADULTS
Megan M. Hasey, B.S., Shari R. Waldstein, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD; Leslie J. Katznel, M.D., Ph.D. Department of Medicine, University of Maryland, School of Medicine, Baltimore, MD
Few studies have examined the relation between health related quality of life (HRQoL) and body mass index (BMI) in older individuals without severe physical and mental health complications. The purpose of this study was to examine the relation between BMI and HRQoL, in healthy elderly community dwelling adults. Participants were 99 adults (94.9% female, mean age = 64.24 years, 89% Caucasian) involved in an ongoing 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 had their height and weight measured. BMI was calculated as BMI = (Weight in Pounds / (Height in inches) x (Height in inches ) ) x 703. Results of multiple regression analyses revealed that, after adjustment for age and hypertension diagnosis, BMI was associated with the Physical Functioning subscale of the SF-36 (b = -.21, R2 = .099, p<.01), that such with higher BMI reported poorer physical functioning. However, BMI was not associated significantly with the following subscales: Role Physical, Bodily Pain, General Health, Vitality, Social Functioning and Mental Health. Results indicate that higher BMI negatively impacts self-reported physical functioning, but not other areas of HRQoL in healthy older adults.

214) Abstract 1323
DOES EMOTIONAL INTELLIGENCE AFFECT SYMPTOM REPORTING?
Nirmala Janardhanam, BS, Susan K. Johnson, PhD, Anita L. Blackard, PhD, Psychology, University of North Carolina - Charlotte, Charlotte, NC
Purpose: This study examined the pathways through which the global trait of emotional intelligence affects perceived stress and symptom reporting. Specifically, the aim of this study was to explore depression, anxiety, positive affect, and negative affect as mediators between a) emotional intelligence (EQ) and b) perceived stress and health symptom reporting. Sample: Students who were enrolled in Introductory Psychology lab sections or a health psychology course, participated. The sample consisted of 227 females (79.1%) and 57 males (19.9%). The mean age of the participants was 20.62 years (SD=5.46). 72.1% of the sample was Caucasian, 18.1% African-American, 4.2% Asian, 2.1% Hispanic, and 3.5% comprised other ethnicities. Methods: EQ was assessed via the self-report Trait-Meta Mood Scale (TMMS) (Salovey & Mayer, 1995). The TMMS consists of three subscales: attention (ability to attend to emotions), clarity (ability to discern feelings), and mood repair (ability to repair unpleasant moods by regulating them). Additional health complaints included a modified positive affect schedule (PANAS), the center for epidemiological studies of depression scale (CES-D), the perceived stress scale (PSS), the state-trait anxiety inventory (STAI), and the symptom interpretation questionnaire (SIQ).

Results: The results of the mediation analysis indicated that total EQ was negatively related to perceived stress (r=-.37, p<.001) and symptom reporting (r=-.35, p<.025). Anxiety was the primary mediator relationship between EQ and perceived stress as indicated by the Sobel test (z=-4.26, p<.001), and between EQ and symptom reporting: (z=-3.92, p<.001). In examining the EQ subscales, attention did not play a significant role in perceived stress or symptom reporting. However, mood repair and clarity were significantly and inversely related to perceived stress (r=-.378, p<.001; r=-.471, p<.001, respectively) and symptom reporting (r=-.386, p<.01; r=-.275, p<.001). Again, anxiety was the primary mediator in the relationship among mood repair, clarity and perceived stress, and symptom reporting.

215) Abstract 1615
ALCOHOL CONSUMPTION AND MENTAL WELL-BEING: A PROSPECTIVE POPULATION STUDY
John C. Barefoot, Ph.D, Psychiatry, Duke University Medical Center, Durham, NC; Laust H. Mortensen, MSc, Morten Gronbaek, Dr. Med.Sci., National Institute of Public Health, SDU, Copenhagen, Denmark
Most studies of alcohol and mental health have been cross-sectional and/or involved clinical samples. This study investigates self reported alcohol consumption in a prospective sample of healthy older adults. Methods: Sample: Students who were enrolled in Introductory Psychology lab sections or a health psychology course, participated. The sample consisted of 227 females (79.1%) and 57 males (19.9%). The mean age of the participants was 20.62 years (SD=5.46). 72.1% of the sample was Caucasian, 18.1% African-American, 4.2% Asian, 2.1% Hispanic, and 3.5% comprised other ethnicities. Methods: EQ was assessed via the self-report Trait-Meta Mood Scale (TMMS) (Salovey & Mayer, 1995). The TMMS consists of three subscales: attention (ability to attend to emotions), clarity (ability to discern feelings), and mood repair (ability to repair unpleasant moods by regulating them). Additional health complaints included a modified positive affect schedule (PANAS), the center for epidemiological studies of depression scale (CES-D), the perceived stress scale (PSS), the state-trait anxiety inventory (STAI), and the symptom interpretation questionnaire (SIQ).

Results: The results of the mediation analysis indicated that total EQ was negatively related to perceived stress (r=-.37, p<.001) and symptom reporting (r=-.35, p<.025). Anxiety was the primary mediator relationship between EQ and perceived stress as indicated by the Sobel test (z=-4.26, p<.001), and between EQ and symptom reporting: (z=-3.92, p<.001). In examining the EQ subscales, attention did not play a significant role in perceived stress or symptom reporting. However, mood repair and clarity were significantly and inversely related to perceived stress (r=-.378, p<.001; r=-.471, p<.001, respectively) and symptom reporting (r=-.386, p<.01; r=-.275, p<.001). Again, anxiety was the primary mediator in the relationship among mood repair, clarity and perceived stress, and symptom reporting.

216) Abstract 1394
CORRELATES OF FATIGUE IN MIDDLE-OLDER AGED ADULTS
Benjamin P. Chapman, PhD, Psychiatry, X Zhao, PhD, X Tu, PhD, Biostatistics, University of Rochester Medical Center, Rochester, NY; P R. Duberstein, PhD, Psychiatry, University of Rochester, Rochester, NY; J A. M oyinihan, PhD, Psychiatry, University of Rochester Medical Center, Rochester, NY
Fatigue is commonly associated with illness, but also reported in approximately 35 percent of middle-aged adults. There is some evidence that fatigue is causally related to elevation of the inflammatory cytokine interleukin (IL)-6. In older adults, IL-6 is negatively correlated with insulin-like growth factor (IGF)-1; high IL-6 and low IGF-1 is hypothesized to be an important health index, and predicts mortality. We examined if this relationship also predicts fatigue in 149 middle-aged adults (mean age=60+ yrs; SD=13.9). No significant correlations were observed between IL-6 or IGF-1 and...
fatigue. Fatigue is correlated with trait neuroticism and depression (p<.01 for both); there were no significant correlations between psychosocial factors, IL-6, and IGF-1. We used cluster analysis to understand patterns of expression of fatigue, IL-6 and IGF-1. Four clusters provided the best-fit for the population (pseudo F statistic=89.99). Cluster 1 (n=40) was highly fatigued, yet low in both IL-6 and IGF-1; Cluster 2 (n=63) was low in all 3 factors; Cluster 3 (n=19) was very high in IL-6, and low in both IL-1 fatigued; Cluster 4 (n=27) represented the 'healthy' profile of high IGF-1, and low fatigue and IL-6. ANOVAs suggested that the clusters differed in general health, perceived stress, loneliness, neuroticism and depression (all p<.002) and extraversion (p=.05), with the 'ideal health' group tending to show the most adaptive personality configuration and psychological adjustment. Of interest was the finding that those individuals in Cluster 3, with highest levels of plasma IL-6, did not exhibit high levels of fatigue, neuroticism or depression. Previously conflicting reports of the nature of relationships among fatigue, IL-6, IGF-1, and psychosocial factors may simply indicate the presence of distinct subgroups of older adults, each of whom evidences a particular pattern on these variables.

Diabetes

217) Abstract 1581

NEUROTICISM, DEPRESSION, AND INTERLEUKIN 6 IN OLDER HEMODIALYSIS AND PRIMARY CARE PATIENTS: A PRELIMINARY REPORT
Benjamin P. Chapman, PhD, Psychiatry, University of Rochester School of Medicine, Rochester, NY, Paul R. Duberstein, PhD, Jan Moynihan, PhD, Psychiatry, University of Rochester Medical Center, Rochester, NY, Noga Geulayov, MSc, Aviva Goral, MPH, Mental Health Epidemiology, Gertner Institute for Epidemiology, Tel-Hashomer, Israel, Noga Garty-Sandalon, RD, MSc, Khitam Muhsen, RN, MSc, Manfred Green, MD, PhD, Israel Center for Disease Control, Ministry of Health, Tel-Hashomer, Israel, Raz Gross, MD, MPH, Mental Health Epidemiology, Gertner Institute for Epidemiology, Tel-Hashomer, Israel.

An inverse relationship has been reported between physical activity (PA) and depression. Research on the association between depression and PA in persons with diabetes mellitus (DM) is scarce; existing data focus on patients at clinical settings. Physical activity is an important therapeutic lifestyle change in DM and was shown to reduce the risk of diabetes related complications. We aimed to assess the relationship between depressive symptoms (DS) and PA; in two independent population-based samples of persons with DM. We analyzed two large representative samples of the adult Israeli population (age>=21 yrs): The Israeli National Health Interview Survey (INHIS) (N=9,509) and the Israel National Health Interview Survey (INHS) (N=4,859), both conducted during 2003-4. Self-reported information on past-month DS; past-year, physician-diagnosed DM; and PA were obtained by means of a telephone interview in INHIS and face-to-face interview in the INHS survey. We used logistic regression models to assess the relationship between DS and physical inactivity among individuals with DM, adjusting for potential confounders, including age, sex, and the presence of other physical conditions. The prevalence of DM was 5.7% (n=542) in INHIS and 7.0% (n=342) in INHS. In total, 55.6% and 53.2% of patients with DM reported being physically inactive, respectively. In both samples of persons with DM, physical inactivity was significantly more prevalent among those with significant DS, compared to those without DS (INHIS: 69.6% vs. 52.3%; INHS: 69.6% vs. 39.4%); adjusted odds ratio (INHIS: 2.12; 95% CI, 1.12-4.05, p=0.02; INHS: 2.99; 95% CI, 1.63-5.49, p=0.0004). Taken together, our results suggest that DS are associated with a higher likelihood for physical inactivity in community dwelling persons with DM. These findings might have important potential clinical and public health implications. There may be a need for a more comprehensive evaluation of patients and their ability to adhere to recommendations as well as to treatment of depression to improve adherence to behavioral recommendations.

218) Abstract 1555

HOSTILITY AND GLUCOSE INDICES IN AFRICAN AMERICAN AND CAUCASIAN FEMALES: THE MEDIATING ROLE OF TRUNK FAT
Anastasia Georgiades, PhD, Richard S. Surwit, PhD, Redford B. Williams, MD, Psychiatry, Duke University School of Medicine, Durham, North Carolina

Hostility has been associated to a variety of cardiovascular risk factors including indices of glucose metabolism. Several studies have shown a consistent association between hostility and glucose indices among females, an association that has recently been suggested to be especially pronounced among African American (AA) women. This association may be mediated by body fat, since particularly abdominal fat has been associated to fasting glucose levels and insulin resistance. Therefore, we investigated the role of percent trunk fat and body mass index (BMI) in the association between hostility and glucose indices among AA and Caucasian (C) females. 44 AA and 77 C healthy non-diabetes females (mean age 33±9), selected on high (>12) and low (<9) Cook Medley hostility scores (27 item version) underwent assessments including an oral glucose tolerance test and a DXA scan. Controlling for age and race, hostility was associated with higher fasting glucose levels (p=.003) and higher percentage trunk fat (p=.009), but not BMI (p=.25), fasting insulin (p=.30), or HOMA (p=.13). There was a significant race by trunk fat interaction on fasting glucose (p=.001), with significant correlations between fasting glucose and percent trunk fat evident among the AA females (r=.64, p=.0001), but not among the C females (r=.08, p=.45). Controlling for trunk fat reduced the association between hostility and fasting glucose in the AA females from r=.30, p=.04 to r=.18, p=.25, but did not influence the association in the C females. Results from the present study showed that hostility was related to trunk fat, a measure that has been associated to metabolic dysregulation and the development of type 2 diabetes. An association between trunk fat and fasting glucose was present only among AA females, in whom trunk fat mediated part of the relation between hostility and fasting glucose. Supported by NHLBI (grant P01-HL36587).

219) Abstract 1700

PHYSICAL INACTIVITY IN ADULTS WITH DIABETES MELLITUS AND DEPRESSIVE SYMPTOMS: RESULTS FROM TWO INDEPENDENT POPULATION-BASED SURVEYS
Galit Geulayov, MSc, Aviva Goral, MPH, Mental Health Epidemiology, Gertner Institute for Epidemiology, Tel-Hashomer, Israel, Noga Garty-Sandalon, RD, MSc, Khitam Muhsen, RN, MSc, Manfred Green, MD, PhD, Israel Center for Disease Control, Ministry of Health, Tel-Hashomer, Israel, Raz Gross, MD, MPH, Mental Health Epidemiology, Gertner Institute for Epidemiology, Tel-Hashomer, Israel.

The Israeli National Health Interview Survey (INHIS) (N=9,509) and the Israel National Health Survey (INHS) (N=4,859), both conducted between depressive symptoms (DS) and PA in two independent population-based samples of persons with DM. We analyzed two large representative samples of the adult Israeli population (age>=21 yrs): The Israeli National Health Interview Survey (INHIS) (N=9,509) and the Israel National Health Interview Survey (INHS) (N=4,859), both conducted during 2003-4. Self-reported information on past-month DS; past-year, physician-diagnosed DM; and PA were obtained by means of a telephone interview in INHIS and face-to-face interview in the INHS survey. We used logistic regression models to assess the relationship between DS and physical inactivity among individuals with DM, adjusting for potential confounders, including age, sex, and the presence of other physical conditions. The prevalence of DM was 5.7% (n=542) in INHIS and 7.0% (n=342) in INHS. In total, 55.6% and 53.2% of patients with DM reported being physically inactive, respectively. In both samples of persons with DM, physical inactivity was significantly more prevalent among those with significant DS, compared to those without DS (INHIS: 69.6% vs. 52.3%; INHS: 69.6% vs. 39.4%); adjusted odds ratio (INHIS: 2.12; 95% CI, 1.12-4.05, p=0.02; INHS: 2.99; 95% CI, 1.63-5.49, p=0.0004). Taken together, our results suggest that DS are associated with a higher likelihood for physical inactivity in community dwelling persons with DM. These findings might have important potential clinical and public health implications. There may be a need for a more comprehensive evaluation of patients and their ability to adhere to recommendations as well as to treatment of depression to improve adherence to behavioral recommendations.
The relationship between hostility and glucose metabolism has been studied extensively.Several studies have shown a consistent association between hostility and fasting glucose among healthy females, an association that has recently been suggested to be especially pronounced among African American (AA) women. However, the mechanisms for this association have not been established. The present study examines the association between hostility and glucose metabolism using an intravenous glucose tolerance test (IVGTT) and the minimal model of glucose and insulin kinetics. 115 healthy subjects without diabetes (29 AA females, 27 Caucasian (C) females, 29 AA males and 30 C males), mean age 34±6 years, selected for high or low Cook Medley hostility scores underwent assessments including an IVGTT. Epinephrine (epi) was measured before, and 5 and 10 min into the IVGTT. Significant 3 way interactions (race x gender x hostility) were found for glucose effectiveness (non-insulin-mediated glucose uptake) and disposition index (ability of beta cells to compensate for insulin resistance), with AA females showing a positive association between hostility and both variables (r=-.39, p=.04 and r=-.44, p=.02). Hostility was related to BMI (r=.41, p<.02) and increases in epi during the IVGTT (r=.40, p<.03) only among AA females. However, controlling for BMI or epi response during the IVGTT did not alter the observed interactions. This study extends our previous findings of an association between hostility and disturbed glucose metabolism among AA females by showing that hostility is related to both insulin and non-insulin mediated glucose metabolism. This effect appears to be independent of both BMI and epi response to the IVGTT. Supported by NHLBI (grant R01 HL076020).

The Handls Study

Melissa C. Rice, MA, Gerontology, University of Maryland, Baltimore, Maryland, S. Carrington Rice, MA, Psychology, University of Maryland, Baltimore County, Baltimore, Maryland, Michele K. Evans, MD, Alan B. Zonderman, PhD, Intramural Research Program, National Institute on Aging, Baltimore, MD, Shari R. Waldstein, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD Depressive symptoms have been shown to precede the development of diabetes. However, little is known about the association between depressive symptoms and glycated hemoglobin (HbA1c) in persons with and without diabetes. Here we examined the relations of depressive symptoms to (1) diabetes diagnosis; (2) HbA1c in self-reported diabetics; and (3) HbA1c among those without a diagnosis of diabetes. Participants derived from the baseline assessment visit of The Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study - a new 20-year longitudinal investigation of community-dwelling Black and white adults ages 30-64. After exclusion for HIV/AIDS, neurological disease, schizophrenia, and bipolar disorder, 198 participants with self-reported diabetes and 953 participants without self-reported diabetes were available for data analysis. Participants completed the Center for Epidemiologic Studies-Depression Scale (CES-D), and provided a blood sample for determination of HbA1c. All analyses were adjusted for sociodemographic factors, cigarette use, waist circumference, cardiovascular disease, and hypertension and all possible two and three way interactions were examined. Results of logistic regression revealed no significant associations between depressive symptoms and diabetes diagnosis. Among those with diagnosed diabetes and those without diagnosed diabetes, multiple regression analysis indicated no significant relation of depressive symptoms to HbA1c. Thus, in this community-dwelling sample, depressive symptoms were not associated with diagnosis of diabetes or glycemic control.
224) Abstract 1052
NORMATIVE VARIATION IN SELF-REPORTED SLEEP QUALITY AND SLEEP DEBT IS ASSOCIATED WITH STIMULATED PRO-INFLAMMATORY CYTOKINE PRODUCTION
Aric A. Prather, M.S., Anna L. Marsland, Ph.D., R.N., Psychology, University of Pittsburgh, Pittsburgh, PA, Serina A. Neumann, Ph.D., Psychiatry, Eastern Virginia Medical School, Norfolk, VA, Martica Hall, Ph.D., Psychiatry, Matthew F. Muldood, M.D., MPH, Clinical Pharmacology, University of Pittsburgh School of Medicine, Pittsburgh, PA, Stephen B. Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA
An emerging literature suggests that sleep problems are related to negative health outcomes, including the onset and progression of inflammatory diseases. Activation of innate inflammatory pathways, marked by the increased production of pro-inflammatory cytokines, has been proposed as one mechanism of these effects. To date, however, it remains unknown whether normative variation in sleep quality and duration is associated with inflammatory competence among healthy adults. To this end, we examined associations of self-reported sleep quality (PSQI) and duration, and a calculated measure of sleep debt with self-measured cytokine secretion, as well as plasma IL-1beta, IL-6, and TNF-alpha among a community sample of 170 healthy adults aged 30-54 years (41% female, 93% Caucasian). Initial bivariate correlations revealed an inverse association between sleep quality and production of IL-6 and IL-1beta. Regression analyses, controlling for demographic and health covariates, revealed that this relationship was retained even for production of IL-1beta (b=-2.3, p<.01), but not IL-6. Secondary analyses revealed an interaction between sleep debt and body mass index (BMI) in the prediction of stimulated IL-6 (b=2.73, p=.04) and IL-1beta (b=3.72, p=.01). This interaction shows a greater impact of sleep debt on cytokine production among adults with lower BMI scores. There were no significant associations between sleep parameters and TNF-alpha. Similarly, sleep duration was unrelated to inflammatory competence. Overall, these findings indicate that poorer sleep quality and greater sleep debt (among individuals with lower BMI) is associated with larger pro-inflammatory responses to endotoxin, which may increase susceptibility to inflammatory conditions. Further investigation of this intriguing pathway is warranted.

225) Abstract 1771
THE EFFECTS OF THE TIMING OF NAPPING ON PSYCHOLOGICAL AND PHYSICAL SYMPTOMS AND SLEEP QUALITY OF 16-HOUR NIGHTSHIFT NURSES
Naoko Aoyagi, PhD, early childhood education, Hamamatsu Gakuen University Junior College, Hamamatsu, Shizuoka, Japan
Cumulative fatigue and sleepiness among nightshift nurses are known as potential risks of medical malpractice and sickness. Taking a nap during nightshift has been suggested as an effective way to prevent these risks. However there are few studies that focus on the effects of the timing of napping. The aim of this study was to investigate the relationship between psychological and physical symptoms and the timing of napping by using ecological momentary assessment. The subjects were 17 female nightshift nurses. They underwent a measurement of psychological and physical symptoms by visual-analog scales and continuous locomotor activity with a watch-type computer during 16-hour nightshift. We divided the subjects into earlier napping group (EG; 23:00-1:00, n=7, 32.3±8.5 years) and later napping group (LG; 3:00-5:00, n=10, 27.0±5.7 years). Linear mixed multivariate models were used to investigate the effect of the timing of napping. The sleep latency in the napping in LG was significantly longer than EG (p<.01). On the other hand, there were no significant differences in total sleep time and sleep efficiency of both groups. There were significant main effects of the timing of napping on scores of fatigue, poor concentration, pains in the back and mean reaction time of cognitive performance test (p<.05). Cognitive performance tended to deteriorate after napping taken in later hours of the nightshift. It was suggested that a burden to a psychosomatic function should become bigger in the later hours of the nightshift.
228) Abstract 1209
HEART RATE VARIABILITY DURING SLEEP: THE SLEEPSCORE STUDY
Martica Hall, PhD, Psychiatry and Psychology, Karen A. Matthews, PhD, Psychiatry, Epidemiology and Psychology, Suresh Malakatla, MD, Internal Medicine, Daniel J. Buyse, MD, Psychiatry, Patrick J. Strollo, MD, Sleep Medicine Center/Division of Pulmonary, Thomas W. Kamarck, PhD, Psychology and Psychiatry, Jane F. Owens, DrPH, Psychiatry, Steven Reis, MD, University of Pittsburgh School of Medicine, Pittsburgh, PA

Our research group has proposed that the assessment of heart rate variability (HRV) during sleep allows evaluation of biological pathways that link psychological, social, and behavioral processes to disease. The present study reports descriptive characteristics of HRV derived from spectral analysis of the EKG during sleep and its association with psychological and physiological risk factors for cardiovascular disease. Participants were 96 community-dwelling adults (mean age 58 years, 51% female, 49% African-American) enrolled in SleepSCORE, a cross-sectional study of nocturnal physiology and CVD risk. Sleep studies were conducted in participants’ homes and trained technicians edited and processed the HRV data in 2-minute epoch. HRV data were linked to the visually-scored sleep data nonREM (stages 2-4 sleep) and REM epochs throughout the night. Repeated measures analysis of variance indicated that vagal activity increased across the night during bouts of wakefulness, NREM and REM sleep (p<0.05). The opposite pattern was seen for sympathovagal tone. Higher perceived stress ratings were associated with decreased vagal tone during the first two sleep cycles only (r = -0.34, p<0.001). Sympathovagal tone during sleep emerged as a significant correlate of CVD risk. In a subset of the participants, a higher sympathovagal tone during NREM sleep was associated with greater brachial artery diameter measured at a separate clinic visit (r=0.32, p<0.01). These data suggest that vagal and sympathovagal tone change across the course of the night and HRV during sleep may be linked to psychological and physiological risk factors for cardiovascular disease. Work is needed to evaluate the extent to which these relationships affect clinical heart disease and hypertension. Supported by HL076369 and Pennsylvania Department of Health (contract ME-02-384).

229) Abstract 1447
COPING, CORTISOL, AND SLEEP IN HEALTHY YOUTH
Margaret D. Hanson, MA, Edith Chen, PhD, Psychology, University of British Columbia, Vancouver, BC, Canada

Primary coping has been shown in past research to be related to better health outcomes, including slower disease progression in HIV+ men and higher T cell counts in law students. Hence coping may affect health via biological pathways. In this study, we tested the relation between coping and an important health behavior, sleep, in healthy youth. We also tested whether a commonly measured biological marker of stress, cortisol, could explain the coping-sleep association. While previous research has investigated associations between coping and sleep, or sleep and cortisol, studies have not considered these three constructs together to test whether cortisol might provide an underlying biological explanation for the coping-sleep association. 53 healthy youth (aged 9-17; 57% male) recorded hours of sleep/night for 14 days. Youth slept an average of 9.13 hrs/night (SD=1.13). Greater use of primary coping was related to fewer hours of sleep per night (B=-0.33, p=0.02). Youth with flatter cortisol slopes also slept fewer hours per night (B=-0.35, p=0.03). However, coping was not significantly related to cortisol slope. In sum, youth in this study who engaged in more primary coping slept less. As well, youth who had flatter cortisol slopes slept less. Cortisol slope, however, did not explain the coping-sleep association. Future studies should consider alternative biological pathways that link coping and sleep, such as blood pressure and cytokines (e.g., IL-1, TNF-alpha). In contrast to previous research, primary coping in this study appears to have detrimental effects on the health behavior of sleep in youth, perhaps because active efforts to deal with stressors keep youth engaged in their problems in a way that can be disruptive to sleep.

230) Abstract 1616
LET ME SLEEP ON IT: THE BENEFITS OF EXPRESSIVE WRITING ON REPORTED SLEEP QUALITY IN YOUNG WOMEN ADJUSTING TO COLLEGE
Danielle Arigo, M.S., Joshua M. Smyth, Ph.D., Psychology, Syracuse University, Syracuse, NY

Life transitions are recognized as sources of stress that can have negative consequences for health, including the adoption of negative health behaviors and the development of serious health conditions over time. Attending college can be a stressful life change, particularly for young women who often face new independence along with a host of self-concept, relationship, and body-image related stressors. Administering interventions to help young women successfully make this transition may help improve short-term function and long-term health. This study examined risk factors related to adjustment to college, and further explored if expressive writing [EW] can facilitate adjustment among young college women. Collene females (n=111, mean age=18.9, 68% Caucasian) completed questionnaires assessing perceived stress, sleep quality, body image, and other health-related measures. Participants were randomized into an EW condition or a control writing condition. All participants completed three 15-minute writing sessions over 2 weeks, and returned for follow-up 8 weeks later. At baseline, greater perceived stress and lower social support were each related to more disorder eating behaviors throughout the study. Coping was negatively related to higher reported eating dissatification, and increased sleep difficulty (p<0.007). The EW intervention did not influence weight/apperance concerns (p<0.22), but predicted better sleep quality at follow-up (controlling for baseline; p<0.01) relative to control participants. Significant group by stress (p<0.05) and group by social support (p<0.05) interactions suggested that EW (relative to control writing) buffered participants against the negative effects of high stress or low social support on sleep quality at follow-up. These data suggest that EW about transition-related experiences (such as weight/appearance concerns) may more broadly positively impact adjustment for college females. Further research should examine if EW can prevent negative health outcomes following stressful life transitions, perhaps by improving sleep quality.

Eating

231) Abstract 1696
EFFECTS OF MINDFULNESS MEDITATION TRAINING ON EATING BEHAVIOR AND BODY FAT DISTRIBUTION
Jennifer J. Daubenmier, PhD, Loren Vlegkas, BA, Margaret Kawata, BA, Nicole Maninger, PhD, Kingsari Haverc, BA, Daniel M. Purnell, BA, Frederick Hecht, MD, Margaret Kemeny, PhD, Elissa Epel, PhD, University of California, San Francisco, San Francisco, CA

Abdominal fat is a feature of the metabolic syndrome and an important predictor of cardiovascular disease independent of body mass index (BMI). Chronic psychological distress is associated with greater abdominal fat. Mindfulness meditation training enhances psychological well-being; however, effects on body fat distribution are unknown. A randomized pilot trial was designed to determine whether a mindfulness-based intervention for overeating redistributes fat away from abdominal depots. Forty-seven overweight and obese women (61% White) with BMIs ranging from 25 to 40 (M=31.2; SD= 4.5) were assigned to a 3-month intervention or waitlist group. Mindfulness was assessed using the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, and Allen, 2004) and emotional and external-based eating tendencies were measured using the Dutch Eating Behavior Questionnaire (van Strien et al, 1986). Body fat distribution was assessed by dual-energy X-ray absorptiometry and the ratio of trunk fat to leg fat mass was calculated. As-treated analyses using ANOVAs for repeated measures indicate that the intervention group relative to the control group reported significant increases on 3 of the 4 KIMS subscales (Observing, p<.01; Acting with Awareness, p<.03; Acceptance without Judgment, p<.01), greater reductions in external-based eating (p < .02), and a tendency for reduced emotional eating (p < .08). No between-group differences were found in body fat distribution or BMI over time. However, correlations within the intervention group revealed that reductions in trunk fat/leg fat ratio were significantly related to increased mindfulness (Acting with Awareness subscale; r = -.56, p = .02) and reductions in emotional eating (r = .50, p < .04). Interventions targeting trunk fat/leg fat/trunk fat mass ratios. These findings suggest that mindfulness...
training improves regulation of food intake and may redistribute fat from central to peripheral regions in those participants who report increased mindfulness and reduced emotional eating.

232) Abstract 1355
ATTENTION AND THE SELF-CONTROL OF EATING
Traci Mann, Ph.D. Psychology, University of Minnesota, Minneapolis, MN, Janet Tomiyama, M.A., Psychology, UCLA, Los Angeles, CA, Ashley Moskovich, B.A., Psychology and Neuroscience, Duke University, Durham, NC, Andrew H. Ward, Ph.D., Psychology, Swarthmore College, Swarthmore, PA
We report on two studies that examine how changes in attention alter the self-regulation of eating among dieters. In both studies, we systematically varied the degree of attentional load imposed on participants across a series of tasks called the n-back tasks. In the task that demands the least amount of attention, the 0-back task, participants responded “yes” whenever a particular letter is mentioned. The 1-back, 2-back, and 3-back tasks each require an increasing amount of attention, with the 3-back task nearly impossible. In addition to the four levels of the n-back task, we ran a control condition that did not include an attentionally demanding task. In all conditions, participants were invited to consume salient food during the task, and the primary outcome measure was the amount consumed as increasing levels of attention were devoted to performing the task. In both studies, we found that increases in attentional load associated with the n-back task led to self-regulation failure, but only up to a point. Both the 0-back and 1-back tasks required more attention than the control task, and both led to disinhibited eating compared to the control task. However, when the attention task was so difficult (i.e., the 2-back task) that participants had to devote all of their processing ability to the task in order to succeed at it, participants reduced their eating dramatically, presumably reflecting lack of attention to the food itself. These results conform to recent neuroscience research, which predicts an inverted U-shaped relationship between the degree of attentional load demanded by a cognitive task and failure at self-regulation. When our subjects were confronted with a task that was still more challenging -- indeed, so challenging that they failed at it (i.e., the 3-back task), they consumed significantly more than both the control group and the groups that attempted disengagement by doing other tasks, supporting previous findings indicating that dieters overeat after experiencing failure. These findings further clarify the relationship between attention and self-control and shed light on the level of attention necessary for individuals to regulate their eating.

233) Abstract 1438
DYING TO BE THIN: THE COSTS IN DAILY LIFE OF THE PURSUIT OF AN IDEALIZED FIGURE IN YOUNG WOMEN
Kristin E. Heron, MS, Joshua M. Smyth, PhD, Psychology, Syracuse University, Syracuse, NY
Media and society place great value on individuals, especially young women, being thin. Pressures to have an idealized figure, particularly when incorporated into an individual’s self-concept, may shape both behavior and self-construal in unhealthy ways. Research demonstrates that body dissatisfaction, disordered eating behavior, and weight control attempts are associated with subsequent stress and negative mood. Such stress and dysphoric mood may, in turn, be risk factors for the development or exacerbation of other diseases. Current understanding is based largely on laboratory studies using retrospective self-report measures, limiting generalizability to processes that occur in the real world. College women (n=59, mean age=19) first completed measures of body and pressures (disordered eating behavior and thin-norm internalization). An ambulatory ecological momentary assessment design (administered on palmtop computers) was then used to obtain assessments of current stress and depressed and anxious mood 5 times each day for 1 week. Multi-level random effect models controlling for body mass index were then used to obtain assessments of current stress and depressed and anxious mood (ps<.01), and significantly related to increased depressed and anxious moods (ps<.02). Greater internalization of thinness norms was associated with higher stressor severity and more depressed and anxious moods (ps<.04). Findings show that women reporting more disordered eating and internalization of thin standards experienced more severe stressors and depressed and anxious moods. This research adds to literature outlining the complex relationship between eating-related attitudes and mood in daily life. These factors may affect the development and maintenance of body self-perception, eating and related health outcomes (e.g., binge eating, obesity), and affective (stress and mood) processes, thus influencing a wide range of psychosomatic processes.

234) Abstract 1046
EFFECTS OF SHORT-TERM SLEEP DEPRIVATION ON HEART RATE VARIABILITY AND ARRHYTHMIA BURDEN IN HEALTHY SUBJECTS
Grant V. Chow, MD, Nivee Amin, BS, Internal Medicine, Michael T. Smith, MD, Brendan Klick, Gina Magyar-Russell, PhD, Psychiatry, Johns Hopkins Medical Institutions, Baltimore, MD, Heather Rogers, MPH, Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, Robert Edwards, MD, Psychiatry, Joseph E. Marine, MD, Roy C. Ziegelstein, MD, Cardiology, Johns Hopkins Medical Institutions, Baltimore, MD
Self-reported “lack of sleep” has been associated with adverse cardiac events, but the mechanism of this relationship is unknown. Healthy, disease-free subjects without sleep disorder were invited to consume salient food during the task, and the primary outcome measure was the amount consumed as increasing levels of attention were devoted to performing the task. In both studies, we found that increases in attentional load associated with the n-back task led to self-regulation failure, but only up to a point. Both the 0-back and 1-back tasks required more attention than the control task, and both led to disinhibited eating compared to the control task. However, when the attention task was so difficult (i.e., the 2-back task) that participants had to devote all of their processing ability to the task in order to succeed at it, participants reduced their eating dramatically, presumably reflecting lack of attention to the food itself. These results conform to recent neuroscience research, which predicts an inverted U-shaped relationship between the degree of attentional load demanded by a cognitive task and failure at self-regulation. When our subjects were confronted with a task that was still more challenging -- indeed, so challenging that they failed at it (i.e., the 3-back task), they consumed significantly more than both the control group and the groups that attempted disengagement by doing other tasks, supporting previous findings indicating that dieters overeat after experiencing failure. These findings further clarify the relationship between attention and self-control and shed light on the level of attention necessary for individuals to regulate their eating.
levels [3.99 vs 1.70 mg/L with a trend towards significance (p = .059)]. After adjustment for BMI, blood glucose and triglycerides, women had higher hsCRP levels than men (2.91 vs 1.87 mg/L, p < .001). When we entered depressive symptoms, the model remained significant, with an interaction between sex and symptoms [F(3, 52) = 2.75, p = .05]. In addition, women with depressive symptoms had higher hsCRP levels than women without symptoms (6.75 vs 1.11 mg/L). There was no evidence of association between IL-6 and depressive symptoms, after controlling for BMI (95% CI: -0.77 to .73). In at-risk people, before a cardiac event, mild-to-moderate depressive symptoms stable over 6 months were associated with increased hsCRP levels, adding fuel to the fire. Women with depressive symptoms had higher hsCRP levels compared to men and to women without symptoms.

236) Abstract 1087
SEX DIFFERENCES IN IMPACT OF C-REACTIVE PROTEIN RISK GROUP ON CORTISOL STRESS REACTIVITY IN HEALTHY YOUNG ADULTS WITH PARENTAL HISTORY OF HYPERTENSION
Jeanette M. Bennett, M.S., Biobehavioral Health, Penn State University, University Park, PA, Isabella M. Rodrigues, Ph.D., Department of Veteran Affairs/WRISHC, University of Medicine and Dentistry of New Jersey, East Orange, New Jersey, Laura Consino Kline, Ph.D., Biobehavioral Health, Penn State University, University Park, PA
C-reactive protein (CRP) is a proinflammatory immune marker of cardiovascular disease (CVD) risk that is independent of traditional risk markers such as cholesterol. The extent to which CRP risk group status (i.e., low, risk, <1 mg/L; average risk, 1-3 mg/L; high risk, >3 mg/L; American Heart Association 2003) is associated with neuroendocrine and cardiovascular stress reactivity among healthy young adults, is not known. We examined the effects of CRP risk status and psychological stress on physiological reactivity in especially vulnerable to future CVD, those with a confirmed parental history of hypertension. Participants were included following an intensive health screening to confirm normal cholesterol levels and health status. Questionnaires were sent to parents to confirm a family history of hypertension. Next, 133 volunteers (63 men and 70 women) aged 18-24 years participated in a 3 session session to examine cortisol and blood pressure responses to speech and mental arithmetic stressors. Blood pressure and heart rate were collected throughout the study and blood samples were collected at baseline and stress for cortisol assessment. Baseline CRP levels also were determined and used to group individuals into low (N=12), average (N=8), or high (N=6) CVD risk status. Women completed their lab assignment during the late phase of their menstrual cycle, which was confirmed through progesterone and estradiol assessment. Stress exposure resulted in a significant increase in systolic and diastolic blood pressure, as well as heart rate, regardless of sex or CRP risk status (p<.05). Cortisol results were more revealing. Specifically, cortisol responses among males increased in response to stress regardless of CRP risk status. In contrast, cortisol decreased in response to stress among women in the low CRP risk group, whereas cortisol levels increased in responses to stress among women in the average and high risk groups (P<.05). Results suggest that baseline CRP risk group status may be an early indicator of cortisol dysregulation in response to a stressor.

237) Abstract 1513
DEPRESSION, CORTICAL ASYMMETRY, AND CARDIOVASCULAR REACTIVITY
Julia D. Betensky, B.A., Richard J. Contrada, Ph.D., Psychology, Rutgers University, Piscataway, NJ
The mechanisms by which depression may contribute to cardiovascular disease (CVD) are unclear. Right-dominant activity in the prefrontal cortex appears to be an objective physiological index of a depressive affective style, and may reflect processes that contribute to heightened autonomic and cardiovascular activity, a possible pathway to CVD. This hypothesis is being examined in an ongoing study. It is expected that greater self-reported depression will be associated with right-sided prefrontal dominance, and that this asymmetry will be associated with greater cardiovascular activity. To date, we have collected data from 23 healthy undergraduate females, with a target N of 40. Participants completed the Beck Depression Inventory and performed a stressful recall task (i.e., to re-experience and then discuss a personally-relevant event that made them feel depressed. Recordings were made of resting electroencephalographic and cardiovascular activity, the latter including systolic (SBP) and diastolic blood pressure (DBP), and heart rate (HR). Cardiovascular activity was assessed throughout the recall task. Preliminary data suggest that greater depression was significantly associated with HR reactivity (r = .54, p < .02), but not SBP or DBP reactivity. These findings suggest that depression is more likely related to cardiac autonomic activity than vascular activity. Further analyses will examine cortical asymmetry as a predictor of autonomic dysregulation, which may be a promising focus of research concerned with emotion-related determinants of cardiovascular reactivity and CVD risk.

238) Abstract 1463
LUNG FUNCTION, PERCEIVED STRESS, AND METABOLIC SYNDROME IN A YOUNG POPULATION
Tyler W. Chavez, Timothy S. Freson, M.S., Celestina Barbosa-Leiker, M.S., Bruce R. Wright, M.D., Health & Wellness Services, John M. Ruiz, PhD, Heidi A. Hamann, Health and Wellness Services, Pullman, WA
Lung Function (LF) is associated with elevated risk of Metabolic Syndrome (MetS), and coronary heart disease (CHD) among middle aged and older populations. Psychological stress (PS) has also been shown to be correlated with lower levels of LF, increased MetS risk, and increased risk of CHD among older populations. The purpose of this study was to examine the cross-sectional relationship between PS, LF, MetS in a young asymptomatic population. The study included 159 adults with a mean age of 18.25 years of age (SD=8.8) who participated in the Student Health and Personality Examination Study II during 2005. MetS was defined according to the National Cholesterol Education Program's Adult Treatment Panel III guidelines. Stress was measured using the Perceived Stress Scale (Cohen & Williamson, 1988). LF was determined using spirometry to measure forced expiratory volume 1.0 (FEV). Significant correlates of the MetS risk factors (central adiposity, percent body fat and log transformed glucose) were entered into a hierarchical regression, controlling for gender and height. FEV (b= .239, p < .048) and gender (b=.363, p=.002) were significant predictors of central adiposity (CA). FEV (b= .228, p=.037) of log transformed blood glucose. It appears that LF and gender were independent predictors of MetS risk factors CA and BF. PS and LF in the young adult population were not correlated with one another even though these correlations were reported in previous research on older populations, suggesting that these correlations may only occur in later stages of MetS and CHD.

239) Abstract 1293
IS THE FACTOR STRUCTURE OF THE METABOLIC SYNDROME COMPARABLE ACROSS AGE GROUPS?
Virginia Ferent, BA, Psychology, Washington State University, Pullman, WA, Celestina Barbosa-Leiker, MS, Psychology, Washington State University, Pullman, Washington, Leonard G. Burns, PhD, Psychology, Washington State University, Pullman, WA, Bruce R. Wright, MD, Health and Wellness Services, Health and Wellness Services, Pullman, WA, Timothy S. Freson, MS, Health and Wellness Services, John M. Ruiz, PhD, Heidi A. Hamann, PhD, Psychology, Washington State University, Pullman, WA
The metabolic syndrome is a cluster of risk factors including fasting glucose, visceral obesity, dyslipidemia and hypertension (NCEP ATP III, 2001) associated with elevated risk for cardiovascular disease. This clustering is controversial because research does not consistently report a single pathogenic process underlining it. A recent study using confirmatory factor analysis (CFA) found that a one-factor model, a 'metabolic syndrome' factor, specified as body mass index, fasting glucose, triglycerides, high-density lipoprotein cholesterol, and diastolic blood pressure provides a good fit for a middle-aged sample (Ferent et al. 2007). This study aims to replicate that factor structure in a college population. Participants were 243 (M = 18.36 years) men and women recruited from a large university on the West Coast. Measurements of blood pressure, glucose concentrations, obesity indices, proinflammatory, and lipid values were conducted. Preliminary analyses showed that glucose (M = 4.403, SD = .08) with a variance of 0.007 did not have enough variability to be included in the CFA analysis. Therefore, an exploratory factor analysis was completed to help determine which variables should be included in the analyses. It was
revealed that the homeostasis model assessment of insulin resistance (HOMA) had the largest factor loading for the metabolic syndrome in this sample. A CFA using the aforementioned indicators and HOMA instead of fasting glucose revealed excellent fit for the metabolic syndrome in young adults instead of fasting glucose. Additional research is needed to further clarify the usefulness of this addition. This study adds to the literature supporting a single common factor, the metabolic syndrome, as underlying this clustering of risk factors.

240) Abstract 1465
PERCEIVED STRESS AND CORONARY HEART DISEASE RISK IN YOUNG ADULTS
Timothy S. Freson, M.S., Celestina Barbosa-Leiker, M.S., Ashley J. Miller, B.S., Bruce R. Wright, M.D., Health & Wellness Services, John M. Ruiz, PhD, Heidi A. Hamann, PhD, Psychology, Washington State University, Pullman, WA
Psychological stress has been shown to predict insulin resistance (IR), hypertension, and coronary heart disease (CHD). Cardiovascular fitness (CF) and cortisol have physiological and psychological effects but little is known about how these factors interact. The purpose of this study was to examine the relationship between stress and other risk factors for CHD in a young population. A total of 159 adults with an average age of 18.25 years (SD=8.8) consisting of 94 females and 65 males participated in the Student Health and Personality Examination Study II during 2005. Stress was measured using the Perceived Stress Scale (PSS; Cohen & Williamson, 1985). Physiological predictor variables included cardiovascular fitness (CF), serum lipids, serum insulin, serum glucose, serum cortisol, and the inflammatory markers. Significant correlates were CF, cortisol, and log transformed glucose were entered into a hierarchical regression, controlling for gender and age. CF (b = -.159, p = .043), cortisol (b = -.176, p = .032), and gender (b = -.331, p = .000) were significant predictors of PSS. Men appear to have lower levels of PSS. The results suggest that endurance exercise could be used as an effective lifestyle intervention in reducing psychological stress and the risk of CHD.

241) Abstract 1657
THE CARDIAC SELF-EFFICACY SCALE (CASE): RELIABILITY AND VALIDITY OF A NEW ASSESSMENT TOOL
Eric B. Hekler, MS, Mental Health, VA Maryland Health Care System, Baltimore, MD, John S. Gottdiener, MD, Willem J. Kop, PhD, Medicine, University of Maryland Medical Center, Baltimore, MD Health behaviors play a major role in heart disease management. Self-efficacy predicts engagement in cardiac health behaviors, including exercise and medication adherence. We created a short scale, the cardiac self-efficacy scale (CASE), and examined the reliability and divergent validity of this instrument. Participants were patients referred for elective coronary angiography (N=97; Age M = 59.6, SD = 7.7, 68% Male; 72% Caucasian). Depression (BDI), anxiety (STAI), and perceived stress (PSS) were assessed in addition to the 14-item CASE. Factor analysis (Maximum Likelihood extraction with Promax Rotation), Cronbach's alpha and bivariate correlations were conducted to assess reliability and divergent validity. CASE assesses two-factor solution (chi-square = 79.63, p < .01) with lifestyle self-efficacy (7 items) and emotional control self-efficacy (6 items), and one item assessing job-performance was dropped. Reliability of the scale was good (total scale Cronbach's alpha= 0.91; subscales alpha= 0.89 and 0.85, respectively). Lifestyle and emotional self-efficacy subscales were moderately correlated (r = 0.60, p < 0.0001). Divergent validity was supported by lower but significant correlations with depression (r = -0.51 & -0.41 respectively) and anxiety (r = -0.22 & -0.28 respectively), and non-significant correlations with perceived stress, age, gender, or race (r-values < 0.18). Heart disease management self-efficacy can be assessed with this new tool, which has good psychometric reliability and validity. The CASE may be useful for treatment allocation and risk factor monitoring for patients with cardiovascular disease. Future studies will focus on assessing the utility of the CASE in predicting health behaviors in cardiac patients.

242) Abstract 1154
PHYSICAL ACTIVITY AND FITNESS TO EXPLAIN THE ASSOCIATION OF DEPRESSION AND HEART RATE VARIABILITY
Joel W. Hughes, Ph.D., Elizabeth Casey, MA, Psychology, Vicki H. Doe, MA, Ellen L. Glickman, Ph.D., Exercise Science, Kent State University, Kent, OH, Phyllis K. Stein, Ph.D., Medicine, Washington University, St. Louis, MO, Donna Waechter, Ph.D., Cardiovascular Institute, James Rosneck, MS, Cardiopulmonary Rehabilitation, Summa Health System, Akron, OH; Richard A. Josephson, MD, School of Medicine, Case Western Reserve University, Cleveland, OH
Altered autonomic nervous system functioning may help to explain the relationship between depression and cardiac mortality, and may be partly explained by lower levels of physical activity and poorer fitness among depressed patients. This study examined the relationship between depression, Holter-derived heart rate variability (HRV), physical activity, and physical fitness among cardiac patients participating in cardiac rehabilitation, as these patients represent a high risk group of cardiac patients typically recovering from a cardiac event and who are subject to multiple assessments and interventions. A gender and age-matched sample of 22 depressed and 22 control patients were assessed at the time of their enrollment in cardiac rehabilitation. Patients completed a 24-hour Holter monitoring protocol, 3 days of activity monitoring with pedometer, and a maximal exercise stress test. Depression symptoms were measured using the Beck Depression Inventory followed by a structured diagnostic interview. Information regarding patient demographics, and cardiac and medical diseases were collected prospectively. Depression appeared to be associated with altered autonomic activity as reflected in reduced HRV, as depression was associated with many frequency and time-domain measures of HRV (all p < .05). However, depression was not associated with decreased very low frequency HRV or high frequency HRV. Activity and fitness were also lower among the depressed patients (p < .05). The relationship between depression and HRV was attenuated after controlling for the lower activity and fitness levels that characterized depressed patients, suggesting that physical activity and its resultant aerobic fitness level may be a mechanism by which depression alters autonomic tone. Future longitudinal studies of exercise treatment in these patients, coupled with measures of autonomic function and outcome, would help confirm this proposed mechanism.

243) Abstract 1456
CARDIOVASCULAR FITNESS, ANXIETY, DEPRESSION, AND INSULIN RESISTANCE IN YOUNG ADULTS
A. L. Jensenka, Timothy S. Freson, M.S., Celestina Barbosa-Leiker, M.S., Bruce R. Wright, M.D., Health & Wellness Services, John M. Ruiz, PhD, Heidi A. Hamann, PhD, Psychology, Washington State University, Pullman, WA
Insulin resistance (IR) is a significant risk factor for the initiation and progression coronary heart disease. Anxiety (AX), depression (DEP), and cardiovascular fitness (CF) have been found to play a role in IR in older populations. This study evaluates the relationship of CF, AX, and DEP to IR in a young healthy population. Participants were 159 healthy young adults with a mean age of 18.25 and SD = .88 (59.1% female, 40.9% male). Psychological factors of DEP and AX were measured using the Center for Epidemiological Studies-Depression scale (CES-D), and the trait anxiety portion of the State-Trait Anxiety Inventory (STAI). Physiological predictor variables included blood pressure, lipid profile, and inflammatory markers. Significant correlates of CF, CES-D, and STAI were entered into hierarchical regressions, controlling for gender, smoking and medication. CF was a significant independent predictor of log transformed homeostatic model assessment-IR (HOMA-IR) (b = -.224, p = .007), log transformed insulin (b = -.231, p = .006), waist circumference (b = -.274, p = .001). CF (b = -.242, p = .000) and gender (b = -.748, p = .000) were significant predictors of percent body fat while CF (b = -.209, p = .011), gender (b = .192, p = .021) and smoking (b = -.179, p = .020) were significant predictors of diastolic blood pressure. The psychosocial factors trait AX and DEP were not significant predictors of insulin resistance risk factors in this younger healthy sample. Perhaps psychological factors play a larger role with increasing age and level of disease.
These results indicate that MS for women is likely linked to different risk factors compared to men. Traditional risk factors appear perfectly fit for men. It also suggests that an inflammatory component plays a dominant role for women apart from triglycerides. These results suggest MS as being different disease entities for men and women.

246) Abstract 1080
ACCULTURATION, PHYSICAL ACTIVITY, CORTISOL, AND SYMPTOMS OF DEPRESSION IN HISPANIC POST-MYOCARDIAL INFARCTION PATIENTS: A STRUCTURAL EQUATION MODELING APPROACH
Vansi K. Koneru, M.S., Paul S. Wachowiak, M.S., Marc Gellman, Ph.D., Miriam Gutt, Ph.D., Elsa Robinson, R.N., Melanie Ashby, Ph.D., Neil Schneiderman, Ph.D., Psychology, University of Miami, Coral Gables, FL
Individuals who engage in physical activity following a myocardial infarction (MI) experience physical and mental health benefits. To date, sociocultural predictors of physical activity (PA) and their relationship with health indices in Hispanic populations continue to be understudied. Using a structural equation modeling approach, this study explored the relationship among acculturation, PA, cortisol, and depression in Hispanic post-MI patients. Participants were 152 Hispanic post-MI patients (70% men) with a mean age of 53 (SD=8.6) years and a mean BMI of 28.8 (SD=5.8). Path coefficients (all p<0.05), adjusting for relevant covariates (e.g., ejection fraction), demonstrated that increasing acculturation was associated with higher PA. Greater PA was associated with higher cortisol. Additionally, greater PA was associated with a larger cortisol decline over the day (waking minus 7 hrs. post-waking) and a reduced cortisol awakening response (30 mins. post waking minus waking). Finally, greater PA was associated with lower IES-R-total score at baseline and lower IES-R-hyperarousal (Standardized Beta=-.20, p<.01) scores at 6-months. Conclusion: TE does not appear to be modified by a coping intervention for ICD patients; however, high baseline TE in this sample could have limited our ability to assess the effectiveness of this intervention. Higher baseline TE related to ICD therapy is associated with decreases in IES-R symptoms, specifically, hyperarousal, and avoidance symptoms at 6-month follow-up.

245) Abstract 1792
ARE THERE SEX DIFFERENCES IN THE RELATIVE CONTRIBUTION OF CLASSIC CARDIAC RISK FACTORS TO THE METABOLIC SYNDROME?
Lynn Jolicoeur, Technician, André Arsenault, MD, Bernard Meloche, Technicain, Nadine S. Bekkouche, BSc, Catherine Laurin, PhD, Kim L. Lavoie, PhD, Blaine Ditto, PhD, Philippe Siébenné, B.A, Roxanne Pelletier, PhD, Jennifer Gordon, BSc, Sandra Péloz, MA, Xueli Zhao, PhD, Simon L. Bacon, Nuclear Medicine, Montreal Heart Institute, Montreal, Quebec, Canada
ACC’s definition of the metabolic syndrome (MS) implies the presence of three of five risk factors: central adiposity (BMI), hypertriglyceridemia, hyperglycemia, hypertension (HBP) and low HDL. We wanted to compare the relative contribution of the five factors on the diagnosis of MS for men and women.

A total of 263 subjects (194 men and 69 women) were included in a study on silent ischemia. They were classified as MS according to ACC. The relative predictive value of each of the five traditional criteria was obtained by discriminant analysis made separately according to the sex. Insulinemia, creatinine, LDL, sedentation, waist measurement and C-reactive protein (CRP) were also explored. For both men and women, the most discriminant factor was triglycerides (F=41.5, p<.001 and F=39.7, p<.001). The four other criteria except hyperglycemia were significant only for men: HDL (F=27.6, p<.001), BMI (F=18.2, p<.001), HBP (F=11.7, p<.001) and hyperglycemia (F=12.3, p<.001). Predominant factors for women are sedentation (F=13.2, p<.001), hyperglycemia (F=4.4, p<.04) and creatinine (F=4.3, p<.04).

The results indicate that MS for women is likely linked to different risk factors compared to men. Traditional risk factors appear perfectly fit for men. It also suggests that an inflammatory component plays a dominant role for women apart from triglycerides. These results suggest MS as being different disease entities for men and women.
and income (B = -4.13, p < .01) were significant predictors of impairments in social and leisure activities. To conclude, income and age may explain ethnic/racial discrepancies in impairments in family roles adjustment post-ACS. Ethnic effects not associated with our demographic and medical covariates continue to predict social leisure impairments. Whether this impairment is due to unmeasured demographics or medical comorbidity, or to other variables is unknown at this time.

248) Abstract 1399
SOCIAL SUPPORT AND CARDIOVASCULAR REACTIVITY TO STRESS AMONG CHINESE IMMIGRANTS
Christine Lee, BA, Sonia Suchday, PhD, Ferkau Graduate School of Psychology, Bronx, NY; Judith Wylie-Rosett, EdD, RD, Albert Einstein College of Medicine, Bronx, NY
Lack of social support is an important determinant of health in the immigrant community. The current study assesses the buffering effect of social support on cardiovascular reactivity to stress among Chinese immigrants in the New York City area. Hypotheses: (1) High perceived social support will be associated with both lower blood pressure and heart rate at baseline, during a stress recall interview, and following the intervention, compared to those who do not have high perceived social support; (2) Lower levels of acculturation to American culture (i.e., participants who hold their Chinese cultural values) will be associated with lower likelihood of soliciting social support to cope with stress. Thirty Chinese immigrants were recruited from New York Downtown Hospital in Manhattan. Following a study description and informed consent procedures, participants completed questionnaires assessing their social support - quality and size. After a 10-minute period of adaptation, participants were videotaped as they recalled a stress-provoking interview-related to the Spinning-Grater State-Trait Anger semi-structured interview format. Recovery was then monitored for 20 minutes and participants were debriefed. Blood pressure and heart rate were monitored at 2 minute intervals during baseline and one minute intervals throughout the stressor. Participants ranged in age from 31-84 years (Mean Age = 59.7 years; 70% Female); average length of stay in the U.S. is 23.5 years. Pearson's correlation analyses revealed a negative correlation between social support and systolic blood pressure during baseline (r = -.49, p < .006), during the interview (r = -.46, p = .01), and during recovery (r = -.53, p < .003). Also, lower levels of acculturation were positively correlated with lower likelihood of seeking social support (r = -.41, p < .03). Conclusion: In the Chinese immigrant community, lack of social support is associated with lower likelihood of soliciting social support to cope with stress. The role of inflammation on the pathophysiology of coronary disease is unclear. We wanted to compare sedentification and CRP in relation to a model of endothelial dysfunction comprising indices of vascular reactivity and metabolic kinetics in men and women. A total of 263 subjects (194 men and 69 women) underwent a five-minute supra-styloric ischemic provocation of the right arm as part of the rest study of a standard SPECT myocardial perfusion imaging study (MPI), the left arm being used as a control. The reactive hyperaemic response was measured by the infection of 30 mCi of tetrafosmin (Tc-99m DTPA) with a delay of 45-60 seconds related to stress response (FMD). Four parameters were derived from the time activity curve (TAC). The between arms relative uptake ratio (RUR) and three within arms ratios allowing a quantitative estimate of the metabolic kinetics of tetrafosmin: the Elbow to Wrist Upslope Ratio (EWRU), the Elbow to Wrist first Pass Ratio (EWPR) and the Elbow to Wrist Steady-state Ratio (EWSR). A multiple linear regression model was used to compare men and women with and without MS. Men without MS are primarily characterized by a significant link between sedentification and EWPR which is significantly higher (T = 4.6, p < 0.5 ) whereas those which have MS present a reduction in EWSR with an increase in sedentification. By contrast, women with MS, have an increased sedentification rate which is linked to a different kinetic parametric profile: an increased RUR and EWRU. These results seem to indicate that the inflammatory reaction as reflected by sedentification rate and CRP have an influence on the kinetics of tetrafosmin which differs according to sex and MS.

250) Abstract 1791
THE EFFECT OF C-REACTION PROTEIN AND SEDIMENTATION ON VASCULAR AND METABOLIC REACTIVITY ACCORDING TO SEX AND METABOLIC SYNDROME STATUS
Bernard Meloche, Technician, André Arsenault, MD, Lynn Jolicoeur, Technicien, Nadine S. Bekkouche, BSc, Catherine Laurin, PhD, Kim L. Lavoie, PhD, Blaine Ditto, PhD, Philippe Stébenne, BA, Roxanne Pelletier, BA, Jennifer L. Gordon, BSc, Sandra Pélaez, MA, Xueli Zhao, PhD, Simon L. Bacon, PhD, Nuclear Medicine, Montreal Heart Institute, Montreal, Quebec, Canada
The metabolic syndrome (MetS) has been conceptualized as a cluster of risk factors in the development of cardiovascular diseases (CVD). High anger (Ang) and low social support (SS) have been associated with increased CVD incidents. Other research has shown that these factors interact in which high anger/hostility predicted greater blood pressure reactivity in persons with high perceived SS. However, the relationships among Ang, SS, and MetS are less known. The purpose of this study was to test if Ang and SS predicted less MetS (Z = -2.52, p < .01), whereas Ang did not (Z = -1.65, p = .10). Their interaction was not significant. The findings indicated that regardless of Ang expression, perceived SS levels were associated with MetS. Our study provided evidence for the linkage between perceived SS and MetS and highlighted the need for longitudinal studies that can elucidate the mechanisms responsible for this relationship.

249) Abstract 1125
DO ANGER AND SOCIAL SUPPORT PREDICT METABOLIC SYNDROME IN HEALTHY MIDDLE-AGED ADULTS?
Hsin-hua Lin, M.S., Maria M. Llabre, Ph.D., Neil Schneiderman, Ph.D., Barry E. Hurwitz, Ph.D., Psychology, University of Miami, Coral Gables, FL
The metabolic syndrome (MetS) has been conceptualized as a cluster of risk factors in the development of cardiovascular diseases (CVD). High anger (Ang) and low social support (SS) have been associated with increased CVD incidents. Other research has shown that these factors interact in which high anger/hostility predicted greater blood pressure reactivity in persons with high perceived SS. However, the inter-relationships among Ang, SS, and MetS are less known. The purpose of this study was to test if Ang and SS predicted MetS and if they interacted to increase risk in persons with high Ang and low SS. Our sample consisted of 339 healthy individuals (52% men) with an average age of 35.5 (SD= 4.6). Subjects participated in a study assessing physiological responses to behavioral and cognitive stressors for CVD risk indices. Variables: Ang (i.e., anger-out, trait anger inventory total, and anger-control) and SS were assessed using the Social Expression Inventory and perceived SS was assessed using the Social Provisions Scale. A confirmatory factor analysis (CFA) model examined if two latent variables derived from the psychosocial measures: Ang (i.e., anger-out, trait anger inventory total, and anger-control) and perceived SS (i.e., reliable-alliance, guidance, attachment, social-integration, and reassurance-worthy); and a latent variable of MetS (i.e., BMI, total cholesterol/HDL ratio, and resting mean arterial pressure). The measurement model fit the data [Chi-square (49) = 56.21, p = .22]. The two latent variables and their interaction were used to predict MetS. Results revealed that greater perceived SS predicted less MetS (Z = -2.52, p < .01), whereas Ang did not (Z = -1.65, p = .10). Their interaction was not significant. The findings indicated that regardless of Ang expression, perceived SS levels were associated with MetS. Our study provided evidence for the linkage between perceived SS and MetS and highlighted the need for longitudinal studies that can elucidate the mechanisms responsible for this relationship.

251) Abstract 1497
DAYTIME NAPPING, STRESS, SLEEP AND OBESITY: THE SLEEPSCORE STUDY
Jane F. Owens, DrPH, Karen A. Matthews, PhD, Martica Hall, PhD, Psychiatry, Thomas W. Kamarck, PhD, Elizabeth J. Mezick, M.A., Psychology, Daniel J. Buysse, M.D., Psychiatry, Patrick J. Strollo, MD, Steven E. Reis, MD, Medicine, University of Pittsburgh, Pittsburgh, PA
Short sleep duration and sleep disturbance may increase risk of emotional disorders and physical morbidity and mortality, and may lead to daytime sleeping and fatigue. Napping may help relieve sleepiness and fatigue. The purpose of this study was to identify the prevalence of napping in a community based sample, to identify how napping is related to polysomnographic (PSG) sleep, stress, and obesity. The sample included 187 African American and Caucasian men and women participating in SleepSCORE, a study of sleep and cardiovascular risk. The protocol included 2 nights of in-home PSG, 9 days of sleep diary, and psychosocial questionnaires related to stress and sleep. In the 9 days of sleep diaries, 56 (30%) reported naps, 66 (35%) reported 1-2 naps, and 66 (35%) reported > 2 naps. Mean nap length was 40 minutes (SD = 27.8). Napping frequency did not differ by age, race or gender, ps > .20. Analyses compared the 3 groups: 0, 1-2 and >2 naps. Results showed that those who reported more napping had greater waist circumference, weight, and BMI (ps < .02). More frequent nappers reported more daytime sleepiness (p = .002) and daytime fatigue and pain (ps <.06); they had less time asleep (p = .06).
and lower sleep efficiency (p = .04) measured by PSG. They also reported more environmental factors disturbing their sleep (p = .03), more unfair treatment (p = .04), and somewhat higher perceived stress levels (p = .07). Napping is associated with obesity, sleep duration and health, and stress. Cause and effect remain to be determined. Supported by HLO76369 and Pennsylvania Department of Health (contract ME-02-384).

252) Abstract 1070
CORRELATES OF PATIENT ACCEPTANCE OF THE CARDIOVERTER-DEFIBRILLATOR: CROSS-VALIDATION OF THE FLORIDA PATIENT ACCEPTANCE SURVEY IN DANISH PATIENTS
Susanne S. Pedersen, PhD, Medical Psychology, Tilburg University, Tilburg, The Netherlands, Helle Spindler, PhD, Psychology, University of Aarhus, Aarhus, Denmark, Jens B. Johansen, MD, Peter Mortensen, MD, Cardiology, Aarhus University Hospital, Aarhus, Denmark, Samuel F. Sears, PhD, Psychology, East Carolina University, Greenville, North Carolina

Device acceptance may comprise one of the keys to identifying patients at high risk for adverse psychological outcome and poor quality of life in clinical practice. We examined (1) the validity and reliability of the Florida Patient Acceptance Survey (FPAS) and (2) the correlates of patient acceptance among the cardioverter-defibrillator (ICD) group in a larger sample of Danish patients. Patients (n = 556; 82.2% males; mean (SD) age = 61.9 (14.3) years) implanted with an cardioverter-defibrillator at Aarhus University Hospital, Denmark, completed a set of psychological questionnaires. The four-factor structure and the validity of the FPAS were confirmed, with the four factors accounting for 64.3% of the variance. The reliability, measured by Cronbach's alpha, was acceptable for the total scale and all subscales, ranging from .73 to .85. Correlates of device acceptance included age, having a partner, Type D personality, anxiety, depressive symptoms, ICD concerns, with older age (OR:1.04; 95%CI:1.02-1.06), Type D personality (OR:3.77; 95%CI:2.13-6.68), anxiety (OR:2.82; 95%CI:1.53-5.33), depressive symptoms (OR:3.02; 95%CI:1.38-6.60), and ICD concerns (OR:4.84; 95%CI:3.01-7.80) associated with poorer acceptance of the ICD, whereas having a partner was associated with better acceptance. These preliminary findings suggest that screening for psychological factors may aid clinicians in identifying patients at risk of poor device acceptance.

253) Abstract 1150
OVERLAP AND DISTINCTIVENESS OF PSYCHOLOGICAL RISK FACTORS IN ISCHEMIC HEART FAILURE: ARE WE THERE YET?
Aline J. Pelle, MSc, Johan Denollet, PhD, CoRPS, Tilburg University, Tilburg, The Netherlands, Anne-Dorthe Zwisler, MD, National Institute of Public Health, Copenhagen, Denmark, Susanne S. Pedersen, PhD, CoRPS, Tilburg University, Tilburg, The Netherlands

Growing evidence supports the importance of psychological factors in the etiology and progression of cardiovascular disease (CVD). However, this research has been criticized in terms of overlapping psychological constructs. We examined whether psychological questionnaires frequently used in cardiovascular research assess distinct constructs in a mixed group of ischemic heart disease (IHD) and chronic heart failure (CHF) patients. Five hundred sixty-five patients with CHF (n=118) or IHD (n=447) completed the DS14, HADS, BDI, and the STAI. Pearson product moment correlations were computed to determine the interrelatedness between psychological constructs. Principal component analyses (PCA) were conducted on both scale scores and items to determine higher-order constructs and distinctiveness of psychological questionnaires. Two higher-order constructs were identified, namely negative affect and social inhibition. Principal component analyses (PCA) were conducted on both scale scores and items to determine higher-order constructs and distinctiveness of psychological questionnaires. Two higher-order constructs were identified, namely negative affect and social inhibition. These constructs were confirmed, where the high-loading items of the HADS and BDI loaded more diffusely, and items of the STAI reflected two different components. The use of multiple questionnaires in cardiac patients is justified, as the higher order construct negative affect comprised different facets. Social inhibition was also shown to be a distinct construct, indicating that it may timely for CVD research to look at the role of inhibition in addition to negative emotions. Future studies are warranted to determine whether these findings are replicable in other cardiac samples and to specify the unique prognostic value of these psychological facets.

254) Abstract 1436
PSYCHO-EXISTENTIAL FACTORS IN PATIENTS WITH CORONARY ARTERY DISEASE WITH REFERENCE TO CIRCULATING ANTIBODIES TO HSP60
Jose R. Pella, MD, Aracelis M. Quintini, MD, Medicine, University of Carabobo, Valencia, Carabobo, Venezuela, Sabrina Islam, B.A-B.Aci, Babette Weksler, B.A-B.Aci, Medicine, Weil Medical College-Cornell University, New York, N.Y.

Our primary aim is to illustrate the importance of psychosocial and existential stress in patients with coronary artery disease (CAD). The secondary aim is to correlate circulating Anti-Hsp60 levels with both psychosocial and existential needs of patients as compared with healthy subjects in a non-randomized case-control observational study. Quantitative variables such as a life event scale (Holmes and Rahe), depression and anxiety as assessed by a self-report questionnaire, demographic data were used as key variables such as the existential needs were measured in 17 patients 45 to 85 years old,11 male and 6 females and 17 healthy controls matched by age and sex. In CAD patients the mean value of Anti-Hsp60 was significantly increased (P<0.05, Chi-square) over controls for both genders. Psychosocial stress in men was positively correlated with CAD (P<0.05, t test). Anti-Hsp60 and higher psychosocial stress were negatively correlated ranging from -0.31 to -0.73. The Pearson correlation Rxy=0.46 as were existential needs (Spearman coefficient Rs=0.84). Similar correlations between psychosocial stress and CAD were observed in woman, with slightly less correlation between existential needs and Anti-Hsp60 level (Spearman coefficient Rs=0.61).

255) Abstract 1596
TREATMENT OF DEPRESSION AFTER CORONARY BYPASS SURGERY: THE ROLE OF HEART DISEASE ATTRIBUTIONS
Rebecca L. Reese, M.A., Psychology, Kenneth E. Freedland, Ph.D., Brian Steinmeyer, M.S., Psychiatry, Washington University, St. Louis, MO

Persistent depression is common after coronary artery bypass graft (CABG) surgery and is associated with nonadherence, rehospitalization, and mortality. However, little is known about how to treat it. This study investigated post-CABG patients' causal beliefs regarding their future health as they relate to treatment outcomes in a randomized clinical trial of cognitive behavior therapy (CBT), supportive stress management (SSM), and usual care (UC). Eighty-eight depressed patients (46 F, 42 M; mean age = 59, sd=10 years) who were enrolled within one year after CABG surgery reported that they expected to have future problems with coronary artery disease. They were then asked about the non-mutually exclusive factors that were likely to cause this to happen. Biological factors (high cholesterol, diabetes, etc.) were cited by 93% of patients, 70% cited behavioral factors (e.g., smoking, lack of exercise, etc.), and 63% cited emotional factors (e.g., depression, anxiety, etc.). Baseline results revealed that patients who cited biological factors were significantly more anxious, younger, and more depressed, anxious, and hopeless (p<0.05). They were then examined how causal attributions related to psychotherapy treatment outcomes. In an adjusted model, those who made behavioral or emotional attributions had significantly higher scores on the Beck Depression Inventory (BDI) (p<.05 and .03, respectively). However, after adjusting for baseline BDI, both effects were attenuated and became non-significant (both p's >.05). There were no interactions between behavioral attributions and treatment group in either model. No significant relationship was found between biological attributions and follow-up BDI. No significant relationships were found between type of attributions and measures of anxiety at follow-up. We conclude that attributions about future health problems are relevant to depression in post-CABG patients and should be addressed in the context of psychotherapy.
256) Abstract 1424
SOCIAL VIGILANCE AND CARDIOVASCULAR RESPONSE: MODERATING EFFECTS OF THE SOCIAL TARGET'S AFFILIATIVE BEHAVIOR AND RELEVANCE
John M. Ruiz, Ph.D., Heidi A. Hamann, Ph.D., Psychology, Bruce R. Wright, MD, Timothy S. Freson, MS, Health and Wellness Services, Washington State University, Pullman, WA
Social vigilance, monitoring the social environment for potential threats, may be a common behavioral mechanism linking psychosocial factors to cardiovascular disease. Our aim was to examine 2 social environment characteristics—the affiliative behavior and relevance of a social target as moderators of cardiovascular reactivity (CVR) during an opportunity for vigilance and subsequent stressor. Prior to giving a speech, 218 men and women were shown a video of a male confederate discussing the research aims of the lab. Half of the participants were told that the confederate would evaluate their speech (high relevance), the other half were told he was simply a research assistant (low relevance). Half of the participants viewed the confederate delivering his remarks in a high affiliation, warm/friendly manner, the other half observed a low affiliation, cold/hostile presentation. As expected, vigilance was associated with a significant increase in blood pressure and decrease in HR from baseline, all ts (205) > 2.47; p < .01. The social target’s relevance emerged as a predictor of vascular reactivity during vigilance. Men with less active (3 repeats) alleles and high CSF 5HIAA, in whom the high reduction function of the neurotransmitter serotonin (5HT) in the central nervous system (CNS) has been associated with negative psychological & behavioral characteristics. Levels of the major 5HT metabolite, 5HIAA, in cerebrospinal fluid (CSF) have been used as an index of CNS 5HT turnover. Men with the more active (3.5/4 repeats) alleles of a functional polymorphism of the monoamine oxidase-A gene promoter (MAOA-uVNTR) have higher CSF 5HIAA levels (Williams et al., Neuropsychopharmacology, 2003), presumably reflecting increased 5HT breakdown and hence reduced CNS 5HT function vs. men with less active (3 repeats) alleles and high CSF 5HIAA, in whom the high 5HIAA must reflect increased CNS 5HT synthesis and/or release. We hypothesized that men with 3 repeats and high 5HIAA (N=14) would show a more favorable profile of personality (NEO-PI-R) & other psychosocial traits than men with the other 3 MAOA-uVNTR/5HIAA combinations. Data were analyzed with a mixed-effects 2-level model comparing the cell of interest with the other 3, controlled for age, gender, and income. Spirituality has also been related to better health in immigrants and buffers against the negative effects of acculturative stress. A sample of 250 Mexican immigrants living in the United States was studied. The average age was 34, 55% female, and had lived an average of 8 years in the United States. Spirituality was measured using the FACIT-Sp-Ex. Cardiovascular disease risk factors were assessed using 24-hour ambulatory blood pressure, C-Reactive protein, fasting glucose and insulin, and body mass index. Analyses were conducted using the general linear models procedure in SAS (Cary, NC). It was found that spirituality was related to decreased blood pressure and C-reactive protein and a reduced acculturation effect (b = -.05). Overall, spirituality appears to be related to positive health outcomes in Mexican immigrants and buffers against the stress of cultural change.

258) Abstract 1730
SPIRITUALITY BUFFERS THE NEGATIVE EFFECTS OF ACCULTURATIVE STRESS ON CARDIOVASCULAR DISEASE RISK FACTORS IN MEXICAN IMMIGRANTS
Patrick R. Steffen, PhD, Psychology, Brigham Young University, Provo, UT
Mexican immigrants to the United States have better health and decreased cardiovascular disease risk factors as compared to both European Americans and Mexican Americans born in the United States. This relationship has been called the Hispanic Paradox because Mexican immigrants have better health in spite of having low levels of education and income. Spirituality has also been related to better health and Mexican immigrants have been shown to have higher levels of spirituality than Americans who were born in the United States. The purpose of the present study was to examine whether spirituality might explain the Hispanic Paradox. Specifically, it was hypothesized that higher levels of spirituality would contribute to better health in immigrants and buffer against the negative effects of acculturative stress. A sample of 250 Mexican immigrants living in the United States was studied. The average age was 34, 55% female, and had lived an average of 8 years in the United States. Spirituality was measured using the FACIT-Sp-Ex. Cardiovascular disease risk factors were assessed using 24-hour ambulatory blood pressure, C-Reactive protein, fasting glucose and insulin, and body mass index. Analyses were conducted using the general linear models procedure in SAS (Cary, NC). It was found that spirituality was related to decreased blood pressure and C-reactive protein and a reduced acculturation effect (b = -.05). Overall, spirituality appears to be related to positive health outcomes in Mexican immigrants and buffers against the stress of cultural change.

259) Abstract 1287
CORRELATES OF WAIST CIRCUMFERENCE IN HEALTHY YOUNG ADULTS
Bruce R. Wright, MD, Health and Wellness Services/ Psychology, Celestina Barbosa-Leiker, MS, Health and Wellness Services, Washington State University, Pullman, WA, Timothy S. Freson, MS, Health and Wellness Services, Washington State University, Pullman, WA, Ruiz John, PhD, Heidi Hamann, PhD, Psychology, Washington State University, Pullman, WA, Ashley Miller, BS, Health and Wellness Services, Washington State University, Pullman, WA
Visceral obesity is associated with insulin resistance, the metabolic syndrome, type 2 diabetes, and cardiovascular (CV) disease, and is dramatically increasing in younger populations. It is therefore important to further characterize the correlates of visceral adiposity in younger people. This study examined the cross-sectional predictors of waist circumference (WC) as a measure of visceral adiposity in a sample of 154 apparently healthy young adults (67 men, 87 women, average age = 18.2). Psychological predictor variables included the Center for Epidemiological Studies Depression Scale, the Perceived Stress Scale, and the Buss-Perry Aggression Questionnaire. Physiological predictor variables included systolic (SBP) and diastolic (DBP) blood pressure, CV fitness (VO2max), serum lipids, serum insulin, the pro-inflammatory marker c reactive protein (CRP), and the anti-inflammatory cytokine, interleukin 10 (IL 10). After adjustment for gender, the significant correlates of WC included SBP, VO2 max (c reactive), the total cholesterol/HDL ratio, CRP, log insulin, and log IL 10. Following hierarchical regression, SBP (b = .248, p < .001), log insulin (b = -.368, p < .001), CRP (b = .248, p = .005) and log IL 10 (b = -.142, p = .038) remained as significant predictors of WC. The direct association of CRP with WC, coupled with the inverse association with IL 10, suggests that visceral obesity is characterized by not only increased pro-inflammatory activity, but also diminished anti-inflammatory activity. These results also support the incorporation of WC, as a simple and inexpensive measure for estimating visceral adiposity, into routine clinical screening for CV and metabolic risk in younger populations.
250) Abstract 1278
PREDICTORS OF INTERLEUKIN 10 IN HEALTHY YOUNG ADULTS
Bruce R. Wright, MD, Health and Wellness Services/ Psychology, Timothy S. Freson, MS, Health and Wellness Services, Washington State University, Pullman, WA, Celestina Barbosa-Leiker, MS, Health and Wellness Services, Washington State University, Pullman, WA, WA, John M. Ruiz, PhD, Psychology, Washington State University, Pullman, WA, Heidi Hamann, PhD, Psychology, Washington State University, Pullman, WA
Interleukin 10 (IL 10) is an anti-inflammatory cytokine that inhibits the inflammatory response in blood vessel walls. Moreover, while inflammation has been hypothesized as a mechanism connecting psychological factors like depression to atherosclerosis, few studies have investigated the relationship between psychological factors and anti-inflammatory agents like IL 10. This cross-sectional study therefore examined psychological and physiological predictors of IL 10 in healthy young adults (124 women, 84 men, mean age = 18.4). Psychological predictor variables included the Center for Epidemiological Studies Depression Scale, the Perceived Stress Scale, and the Buss-Perry Aggression Questionnaire. Physiological predictor variables included blood pressure, fitness (VO2max), anthropometric indices, the homeostasis model of insulin resistance (HOMA-IR), and serum levels of the inflammatory cytokines IL 6, IL 1b, tumor necrosis factor alpha (TNF-A), and interferon gamma (IFN-G). There were no significant correlations between log IL 10 and any of the psychological scales. After adjustment for gender, log IL 10 correlated directly with all of the other cytokines measured, and inversely with waist circumference and % body fat. Following hierarchical regression, only log IL 4 (b = .49, p < .05), log IL 6 (b = .49, p < .05) and log IFN-G (b = .432, p < .001) predicted log IL 10 levels, perhaps reflecting the relative balance of pro-inflammatory vs. anti-inflammatory, and Th1 vs. Th 2 processes, in this essentially healthy sample. Given the importance of anti-inflammatory processes in health and disease, more research is warranted in this area incorporating a range of both healthy and clinical populations.

261) Abstract 1090
CHRONIC ASThma AND QUALITY OF LIFE: MECHANISMS OF ASSOCIATION USING A POPULATION-BASED STUDY
Frank C. Bandiera, MPH, Epidemiology and Public Health, University of Miami, Miami, Florida, William Jeffries, MA, Sociology, University of Florida, Gainesville, Florida, Ahmed Arif, MD, PhD, Public Health Sciences, University of North Carolina at Charlotte, Charlotte, North Carolina, Nabih Asal, PhD, University of Florida, Epidemiology and Biostatistics, Gainesville, Florida
Introduction: Previous research has found that asthma is related with worse quality of life. Income, smoking status and body mass index have been related with both asthma and quality of life. The purpose of the present study was to examine relations among income, smoking status, body mass index, and asthma on quality of life outcomes in individuals surveyed as part of the Centers for Disease Control and Prevention 2006 Behavioral Risk Factor Surveillance System (BRFSS). Methods: 2006 BRFSS demographic, asthma, and quality of life data were obtained on non-Hispanic Whites (68.70%), non-Hispanic Blacks (9.25%), Hispanics (14.79%) and non-Hispanic others (7.26%). Ordinal logistic analysis was used to examine the main and interaction effects of income, smoking status, body mass index, and history of asthma on poor mental health (n=349,569), poor physical health (n=348,519), activity limitation (n=181,859), and general health (n=354,351). Results: Income level modified the relationship between asthma and mental health, activity limitation and general health. Specifically, persons of low income with asthma reported more days of poor mental health (OR=1.32, p<.0003), more days of activity limitation (OR=1.38, p=.0003) and worse general health (OR=1.33, p<.0001). Smoking status modified the relationship between asthma and mental health, physical health and general health. Current smokers with asthma reported more days of poor mental health (OR=1.18, p=.0006), days of poor physical health (OR=1.21, p=.0019), and worse general health (OR=1.20, p=.0019). Body mass index modified the relationship between asthma and mental and activity limitation. Obese persons with asthma reported more days of poor mental health (OR=1.19, p=.0023) and more days of activity limitation (OR=1.27, p=.020). Conclusions: The results of this study highlight how factors that worsen asthma modify the relationship between asthma and quality of life outcomes.

262) Abstract 1661
DEPRESSIVE SYMPTOMS AND RISK BEHAVIOR IN ASTHMA AND OTHER CHRONIC RESPIRATORY CONDITIONS: RESULTS FROM A NATIONAL POPULATION-BASED SURVEY
Raz Gross, MD, MPH, Avida Goral, MPH, Mental Health Epidemiology, Joshua Lipsitz, PhD, Mental Health Epidemiology, Galit Goulavoy, MSc, Mental Health Epidemiology, Gertner Institute for Epidemiology, Tel-Hashomer, Israel, Noga Garty-Sandalon, RD, MSc, Manfred Green, MD, PhD, Israel Center for Disease Control, Ministry of Health, Tel-Hashomer, Israel
Previous research suggests that depression is common in individuals with asthma and other chronic respiratory conditions (CRC). Most of the studies, however, used data on help seeking patients at clinical settings. Data from large, representative community samples are limited. Moreover, research on the association between depressive symptoms (DS) and risk behaviors in persons with CRC is scarce. We analyzed data from the National Health and Nutrition Examination Survey (NHANES), conducted on a large representative sample (N=9,509; 58% response rate) of the adult Israeli population in 2003-4. Information on past month depressive symptoms; past year, physician diagnosed asthma, emphysema, and chronic bronchitis; current and past smoking; physical activity; height and weight were obtained by means of a telephone interview, using self report instruments from the European Health Interview Survey (EUROHIS). We used multinomial logistic regression models to assess the relationship between CRC and DS, and between DS and risk behaviors (smoking, physical inactivity, and obesity) adjusting for potential confounders. A total of 484 participants (5.1%) reported past year asthma, chronic bronchitis, or emphysema. Among participants with CRC 16.1% had significant depressive symptoms, compared with 7.1% among participants without CRC (adjusted odds ratio [AOR], 1.01; 95% CI, 1.50-2.70; p<.0001). Current smoking was significantly more common among participants with CRC and significant DS, compared to those without DS (31.2% vs. 18.5%; AOR, 1.99; 95% CI, 1.03-3.87; p=.008). Participants with significant DS were also more likely to be physically inactive compared to those without DS (71.4% vs. 51.4%; AOR, 2.38; 95% CI, 1.31-4.33; p<.005). Depressive symptoms were not associated with obesity. Our results suggest that current significant depressive symptoms are common and associated with current smoking and lack of physical activity in persons with CRC in the community. These findings might have important potential clinical and public health implications.

263) Abstract 1193
IS SEVERE ECONOMIC DISADVANTAGED ADULTS IN CANADA HAVE WORSE ASTHMA?
Kim L. Lavoie, PhD, Anne Bouchard, BSc, Isabelle Boisvert, Montreal Behavioral Medicine Center, University of Quebec, Hôpital du Sacré-Cœur, Montreal, Quebec, Canada, Eric Loucks, PhD, Epidemiology, McGill University, Montreal, Quebec, Canada, Simon L. Bacon, PhD, Montreal Behavioral Medicine Center, Concordia University, Hôpital du Sacré-Cœur, Montreal, Quebec, Canada
Socio-economic status (SES) has been linked to higher morbidity in patients with several chronic diseases, but may be particularly relevant to asthma due to mechanisms by which it could adversely impact asthma outcomes. At the individual level, asthmatics of lower SES may have higher exposures to indoor (e.g., cockroaches, tobacco smoke) and outdoor (e.g., urban pollution) allergens, and poorer access to health care, which may increase risk for asthma exacerbations. Though the SES-asthma link has been well established in children, less is known about this association in adults. This study assessed associations between adult SES and five measures of asthma morbidity in 782 adult asthmatics (n=467 women, M age 48.5 yrs): asthma control; pulmonary function (%FEV1); asthma-related health service use in the past year (emergency department, ED visits and hospitalizations); asthma self-efficacy, and asthma-related quality of life. All patients underwent a socio-demographic and medical history interview and pulmonary function testing on the day of their asthma clinic visit, and completed a
battery of questionnaires (Asthma Control Questionnaire, ACQ; Asthma Quality of Life Questionnaire, AQLQ; Asthma Self-Efficacy Scale, ASES). General Linear Model 1 assessed associations between SES (measured using educational level: M=12.9 yrs; range 2-35 yrs) and each morbidity measure, controlling for age, sex and asthma severity. Results indicated that lower SES was significantly associated with worse asthma control (F=11.63, p<.001), greater health service use (hospitalizations) (F=5.96, p<.05), and worse asthma self-efficacy (F=12.04, p<.01), independent of covariates. SES was not related to worse pulmonary function or quality of life. Results suggest that SES (measured according to education level), is associated with several indices of worse asthma morbidity in adult asthmatics. Results are consistent with previous studies linking lower SES to worse asthma in children. Future studies should examine the mechanisms by which low SES adversely impacts asthma in adults.

264) Abstract 1753

HOME MONITORING OF AIRWAY INFLAMMATION WITH EXHALED NITRIC OXIDE: EVALUATION OF A NEW AMBULATORY TECHNIQUE FOR ASTHMA PATIENTS

Antje Kullowatz, PhD, Environmental Health, Harvard School of Public Health, Boston, MA, Kristin E. Schellack, undergraduate student, Thomas Ritz, PhD, Psychology, Southern Methodist University, Dallas, TX

Eosinophilic airway inflammation is a key pathophysiological feature of asthma that can be measured noninvasively by exhaled nitric oxide (NO). We sought to investigate the feasibility, repeatability, and acceptance of the recently developed hand-held NO analyzer (Aerocrine AB; Sweden) in a study of daily home measurements over a 2-month period in patients with asthma. Participants used an electronic diary on symptoms and mood and performed NO as well as forced expiratory flow (FEV1) measurements daily in the evening. All measurements were recorded in electronic memories of the equipment. Respiratory impedance and additional spirometry indices were measured in the laboratory at the inclusion, the one month follow up, and at the completion visit. Thirteen participants (all female, age: 18-51 yrs) completed the full 2-month study protocol. They performed 57 to 70 daily measurements of NO during this time period (8.9% missing in total): missing values per person ranged from 0 to 17. NO measures at the visits were highly correlated, but were not associated to lung function measures. Mostly, the instrument was described as easily manageable and helpful for asthma management. Exhaled NO values show a considerable day-to-day variation in asthma patients (median=28.5 ppb, range=8.2 to 74.0 ppb) and provide diagnostically relevant information beyond traditional lung function measurements. Dependency on medication, symptoms, and asthma triggers need to be studied in further detail. Home monitoring of airway inflammation with this noninvasive hand-held device is feasible and well accepted by participants. The device will allow daily monitoring of NO changes in biobehavioral studies of asthmatic airway inflammation and will help improving asthma management.

265) Abstract 1710

EMOTIONAL REACTIVITY OF THE AIRWAYS IN ASTHMA: CONSISTENCY ACROSS EMOTION INDUCTION TECHNIQUES AND EMOTIONAL QUALITIES

Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Antje Kullowatz, Ph.D., Harvard School of Public Health, Boston, MA, Hans-Jürgen Smith, Ph.D., Vivas Healthcare, Höchberg, Germany, Francine Kusminskas, Ph.D., Helgo Magnussen, Ph.D., Pulmonary Research Institute, Hospital Grosshansdorf, Grosshansdorf, Germany, Bernhard Dahme, Ph.D., University of Hamburg, Hamburg, Germany

Asthmatic airway constriction in response to emotional stimuli is well-documented. Most studies suggest significant responding to unpleasant stimuli, but some also to pleasant or exciting stimuli. In addition, considerable between-individual differences exist in the extent to which the airways of asthma patients respond to such stimuli. We therefore studied the stability of between-individual differences across emotion induction techniques and across qualities of emotion. Fifty-four asthma patients viewed two affective films and two blocks of emotional pictures from each of the following three categories: pleasant (amusing comedy; happiness pictures), unpleasant (surgery scenes; blood and mutilation pictures) and neutral quality. Two parallel subsets of these stimuli were shown 3 to 8 days apart. At the beginning of the session, patients inhaled a placebo or an anticholinergic agent, respectively, in a randomized double-blind design. Respiratory resistance at 5-3 Hz was recorded before and during each stimulus presentation with impulse oscillometry. Significant increases in resistance were observed during unpleasant stimulation regardless of the induction technique. Pleasant stimuli elicited weaker and more variable responses. Responses to unpleasant films were significantly correlated with responses to unpleasant pictures across the resistance spectrum, r=.37-.46, p<.01. Resistance changes during pictures, but not films, of a pleasant and unpleasant quality were also correlated at the same level. Thus, the intensity of airway responses to unpleasant emotional stimuli is moderately consistent across stimulus types, but generalization across emotional qualities depends on the type emotion induction technique used.

266) Abstract 1142

DOES STRESS DURING PREGNANCY PREDICT ANTHROPOMETRIC CHARACTERISTICS OF THE NEONATES?

Adomas Bunevicius, Faculty of Medicine, Kaunas University of Medicine, Garliava, Kauno rajonas, Lithuania, Laima Kusminskas, Robertas Bunevicius, Institute of Psychophysiology and Rehabilitation, Kaunas University of Medicine, Palanga, Lithuania

It is well known that stress during pregnancy is associated with negative neonatal outcomes. The association between antenatal maternal personality traits and neonatal outcomes has never been studied. Therefore, the aim of this study was to evaluate the relationship between antenatal maternal psychosocial stress and personality traits versus anthropometric characteristics of the neonates. Three-hundred and seven randomly selected pregnant women attending 2 obstetric clinics agreed to participate in the study and were evaluated for acute and chronic perceived psychosocial stress using DSM-III-R Axis IV criteria in all three trimesters of pregnancy and were evaluated for personality traits using the Big-Five Personality Inventory in the second trimester of pregnancy. After women delivered their babies we analyzed 102 birth delivery medical case histories and obtained information about birthweight, height, Appgar scores of the neonates and calculated Body Mass Index (BMI) of the neonates. Perceived acute psychosocial stress in the third trimester pregnancy was found to be significant predictor of height of the neonates (r=0.26, p=0.007). Perceived acute psychosocial stress in the first and second trimesters of pregnancy, perceived chronic psychosocial stress in all trimesters of pregnancy as well as Big-Five personality dimensions did not predict any anthropometric characteristic of the neonates. Mothers who had acute psychosocial stress scores in the third trimester of pregnancy from 0 (no stress) to 3 (medium stress) delivered significantly taller neonates when compared to women who had acute psychosocial stress scores from 4 (severe stress) to 6 (catastrophic stress) in the third trimester of pregnancy (52.2±2.3cm and 50.5±1.5cm, respectively, p=0.003). Higher level of acute, but not chronic, psychosocial stress in the third trimester of pregnancy is associated with higher height of the neonates. Maternal personality traits are not associated with anthropometric characteristics of the neonates. Higher level of acute psychosocial stress in the third trimester of pregnancy is associated with smaller height of the neonates.

267) Abstract 1176

PSYCHOLOGICAL STRESS INCREASES THE RISK OF CHORIOAMNIONITIS AMONG WOMEN WITH PRETERM PREMATURE RUPTURE OF THE FETAL MEMBRANES

Toby Yaronowitz, MD, Pediatrics, Martica Hall, PhD, Psychiatry, Univ Pittsburgh, Pittsburgh, PA

Premature rupture of the fetal membranes (pPROM) is the leading cause of infant morbidity and mortality in developed countries today. One cause of preterm birth is preterm premature rupture of the fetal membranes (pPROM). pPROM increases the risk of chorioamnionitis (chorio), an infection of the fetal membranes and placenta. Chorio-exposed premature infants are at higher risk of perinatal brain injury and developmental disabilities compared to other premature infants. It is not clear why some women with pPROM develop chorio whereas others do not. Because psychological stress has been associated with preterm delivery, we
hypothesized that psychological stress increases the risk of chorio among women with pPROM. We enrolled 15 women with pPROM at 24-31 wk gestation (GA), who were not in active labor and not suspected to have chorio at the time of admission. Mean salivary cortisol concentrations over 2d (5 samples/d) were compared for women who did and did not develop chorio. Psychological stress was assessed by the following batteries: PERI Life Events Scale, 14-item Perceived Stress Scale, Interpersonal Support Evaluation List, Daily Hassels Scale, Relationship Scale, Beck Depression Inventory, and an investigator-generated Stress of Pregnancy Scale. Ten of the 15 women developed chorio. We found no relationship between mean cortisol values and GA at enrollment, GA at delivery, the development of chorio, or the score on any psychological assessment. Women who developed chorio had higher scores on the PERI life events scale overall (p=0.07), and in particular on Family (p=0.016) sub-scale. Furthermore, the PERI Pregnancy Subscale score was negatively correlated with GA at delivery (R=-0.59, p=0.026). Women with and without chorio scored similarly for the remaining scales. We conclude that psychological stress, particularly as it pertains to the stress of pregnancy and family relationships, increases the risk of chorio among high-risk women with preterm premature rupture of the fetal membranes.

268) Abstract 1548
PSYCHOLOGICAL LIAISON COUNSELING IN OBSTETRIC INPATIENTS TREATED IN ORDER TO PREVENT PRETERM BIRTH: DETERMINANTS OF DEMAND AND OUTCOMES
Beate Ditzen, Ph.D., Carol Hunkeler, B.A., Clinical Psychology & Psychotherapy, University of Zurich, Institute of Psychology, Zurich, Switzerland, Roland Zimmermann, M.D., Dept. of Obstetrics and Gynecology, University Hospital Zurich, Zurich, Switzerland, Ulrike Ebkler, Ph.D., Clinical Psychology & Psychotherapy, University of Zurich, Institute of Psychology, Zurich, Switzerland
Purpose of the Study: Despite the considerable improvements in medical care in the fields of gynecology and obstetrics, still surprisingly little is known about the determinants of preterm birth and its successful prevention. In Western countries, approximately 11% to 12% of all births occur preterm (1), with major economic and psychosocial impact for affected families. The impact of psychosocial factors, such as stress, on preterm birth is still discussed in the literature (2), and consequently, among other treatment options, psychological counseling (PC) is offered to some women in addition to medical treatment for preterm birth. However, not all women ask for and receive PC, and among those who do, the concepts of treatment vary. We sought to determine predictors of demand of psychological interventions in obstetric inpatients, standard interventions in those women who received treatment, and determinants of successful treatment. Methods: In the years between 2002 and 2007, 326 inpatients who were treated in the Department of Obstetrics at the University Hospital Zurich, Switzerland, received PC; about 2/3 of these patients received medical treatment in order to prevent preterm birth. Patients were referred by the treating doctor or by the midwife to receive PC and attended M = 1.2 sessions. Medical records and psychological treatment protocols of all these patients were analyzed with regard to medical information (duration of pregnancy, medical diagnosis, medical treatment), number of PC sessions, PC treatment rationale, and PC methods. If available, duration of pregnancy at birth, birth weight and APGAR scores were analyzed as variables indicating treatment success. Summary of Results: Duration of pregnancy when receiving PC, medical diagnosis, and medical treatment were unrelated to the demand/ receipt of PC during hospitalization in order to prevent preterm birth. Treatment rationale and methods of PC were highly individualized, however mostly focused on emotion regulation and the reduction of anxiety. Data on treatment success are currently analyzed and will be presented and discussed at the conference for the first time. Bibliography: 1. Simhan HN, Caritis SN, N Engl J Med, 2007 2. Rich-Edwards JW, Grizzard TA; Am J Obstet Gynecol, 2005

269) Abstract 1744
PREMENSTRUAL DYSPHORIC DISORDER AMONG ARAB WOMEN IN THE PRIMARY HEALTH CARE: PREVALENCE, CLINICAL, SYMPTOMATOLOGY AND SOCIODEMOGRAPHIC CORRELATES
Ossama T. Osman, M.D., Department of Psychiatry and Behavioral Sciences, Diad Rik, M.D., Obstetrics and Gynecology, Sufyan Sabri, Ph.D., Psychiatry, Faculty of Medicine- United Arab Emirates University, Al-Ain, Abu Dhabi, United Arab Emirates
Objectives: This is an epidemiologic survey of the prevalence and impact of the premenstrual dysphoric disorder (PMDD) among adult women attending the primary care clinics in the city of Al-Ain in the United Arab Emirates. Subjects and Methods: Five hundred and eight (n=508) women in their reproductive years (18-50 y.o.) were selected at random from 5 clinics and were administered two screening instruments for PMDD namely, the Premenstrual Symptoms Screening Tool (PSST) and the Sheehan Disability Scale (SDS). Results: The prevalence rate for PMDD was 12.4%. There was a statistically significant association between the presence of the disorder (PMDD) and several socio-demographic factors including; higher education (p=0.001), single marital status (p=0.001), family history of PMDD (p=0.001), use of sedatives hypnotics drugs (p=0.001) and past psychological problems (p=0.001). There was no association between the presence of the disorder and the regularity of the menstrual cycle indicating the primary origin of the disorder. The Mann-whitney test was used to assess the relation between the outcomes of PSST & SDS and revealed high significant association (p=0.001) with PMDD women having higher disability than those without PMDD on all dimensions of functioning. There was a strong association between the presence of the disorder and several stressors reported over the past 12 months including; illincidence of a family member, health problems, difficulties related to children, significant family conflicts. Conclusion: The prevalence of severe forms of PMDD is consistent with the reported international rates. Rates are higher among the highly educated and single. Most interesting is the finding of strong association between major past life stressors in those women with the disorder compared with those without. This may point to a specific vulnerability that requires further study.

270) Abstract 1482
RELATIONSHIP BETWEEN PAIN WITH INTERCOURSE AND PSYCHOLOGICAL DISTRESS AMONG WOMEN WITH VULVAR VESTIBULITIS SYNDROME
Kinnari Desai, MD, Jessica Hartung, BS, Caitlin E. Shaw, Student, Cara Perinetti-Liebert, BS, Deneiz Zolnoun, MD, Obstetrics & Gynecology, University of North Carolina, Chapel Hill, Chapel Hill, NC
Vulvar vestibulitis syndrome (VVS) is the most common cause of vulvo-vaginal pain in reproductive age women, affecting up to 15% of the general female population. Women with VVS have pain with intercourse, and sensitivity to genital contact. Psychological distress such as anxiety and somatization are also common in this population. The current study examines how anxiety, somatization and perceived stress are related to pain with intercourse in women with VVS. We gathered cross-sectional data on 63 women with VVS who were seen at the University of North Carolina Vulvar Pain Clinic. We measured the following variables: anxiety (Spilleberger State-Trait Anxiety Inventory), stress (10-item Perceived Stress Scale), and somatization (Pennebaker Inventory of Limbic Languidness). Most were married (80%), white (91%), college educated (85.7%) women in their thirties (32.6, SD=7.3). On a Likert scale from 0 (no pain) to 100 (worst imaginable pain) with intercourse, the average maximum pain in the past two-weeks was 59.2 (SD=30.1) and the average lowest pain was 38.8 (SD=29.0). Using partial correlation controlling for age and education, we found that perceived stress was related to both lowest (r=.25, p=0.05) and maximal (r=.25, p=.05) intercourse related pain. Somatization was also associated with lowest (r=.31, p=.02) and maximal (r=.29, p=.02) pain with intercourse. There was a trend for state anxiety to be related to both measures of pain (p=.10). Although VVS is commonly viewed in gynecology as a local inflammatory disorder, our data suggest that psychological parameters may play a role in clinical pain reporting. Further research to examine the causal direction of these relationships is warranted.
271) Abstract 1435
DIFFERENCES IN SYSTEMIC PAIN PERCEPTION BETWEEN WOMEN WITH PRIMARY AND SECONDARY VULVAR VESTIBULITIS SYNDROME
Denniz Zohnoun, MD, Cara Perinetti-Liebert, BS, Obstetrics and Gynecology, Rebecca Klatkin, MA, Mary Beth Mechlin, MA, Susan S. Girdler, PhD, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC

Vulvar vestibulitis syndrome (VVS) is the most common cause of vulvovaginal pain in reproductive age women, affecting up to 15% of the general female population. VVS is not a homogenous diagnosis; it is clinically classified into two subgroups (primary and secondary) based on onset of pain. Primary VVS is defined as onset of pain with first act of intercourse or tampon use, whereas secondary VVS is characterized by a pain free interval prior to developing painful intercourse. The goal of the current paper is to compare systemic pain perception, and depression between these two subgroups. We enrolled 40 women with VVS into a psychophysiological study, 13 with primary VVS and 27 with secondary illness. We measured the following variables: thermal, cold-pressor and ischemic pain thresholds and tolerances, and depression (Beck). Our cohort consisted of mostly married (73.7%), white (90.0%), college educated (100%) women with a mean age of 31.0 yrs (SD=8.2); 70% had never been pregnant and the other 30% had an average of 2.1 pregnancies. Primary VVS was characterized by a lower pain threshold (mean=53.8, SD=3.8) compared to secondary VVS (mean=42.2). Primary VVS also had lower cold-pressor threshold (mean=6.9, SD=2.8) and tolerance (mean=23.2, SD=7.6) compared to those with secondary VVS, respectively (mean=11.2, SD=5.9, p=.004; mean=51.6, SD=61.3, p=.03). In addition, there was a trend for those with primary VVS to have lower ischemic pain threshold (mean=93.8, SD=49.6) compared to secondary (mean=129.6, SD=78.4), p=.06. The differences did not significantly differ on depression, ischemic and thermal tolerance and other demographic variables. This suggests the notion that VVS is not a homogenous disorder, and that patients with early onset of pain may have more central pain dysregulation compared to those who develop the condition later in life. Presence of central dysregulation among those with primary VVS may indicate that traditional local treatment modalities (e.g. resection of the skin) may not be an optimal treatment for this subgroup.

272) Abstract 1411
INTRUSION, AVOIDANCE AND AROUSAL ARE NOT ASSOCIATED WITH EVENING SALIVARY CORTISOL LEVELS IN PREGNANT WOMEN FOLLOWING DETECTION OF FETAL ANOMALIES
Anne Kaasen, MSc, Department of Obstetrics and Gynecology, University of Oslo, Rikshospitalet Medical Center, Oslo, Norway, Hans Skari, PhD, Department of Paediatric Surgery, Rikshospitalet Medical Center, Oslo, Norway, Ulrik F. Malt, MD, PhD, Department of Neuropsychiatry and Psychosomatic Med., Anne Helbig, MD, Department of Obstetrics and Gynecology, University of Oslo, Rikshospitalet Medical Center, Oslo, Norway, Arvid Heiberg, MD, PhD, Department of Medical Genetics, Rikshospitalet Medical Center, Oslo, Norway, Gunnvor N. Haugen, MD, PhD, Department of Obstetrics and Gynecology, University of Oslo, Rikshospitalet Medical Center, Oslo, Norway

Prenatal learning about fetal anomalies is distressing. We hypothesized that women referred to a tertiary centre for fetal medicine because of fetal anomaly would continue the pregnancy. Therefore, we expected that women with anomalies would report lower distress scores than women who decided to terminate the pregnancy. A cohort of 44 women was recruited from a tertiary centre and was divided into 20 women who chose to continue pregnancy with a fetal anomaly who chose to continue pregnancy and terminated pregnancy (group 2; n=20). There was no significant difference between both groups on demographic variables. The study sample had a mean age of 31.0 yrs (SD=8.2); 70% had never been pregnant and the other 30% had an average of 2.1 pregnancies. The study used the Impact of Event Scale (IES) to measure distress. Contrary to our assumption, we found no significant difference in stress levels and saliva cortisol levels between women choosing to continue vs. interrupt a pregnancy complicated by a prenatal diagnosis of a fetal structural anomaly. We also found a dissociation between psychological distress response (IES-total or subscale scores) and salivary cortisol in distressed pregnant women which contradicts previous findings in patients with PTSD and needs further studies.

Basic pain research

273) Abstract 1268
COGNITIVE APPRAISALS ARE RELATED TO THE NEUROENDOCRINE STRESS RESPONSE TO EXPERIMENTAL ACUTE PAIN
Lucy A. Mayes, M.A., Psychology, University of Maryland, Baltimore County, Baltimore, MD, U.S.A, Burel Goodin, M.A., Noel Burns, B.A., Lynanne McGuire, Ph.D., Psychology, University of Maryland, Baltimore County, Baltimore, MD

The Lazarus and Folkman (1984) appraisal model of the stress response is well recognized. Anticipatory cognitive appraisals are important in the neuroendocrine stress response to the Trier Social Stress Test, however, the role of anticipatory cognitive appraisals in the neuroendocrine stress response to acute pain is not known. This study aimed to use cognitive appraisals related to the Cold Pressor Task (CPT) using the Transactional Stress Questionnaire (Gaab et al., 2005), which was modified for use in an experimental pain setting. Participants (N=80; 50% female), were healthy, ethnically diverse young adults. Participants completed the anticipated pain condition and in vivo cognitive appraisals were compared on salivary cortisol reactivity, pain intensity, pain structural and pain tolerance. Cortisol was measured at three time points, and study sessions occurred at the same time of day across participants. A 2X2 factorial design was used, and participants were randomly assigned to conditions via stratified sampling based on sex. The two factors varied the CPT instructions to manipulate perceived threat and perceived control. The internal consistency of the modified anticipatory and in vivo primary and secondary appraisal scales was remarkably good (α=.71 to .80). Further, the anticipatory primary appraisal scale was associated with pain tolerance (p<.05), and the in vivo primary and secondary appraisal scales were associated with cortisol reactivity, pain intensity and unpleasantness, and pain tolerance (p's<.05). Additionally, significant interactions of appraisals with the perceived threat and control manipulations were found. In vivo cognitive appraisals of pain, compared with anticipatory appraisals, may be particularly important in pain outcomes and may provide a key target for pain interventions.

274) Abstract 1643
CONFIRMATORY FACTOR ANALYSIS AND INVARIANCE OF THE SHORT FORM MCGILL PAIN QUESTIONNAIRE (MPQ-SF) IN A LONGITUDINAL SAMPLE OF BURN PATIENTS
Shawn T. Mason, MS, Lisa L. Arencibia, Psy D, Psychiatry and Behavioral Sciences, J. A. Fauerbach, PhD, Psychiatry and Behavioral Sciences, Caryn Seebach, MS, Claire Sootang-Ackerman, MS, Psychiatry and Behavioral Sciences, Johns Hopkins Bayview Medical Center, Baltimore, MD

The Short Form McGill Pain Questionnaire (MPQ-SF) was developed as an abbreviated version of the parent instrument by Melzack in 1987. Although the MPQ-SF has been used in over 250 published studies, a minimal number have evaluated its factor structure. The MPQ-SF has never been evaluated in a burn population, nor has it been assessed for factorial invariance using a longitudinal sample. Data were collected at a regional burn center and patients were consented into the study based on burn severity (n=14% TBSA). Participants were primarily male (73%) and Caucasian (66%), with a mean age of 38 years. Confirmatory Factor Analysis (CFA) results supported a first-order, three-factor, oblique model. Findings were conceptually consistent with Melzack's original proposal of sensory, affective, and evaluative dimensions. Using a sample of 162 patients one month post discharge, results and fit index values were: Chi Square=153, df=116, CFI=.94, TLI=.93, RMSEA=.05,SMSR=.06. Invariance of this factor structure was assessed against time points of 6 and 12 months. Results from the same sample produced an invariant structure with fit index values including: Chi Square=312, df=260, CFI=.96, TLI=.96.
275 Abstract 1433

ASSESSMENT OF RELIABILITY AND VALIDITY OF THE WORST DAY OF THE WEEK FUNCTIONAL ASSESSMENT IN A NON-CLINICAL POPULATION

Kimberly Williams, PhD, Christina Abildso, EdM, Community Medicine, West Virginia University School of Medicine, Morgantown, WV; Kevin Larkin, PhD, Psychology, West Virginia University College of Arts and Science, Morgantown, WV; Ed Doyle, MD, Community Medicine, Beverly Epstein, MD, Orthopaedics, Smith David, PhD, Biochemistry, Linda Cooper, MSW, MBA, Community Medicine, West Virginia University School of Medicine, Morgantown, WV

Assessing the impact of interventions to alleviate chronic low back pain (CLBP)-affiliated disability in non-clinical subjects is difficult with currently validated and widely utilized measures. These measures include the Oswestry Disability Questionnaire (ODQ), the Roland Morris Disability Questionnaire (RMDQ), and the Pain Disability Index (PDI). These measures assess a specific time point ('today' in the RMDQ) or the 'typical experience' of pain (ODQ and PDI) but may not capture periodic episodes of LBP. Additionally, psychometric testing has been conducted using clinical populations, resulting in applicability to severely disabled populations unwilling to volunteer for studies involving active interventions (e.g., yoga). The current study investigated pain-related coping, systolic blood pressure (SBP) reactivity, pain tolerance, and salivary cortisol responses to a cold pressor task (CPT) in baseline scores and potential floor effects when used to track effectiveness of interventions over time. Thus, as part of a larger study of the impact of Iyengar Yoga on CLBP, a new instrument, called the 'worst day of the week' functional assessment (WDWFA) was developed based on the ODQ to assess the experience of disability during the worst day of pain in the last week. We tested this assessment for both psychometric properties in a non-clinical population and convergent validity with self-report measures. Analyses were conducted comparing WDWFA internal consistency (Cronbach's alpha = .73) and was significantly lower compared with the PQSF (r from .57 - .74). In summary, the modified version of the ODQ appears to have adequate convergent validity with currently accepted measures and displays internal consistency and should be further tested for reliability and validity with individuals with non-clinical CLBP.

276) Abstract 1378

PAIN-RELATED ACTIVE COPING AND HPA AXIS RESPONSE TO ACUTE PAIN

Noel Burns, BA, Burel Goodin, MA, Mark Allhouse, BA, Lacy Mayes, MA, Psychology, University of Maryland, Baltimore County, Baltimore, MD; Gayle Page, DNsC, Nursing, Johns Hopkins University School of Nursing, Baltimore, MD; Lyneane McGuire, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD

Dynamic HPA axis responses to stress have been linked with better health outcomes and lower pain sensitivity. The influence of adaptive pain-related coping on the HPA axis response to acute pain is not known. The current study investigated pain-related coping, systolic blood pressure (SBP) reactivity, pain tolerance, and salivary cortisol reactivity during acute pain using the cold pressor task (CPT) in healthy, ethnically diverse young adults (N = 62; 61% women). The five active coping scales from the Coping Strategies Questionnaire Short-Form comprised the pain-related active coping composite score. Cortisol and SBP were assessed at baseline, during acute pain (SBP), and 15 minutes post-CPT (cortisol). Multiple regressions were used to examine whether active coping during acute pain, SBP reactivity, and pain tolerance were significantly predicted by coping. Results demonstrated significant SBP reactivity among men and women. Women showed a significant increase in cortisol over time (p < .01) whereas men showed a trend in the expected direction (p = .08). Women showed lower pain tolerance (p < .05) and displayed internal reliability (Cronbach's alpha = .87) and was significantly lower compared with the PQSF (r from .57 - .74). In summary, the modified version of the ODQ appears to have adequate convergent validity with currently accepted measures and displays internal consistency and should be further tested for reliability and validity with individuals with non-clinical CLBP.

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277) Abstract 1740

PSYCHOSOMATIC INTERACTIONS EXPLAINING THE RELATIONSHIP BETWEEN ANGER AND PAIN

Ephrem Fernandez, Ph.D., Psychology, University of Texas at San Antonio, San Antonio, Texas

Psychosomatic Interactions Explaining the Relationship Between Anger and Pain Just as various links have been made between depression and pain, the interaction between anger and pain is now drawing biomedical interest. This study utilized psychometrically reviewed measures of anger-related coping (e.g., symptom coping, task-oriented coping), the Pain Catastrophizing Scale (PCS), the Pain Catastrophizing Scale-Short Form (PCS-SF), and the WDWFA at each time point. Internal consistency (Cronbach's alpha) and convergent validity (inter-correlation of measures) were found to trigger pain in experiments. The exacerbation of pain intensity by anger has been apparent in regression data. The prolonging of pain duration by anger is supported by learning theory but hitherto under-researched empirically. The weight of evidence points to anger as a consequence of pain as revealed in survey data and illustrated in clinical case material. In conclusion, the interaction between anger and pain can be represented in many ways. The predominant role of anger in pain is that of a consequence, and in this regard it has much in common with findings on depression and pain. Methodological options are outlined for the design of further studies in this area.

278) Abstract 1171

ENDOGENOUS OPIOIDS MAY BUFFER EFFECTS OF ANGER AROUSAL ON SENSITIVITY TO SUBSEQUENT PAIN

John Burns, PhD, Psychology, Rosalind Franklin Univ, North Chicago, IL; Stephen Bruehl, PhD, Ok Chung, MD, Anesthesiology, Vanderbilt Univ School of Medicine, Nashville, TN, Ed Magid, MD, Clinics, Rosalind Franklin Univ, North Chicago, IL

Anger arousal is linked to increased levels of sensitivity to subsequent painful stimuli. Many mechanisms have been offered to account for this association. Here, we propose that individual variability in functioning of endogenous inhibitory systems may serve to buffer or magnify effects of initial anger on later pain. Specifically, deficient activation of endogenous inhibitory systems may serve to buffer or magnify effects of initial anger on later pain. Specifically, deficient activation of endogenous inhibitory systems may serve to buffer or magnify effects of initial anger on later pain. Additionally, psychometric testing has been conducted using clinical populations, resulting in applicability to severely disabled populations unwilling to volunteer for studies involving active interventions (e.g., yoga). The current study investigated pain-related coping, systolic blood pressure (SBP) reactivity, pain tolerance, and salivary cortisol responses to a cold pressor task (CPT) in healthy, ethnically diverse young adults (N = 62; 61% women). The five active coping scales from the Coping Strategies Questionnaire Short-Form comprised the pain-related active coping composite score. Cortisol and SBP were assessed at baseline, during acute pain (SBP), and 15 minutes post-CPT (cortisol). Multiple regressions were used to examine whether active coping during acute pain, SBP reactivity, and pain tolerance were significantly predicted by coping. Results demonstrated significant SBP reactivity among men and women. Women showed a significant increase in cortisol over time (p < .01) whereas men showed a trend in the expected direction (p = .08). Women showed lower pain tolerance (p < .05) and displayed internal reliability (Cronbach's alpha = .87) and was significantly lower compared with the PQSF (r from .57 - .74). In summary, the modified version of the ODQ appears to have adequate convergent validity with currently accepted measures and displays internal consistency and should be further tested for reliability and validity with individuals with non-clinical CLBP.
Comparisons showed that subjects in the Maze/Pain order who received naltrexone reported Sensory scores that were higher than the average of all other groups (p<.001). More specifically, this group reported higher Sensory scores than the Maze/Pain group who got placebo (F=5.1). Also, the Pain/Maze order groups who got either placebo or naltrexone did not differ significantly on pain [F<1]. Finally, the Maze/Pain group who received placebo did not differ significantly from the average of the Pain/Maze groups [F=1.7,ns], but was directionally lower. Results showed that only the group who received opioid blockade and who underwent anger prior to pain showed elevated sensory pain ratings, whereas the other groups were approximately equivalent. Findings suggest that endogenous opioids may buffer the otherwise hyperalgesic effects of anger arousal on sensitivity to sensory aspects of acute pain.

**Anxiety/depression**

**279) Abstract 1308**

**THE IMPACT OF PERCEIVED DISCRIMINATION ON DEPRESSIVE SYMPTOMS IS MODERATED BY SOCIAL SUPPORT AND RACE**

Redford B. Williams, MD, Psychiatry, Duke University Medical Center, Durham, NC, Jolynn Pek, BS, Psychology, University of North Carolina at Chapel Hill, Chapel Hill, NC, Laura S. Richmon, Ph.D., Psychology, Duke University, Durham, NC, Ilene C. Siegler, Ph.D., Psychiatry, Duke University Medical Center, Durham, NC

African Americans (AAs) have higher rates of many physical diseases than whites. Racial discrimination likely contributes to this physical health disparity. Despite experiencing higher levels of stress associated with discrimination, however, AAs suffer the same or even lower rates of chronic disease than whites. In a sample of depressed adults seeking outpatient psychiatric treatment. The current report presents interim course of medical risk factors among depressed adults seeking standardized outpatient depression treatment. Prior to initiating depression treatment. Prevalence of the metabolic syndrome in the current sample (18.1%) was similar across genders and in line with US population norms. Among females (N=51), age of first lifetime depressive episode was positively associated with metabolic syndrome risk. Specifically, 40% of women reporting that they experienced their first lifetime depressive episode after age 30 met criteria for the metabolic syndrome; in contrast, only 8.6% of women reporting their first depressive episode prior to age 30 met metabolic syndrome criteria (chi-square=7.03, p<.01). The effect of age of first depression onset on number of metabolic criteria met remained significant [F(1,49)=5.77, p<.05] following control for current age (F=4.98, p<.05), BMI (F=16.77, p<.01), and smoking status (F=3.73, p=.06). In contrast, number of lifetime depressive episodes, years since first depression onset, and number of lifetime mood symptoms were not associated with baseline metabolic syndrome risk. None of the psychiatric history variables was associated with metabolic risk among males (N=32). These preliminary findings are provocative, and suggest that depressed women with different lifetime depression histories may show differential patterns of metabolic syndrome risk.

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**281) Abstract 1155**

**CAN STAFF EDUCATION CHANGE NURSING ATTITUDES TOWARDS SUICIDAL PATIENTS?**

E Norris, MD, R Primero, MD, G Stern, RN, K Burke, RN, N Kaufmann, MD, Psychiatry, C Foltz, PhD, Health Studies, T Capuano, MBA, Clinical Services, Lehigh Valley Hospital, Allentown, PA

Suicidal behavior is a major health issue. Joint Commission regulation (the National Patient Safety Goal 15A) requires assessment of suicide risk for all patients treated for behavioral health problems in all hospitals. One factor when working with suicidal patients is the nurses attitudes towards these patients.

In this study, we propose to compare attitudes between general medical floor (GME), emergency room (ER) and mental health (MH) nurses before and after educational classes designed to increase nursing knowledge of suicidal patients. The 17-item Understanding of Suicide Attempt Patient Scale was compared before and after staff education. Demographics were collected. Independent t-tests were used with Bonferroni corrected significance of p<.0028.

502 nurses completed pre-education surveys with the following breakdown. 71 MH nurses (86% female, mean age 46.8 yrs, 15.6 yrs experience (exp.)), 120 ER nurses (78% female, mean age 36.5 yrs, 8.7 yrs exp.), and 311 GMF nurses (94% female, mean age of 39.4 yrs, 12.3 yrs exp.). 400 nurses (82%) completed post education surveys.

At baseline, MH nurses had more favorable attitudes towards suicidal patients regarding 11 items with ER nurses (p<.00017, d=.77) and 12 items with GMF nurses (p<.00017, d=.85). ED nurses differed from GMF nurses in 3 items (p<.00039, d=.57). Total empathetic attitude score was higher in MH nurses compared to ER and GMF nurses (p<.00001, d=1.31) and not different between ER and GMF nurses.

After education, MH, GMF and ER nurses had minimal change in their attitudes compared to groups, however within the GMF nurses attitudes regarding 6 items improved after the education program (p<.001) as well as empathetic total attitude improved (p<.00013, d=3). ER and GMF nurses initially appeared less confident in their psychological assessment and intervention skills in treating suicidal patients.

After education, 6 parameters assessing nursing attitudes improved in GMF nurses.

**280) Abstract 1310**

**INDICATORS OF THE METABOLIC SYNDROME AMONG TREATMENT-SEEKING DEPRESSED ADULTS: ASSOCIATIONS WITH LIFETIME PSYCHIATRIC HISTORY**

Jill M. Cyranowski, PhD, Tara L. Hoffens, BA, Ellen Frank, PhD, Psychiatry, Anna L. Marsland, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Depression is associated with elevated rates of coronary artery disease and diabetes. Yet, little is known about the prevalence, covariates and course of medical risk factors among depressed adults seeking outpatient psychiatric treatment. The current report presents interim analyses of a prospective study of medical risk factors among a sample of medically-stable adults receiving standardized outpatient depression treatment. A sample of 83 depressed adults (61% female; 84% white; mean age=39 years) was assessed for ATP-III metabolic syndrome prior to initiating depression treatment. Prevalence of the metabolic syndrome in the current sample (18.1%) was similar across genders and in line with US population norms. Among females (N=51), age of first lifetime depressive episode was positively associated with metabolic syndrome risk. Specifically, 40% of women reporting that they experienced their first lifetime depressive episode after age 30 met criteria for the metabolic syndrome; in contrast, only 8.6% of women reporting their first depressive episode prior to age 30 met metabolic syndrome criteria (chi-square=7.03, p<.01). The effect of age of first depression onset on number of metabolic criteria met remained significant [F(1,49)=5.77, p<.05] following control for current age (F=4.98, p<.05), BMI (F=16.77, p<.01), and smoking status (F=3.73, p=.06). In contrast, number of lifetime depressive episodes, years since first depression onset, and number of lifetime mood symptoms were not associated with baseline metabolic syndrome risk. None of the psychiatric history variables was associated with metabolic risk among males (N=32). These preliminary findings are provocative, and suggest that depressed women with different lifetime depression histories may show differential patterns of metabolic syndrome risk.

Supported by the Pittsburgh Foundation, the Pittsburgh Mind-Body Center (PMBC; NIH grants HL076852/076858), and NIH grant MH65376.

**282) Abstract 1567**

**CARDIOVASCULAR DISEASE IN A LARGE COHORT OF DEPRESSED AND/OR ANXIOUS PATIENTS: FINDINGS FROM NESDA**

N Vogelzangs, MSc, A Seldenrijk, MSc; Psychiatry, H van Hout, PhD, M van Marwijk, PhD, General Practice, M Diamant, PhD, Endocrinology, B Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands

The fact that psychopathology and cardiovascular disease (CVD) are correlated has been frequently confirmed in large-scale community studies or among cardiovascular patients. However, this association has not been extensively examined in a large psychiatric cohort. This study examined the prevalence of cardiovascular disease in a large cohort (n=2981, mean age 42 (SD=13); 67% women) consisting of persons...
with a psychiatric diagnosis of depression and/or anxiety (n=2273) as well as healthy controls (n=515), using baseline data from the Netherlands Study of Depression and Anxiety (NESDA). The presence, chronicity, and subtype of major depressive disorder (MDD; single or recurrent) and anxiety disorder (generalized anxiety disorder, social phobia, panic disorder and agoraphobia) were diagnosed according to the DSM-IV criteria using the CIDI interview. Severity of symptoms were measured with the Inventory of Depressive Symptoms (IDS) and the Beck Anxiety Inventory (BAI). Prevalent CVD was assessed using algorithms based on self-report and medication use and was found to be 6.2% (n=172). Both depressed and anxious patients were more likely to have prevalent CVD (OR=1.78, 95% CI=1.07-2.98, p=0.03; OR=2.01, 95% CI=1.20-3.36, p=0.008, respectively) than healthy controls after adjustment for sociodemographic and lifestyle differences. When included in the same statistical model, depression and anxiety disorders both were independent risk factors of CVD (MDD: OR=1.48, 95% CI=1.00-2.18, p=0.05; Anxiety disorders: OR=1.77, 95% CI=1.21-2.59, p=0.003). There was no significant association between CVD and subtype or chronicity of psychiatric conditions. However, higher severity of depressive or anxiety symptoms were associated with higher risk of CVD (IDS: OR per SD=1.38, 95% CI=1.12-1.71, p=0.003; BAI: OR per SD=1.32, 95% CI=1.09-1.61, p=0.005). These results support the hypothesis that CVD is more prevalent in both depressed and anxious psychiatric patients. This association was independent of demographic factors and a specific subtype of the depressive or anxiety disorder, but the prevalence of CVD was highest among those with the most severe symptoms.

283) Abstract 1405
META-ANALYSIS OF THE EFFECT OF TESTOSTERONE REPLACEMENT ON MAJOR DEPRESSIVE DISORDER
Fahd A. Zarrouf, MD, Medicine/Psychiatry, West Virginia University, Charleston, WV, James p. Griffith, MD, FACP, Medicine/Psychiatry, West Virginia University, Charleston, WV
Purpose of study: The present meta-analysis assesses the efficacy of testosterone-based therapy in adults with depressive disorders based on published and unpublished randomized controlled trials. Subject sample and statistical methods: We performed a comprehensive search of Reporting of Meta-analyses guidelines for reporting our meta-analysis. Two reviewers independently screened abstracts according to the inclusion criteria. Studies were included if they reported the response of depression to an intervention (Testosterone vs. placebo) as a primary or a secondary endpoint. 58 eligible studies were retrieved for more detailed evaluation. 7 double-blind, placebo-control randomized clinical trials were included in the meta-analysis. We extracted data including study source, total number of participants and total number in each group, participants' age, diagnosis of hypogonadism and HIV/AIDS, study duration, type of intervention (androgen type, dose, route, and frequency) and depression treatment response for intervention and for placebo. Summary of results: Meta-analysis of the included studies showed a significant positive effect of testosterone therapy on HAM-D response in depressed patients compared to placebo (z=4.04, p<0.0001). Subgroup analysis showed that hypogonadal patients had better response than eugonadal participants (z=3.84, p=0.0001) vs. (z=1.49, p=0.14), and HIV/AIDS subgroup population had better response than HIV/AIDS free patients (z=3.33, p=0.0009) vs. (z=2.29, p=0.02).

284) Abstract 1281
CHILDHOOD SEXUAL ABUSE IS INDEPENDENTLY ASSOCIATED WITH PHYSICAL ILLNESS BURDEN IN DEPRESSED PATIENTS 50 YEARS OF AGE AND OLDER
Paul Duheberstein, PhD, Ben Chapman, PhD, Nancy Talbot, PhD, Psychiatry, University of Rochester, Rochester, NY
Research on the health consequences of childhood sexual abuse (CSA) has focused mainly on younger female medical patients. We examined the relationship between CSA and health in a sample of 147 male and female psychiatric patients 50 years of age or older, diagnosed with a mood disorder. Shared method variance was minimized by collecting data via self-report (CSA histories) and physician ratings (medical illness burden, assessed via the Cumulative Illness Rating Scale, CIRS). CSA was assessed via a well-validated instrument, the Child Trauma Questionnaire, that instructs participants to rate the frequency with which events occurred throughout childhood. Scores range from 0 to 10, with higher scores indicating greater frequency. We found that CSA was associated with higher levels of illness burden in a sample of older adult psychiatric patients, independent of demographic factors. CSA was associated with increased illness burden (B=1.77, SE=.82, t=2.16, df=141, p=.03). CSA was associated with CIRS scores 1.77 higher than no CSA, while one decade of age was associated with a 1.78 increase in CIRS scores. We conclude that the effect of CSA on illness burden is equivalent to about 10 years of aging. Findings contribute to the development of theories concerning the effects of early life influences on disease in middle age and older adulthood. From a public health perspective, early detection of patients' abuse histories could inform targeted interventions and might prevent or decelerate the progression of morbidity.

285) Abstract 1569
SUBCLINICAL CARDIOVASCULAR DISEASE IN A LARGE COHORT OF DEPRESSED AND/OR ANXIOUS PATIENTS: FINDINGS FROM NESDA
A Seldenrijk, MSc, N Vogelzangs, MSc, Psychiatry, H van Hout, PhD, H van Marwijk, PhD, General Practice, M Diamant, PhD, Epidemiology, B Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands
The association between psychopathology and cardiovascular disease (CVD) has been frequently confirmed in large-scale community studies or among cardiovascular patients. However, the association with subclinical CVD, which is more even interesting from a preventive point of view, has been less extensively examined. The ankle brachial index (ABI) has been suggested as an indicator of subclinical CVD and a low ABI (d0.9) has been associated with an increased risk of subsequent cardiovascular mortality, coronary heart disease and stroke. This study examined whether an ABI d0.9 was more prevalent among CVD-free persons with a psychiatric diagnosis of depression and/or anxiety (n=2059) than in healthy controls (n=479), using baseline data from the Netherlands Study of Depression and Anxiety (NESDA), a large, prospective study (mean age 42 (SD=13); 67% women). The presence of major depressive disorder (MDD) and anxiety disorders (generalized anxiety disorder, social phobia, panic disorder and agoraphobia) was diagnosed according to the DSM-IV criteria using the CIDI interview. Comorbidity was high: 59% (n=1206) of the patients had both depression and anxiety. ABI was obtained using a Doppler ultrasound 8-MHz transducer and an ABI d0.9 was present in 2.3% (n=58). Having a depressive and/or anxiety disorder increased the likelihood of an ABI d0.9 more than 3-fold (OR=3.20, 95% CI=1.14-8.94, p=0.03) after adjustment for sociodemographic and lifestyle differences. When examined separately, both depressed and anxious patients were more likely to have an ABI d0.9 (OR=3.04, 95% CI=1.06-8.69, p=0.04; OR=3.44, 95% CI=1.21-9.75, p=0.02, respectively) than healthy controls. When included in the same statistical model, only anxiety disorders were an independent risk factor of subclinical CVD (OR=2.65, 95% CI=1.08-3.86, p=0.03). These results show that a low ABI (d0.9) is more often found among depressed and anxious patients compared to healthy controls. In addition, the strongest association was found for anxiety disorders.

286) Abstract 1141
INCREASED VEGF IN PATIENTS WITH TYPICAL DEPRESSIVE DISORDER BUT NOT IN ATYPICAL DEPRESSIVE PATIENTS
Eva Fassbinder, MD, Wiebke Greggersen, MD, Sebastian Rudolf, MD, Psychiatry and Psychotherapy, Achim Peters, Professor, Internal Medicine I, Ulrich Schweiger, Professor, Psychiatry and Psychotherapy, University of Lubeck, Lubeck, Germany
Purpose of study: Patients with major depressive disorder (MDD) show alterations in the glucose metabolism and the allocation-system, that primarily uses the sympathetic nervous system and the HPA-system as effectors. It has been proposed that in typical MDD (characterized by weight loss and hyposomnia) the HPA-system and the sympathetic nervous system are stimulated while their activity is attenuated in MDD with atypical features (mainly weight gain and hypersomnia). Whole body glucose disposal is reduced in patients with typical and atypical MDD. This may result from a reduced glucose uptake either into the body glucose disposal is reduced in patients with typical and atypical MDD. This may result from a reduced glucose uptake either into the brain or into muscle/adipose tissue or a combination of both. Vascular
endothelial growth factor (VEGF) is known to enhance glucose transport across the blood-brain barrier. We therefore investigated VEGF concentrations in patients with typical and atypical MDD and controls during a stepwise glucose clamp procedure.

Subject sample and statement of methods: Twenty-three patients with typical and 10 patients with atypical major depression (21 women, 12 men) underwent a stepwise glucose clamp with hyper-, eu- and hypoglycaemic platelets. Eighteen healthy women and 18 healthy men served as comparison group. VEGF was determined every 15 min.

Summary of results: VEGF concentrations were significantly higher in typical MDD compared to atypical MDD and comparison group (mean±SEM 67.4±5.2 vs. 41.0±7.9 and 41.4±4.2 pg/ml, df=2, F= 8.32, p=0.001). Significant differences were also observed at all plateaus. The VEGF elevation in the subgroup with typical MDD may be regarded as a neuroprotective mechanism to enhance the cerebral glucose supply.

287) Abstract 1101
CORRELATION BETWEEN HEART RATE VARIABILITY AND PLATELET SEROTONIN UPTAKE IN PATIENTS WITH PANIC DISORDER
Eun-Ho Kang, M.D., Psychiatry, Sungkyunkwan University School of Medicine, Seoul, Korea(South), Bum-Hee Yu, M.D., Ph.D., Psychiatry, Sungkyunkwan University, School of Medicine, Seoul, Korea(South), Moon-Sun Koo, M.S., Psychiatry, Sungkyunkwan University School of Medicine, Seoul, Korea(South), Kyung-Jeong Kim, Bsc, Psychiatry, Sungkyunkwan University, School of Medicine, Seoul, Korea(South), Woo-Yong Shin, M.D., Psychiatry, Sungkyunkwan University School of Medicine, Seoul, Korea(South), In-Su Lee, M.D., Psychiatry, Semin Hospital, Yeo Ju, Korea(South), Joo-Eon Park, M.D., Psychiatry, Keyo Hospital, Euiwang, Korea(South), Jun-Bum Ahn, Bsc, Psychiatry, Sungkyunkwan University, School of Medicine, Seoul, Korea(South), Min Sun Koo, M.S., Psychiatry, Sungkyunkwan University School of Medicine, Seoul, Korea(South), Sungkyunkwan University, School of Medicine, Seoul, Korea(South), Joo-Eon Park, M.D., Psychiatry, Keyo Hospital, Euiwang, Korea(South)

Many studies have related altered heart rate variability (HRV) to panic disorder. The present study investigated the relationship between platelet serotonin uptake and power spectral analysis of HRV in patients with panic disorder.

HRV and platelet serotonin uptake kinetics including maximum velocity (Vmax) and affinity constant (Km) were measured in 35 patients with panic disorder, aged 20 to 54 years. For HRV indexes, total power (TP), high frequency (HF) power, low frequency (LF) power, LF/HF ratio, LF in normalized units (LF norm), and HF in normalized units (HF norm) were determined in supine and standing up position consecutively.

The HF power and HF norm were significantly decreased whereas the LF/HF and LF norm were increased by standing. With a supine position, only HF power was positively correlated with Km (rs = -0.418, p=0.015). However, with a standing position, Km was negatively correlated with LF/HF (rs=-0.545, p=0.001), LF norm (rs= -0.522, p=0.002), and Vmax was negatively correlated with only LF/HF with a standing position (r=-0.354, p=0.047). In a multivariate analysis using linear regression, low Km independently predicted increased LF/HF with a standing position, even after controlling for age, sex, and body mass index (delta R2 = 0.142, beta=-0.344, p=0.049).

Platelet serotonin uptake parameters were positively correlated with changes in sympathovagal tone in response to standing in panic patients. Especially, higher affinity of serotonin uptake predicted increased sympathovagal tone. These results suggest that changes in serotonergic system are closely related to HRV in patients with panic disorder.

288) Abstract 1651
RELATIONSHIP BETWEEN PERSONALITY DIMENSIONS AND PSYCHOPATHOLOGY IN PATIENTS WITH MAJOR DEPRESSION
Rupert Conrad, MD, Ingo Wegener, PhD, Katrin Imbierowicz, MD, Reinhard Liedtke, MD, Franziska Geiser, MD, Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, Germany

The study investigated the capacity of alexithymic personality features, in combination with temperament and character traits, age and gender, to predict psychopathological symptoms in patients with major depression. 339 consecutive patients were investigated using the Toronto Alexithymia Scale-20 (TAS-20), the Temperament and Character Inventory (TCI), the Symptom Checklist-90-R (SCL-90-R), and the Hamilton Depression and Anxiety Rating Scales (HDRS, HARS). The amount of variance in SCL-90-R subscales and Hamilton scales predicted by TAS-20, TCI, age and gender was calculated by linear regression analyses. 14-46% of variance was explained by the predictors. The ‘difficulties identifying feeling’ facet of alexithymia appeared to be a significant predictor for all dimensions of psychopathology. Among TCI scales harm avoidance was the strongest predictor for somatization, phobic anxiety, and anxiety (SCL-90-R, HARS), low self-directedness was the strongest predictor for obsessionality, depression (SCL-90-R, HDRS), interpersonal sensitivity and psychoticism, and low cooperativeness was the strongest predictor for hostility and paranoia. In conclusion, many psychopathological symptoms in major depression are associated with difficulties in the identification of emotions. Relative to alexithymia, Cloninger's psychobiological model of personality could predict psychopathological symptoms in a distinct and meaningful manner. The TAS-20 and the TCI are useful questionnaires for a better understanding of the relationship between psychopathology and personality in major depression.

289) Abstract 1067
PILOT PROSPECTIVE STUDY OF ROUTINE INPATIENT HOSPICE DEPRESSION/DELIRIUM SCREENING SUGGESTS EASE OF ADMINISTRATION FOR STAFF AND PATIENTS AND HIGH PREVALENCE
Scott A. Irwin, MD, PhD, San Diego Hospice & Palliative Care, San Diego, CA, Sanjai Rao, MD, Psychiatry, UCSD, San Diego, CA, Frank DeRubeis, MD, San Diego Hospice & Palliative Care, San Diego, CA

Depression and delirium are prevalent in patients with advanced, life-threatening illnesses, with depression rates ranging from 1-40% and delirium rates of up to 85%. Both are difficult to assess, under-recognized, and under-treated in these patients. Furthermore, these syndromes are associated with significant morbidity and mortality. This study aims to assess the difficulty of screening for depression and delirium for staff and patients in an inpatient hospice setting. 20 inpatients were screened for depression by the social work staff on admission, using the two-question depression screening tool extracted from the PRIME-MD and tested by Whooley et al., 1997. 22 inpatients were screened daily for delirium by the nursing staff using the Confusion Assessment Method. At the time of depression screening, each patient was asked to rate the ease of administration of the depression screening on a 5-point scale (1-strongly disagree to 5-strongly agree (very easy)). Each staff member was asked to rate the ease of administration to the staff member and as perceived to the patient. For delirium screening, which involved no questions for the patient, staff rated the ease of administration. 70% of patients screened positive for depression. The mean ease of administration ratings were: 4.25/5 for patients, 4.40/5 for staff, and 4.45/5 for staff perception of how easy the process was for the patient. 64% of patients screened positive for delirium. The mean ease of administration rating by staff was 3.87/5. Screening suggests a high rate of depression and delirium in this population. Routine screening for either of these syndromes is relatively easy to implement on an inpatient hospice unit and may lead to increased recognition and treatment. Depression and delirium have a significant impact on patients with advanced, life-threatening illness. It will be important to improve recognition and management of these syndromes in hospice care, such that the recognition, assessment, treatment, morbidity, and mortality of these disorders all improve. Routine screening may be an important first step.

290) Abstract 1633
PSYCHOLOGICAL FEATURES IN PANIC DISORDER PATIENTS WITH MAJOR DEPRESSION
 Miyabi Isshiki, Graduate School of Human Sciences, Waseda University, Tokyo, Japan, Hisanobu Kaiya, Research Center for Panic Disorder, Warakukai Incorporated Medical Institution, Minatoku, Tokyo, Japan, Shinobu Nomura, Faculty of Human Sciences, Waseda University, Tokyo, Japan

This study aimed a comparison about psychological features (depression, social problem-solving, anxiety, stress) between panic
disorder patients with major depression and without one. The subjects of this study were 40 panic disorder patients (7 male and 33 female, mean age=35.65±1.66yrs.) who completed six questionnaires such as the diagnostic criteria of major depression and panic disorder in Mini International Neuropsychiatric Interview, the questionnaire about panic disorder symptoms, the Self-rating Depression Scale, the State-Trait Anxiety Inventory, the Stress Response Scale-18 and the Social Problem-solving Inventory-revised (SPSI-R). SPSI-R consists of the following five factors; Positive Problem Orientation (PPO), Negative Problem Orientation (NPO), Rational Problem Solving (RPS), and Impulsivity/ Carelessness Style (ICS), and Avoidance Style (AS). Statistical analyses were made using correlation analyses and t test. The participants included 26 panic disorder patients without major depression (PD) and 14 panic disorder patients with major depression (PD+MD). There were no significant differences in the panic disorder symptoms between PD and PD+MD groups. For the both groups, Social problem-solving was significantly negatively correlated with depression, anxiety, and Stress (p<0.01). The PD+MD group had significantly higher scores for depression, anxiety, stress, and significantly lower scores for Social Problem-solving than PD group (p<0.01). In the five factors of Social problem solving, PPO, RPS, and ICS had no significant differences between the PD and PD+MD groups. And the PD+MD group had significantly higher scores for NPO and AS than PD group (p<0.01). There were no significant differences between the PD and PD+MD in the panic disorder symptoms, PD+MD group had higher depression, anxiety, stress, and lower social problem-solving ability than PD. The presence of major depression may relate to the low scores of NPO and AS especially in five factors of Social Problem-Solving Ability.

291) Abstract 1423
EFFECTS OF A COGNITIVE-BEHAVIORAL GROUP THERAPY ON INFLAMMATORY MARKERS AND HEALTH FUNCTIONING IN DEPRESSED ELDERLY: A PILOT STUDY
Chiu-Tien Hsu, Graduate Institute of Psychology, National Chung-Cheng University, Taiwan, MING-HSIUNG, CHIA-YI, Taiwan, ROC, Chia-Ying Weng, Graduate Institute of Psychology, Nation Chung Cheng University, CHIA-YI, Taiwan, ROC, Pin-Fan Chen, Metabolism, Buddhist Dalin Tzu Chi General Hospital, Taiwan, Chia-Yi, ROC, Chih-Sung Kao, Metabolism, Chia-Lin Lin, Cardiology, Buddhist Dalin Tzu Chi General Hospital, Chia-Yi, Taiwan, ROC, Ming-Chung Jang, County Health Bureau, Chiayi County Health Bureau, Taiwan, Taibao City, Chiayi County, Taiwan, ROC, Sze-Yu Kuo, psychology, Chiayi County Health Bureau, Taiwan, Taibao City, Chiayi County, Taiwan, ROC.

Purpose of study:Correlational research has demonstrated that depression is associated with altered functioning of pro-inflammatory cytokines, which regulate the body's immune response to infection and injury. The purpose of this intervention study was to examine the causal relationship between depression and cytokines. We hypothesized that cognitive-behavioral intervention would lead to a change in depression, a reduction in inflammatory markers and an improvement in physical health in depressed elderly people. Subject sample and statement of methods:Thirty senior adults (15 male and 15 female, age 71~ 84 years) with at least mild depressive symptoms were assigned to an 8-week cognitive-behavioral group therapy program (one two-hour session per week, N=15) or a waitlist control condition (N=15) from October 2006 to December 2007. Severity of depression was measured with the Centre for Epidemiologic Studies Depression(CES-D). Medical outcomes were measured with the 36-item MOSSF-36. Pro-inflammatory cytokines including interleukin (IL)-6, tumor necrosis factor (TNF)-, C-reactive protein (CRP) were assessed both prior to and after the intervention, in order to examine the effects of cognitive-behavioral therapy on depression, inflammatory markers and the physical health of the participants. Summary of results:The results of this pilot study show significant improvements in the CES-D total depression score, t (10)=4.57, p < 0.001, the MOSF-36 mental component score, t (10)=2.25, p < 0.05, and the MOSF-36 physical component score, t (10)=2.56, p < 0.05. The data for the inflammatory markers will be collected and analyzed by December 2007. The findings of this study may have implications for the causal relationship between depression and immunological balance.

292) Abstract 1461
DEPRESSION AND C-REACTIVE PROTEIN IN A POPULATION-BASED COHORT
Briana Mezuk, PhD, Epidemiology, University of Michigan, Ann Arbor, MI, William W. Eaton, PhD, Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, Sherita H. Golden, MD, Endocrinology and Metabolism, Johns Hopkins School of Medicine, Baltimore, MD, Peter Zandi, PhD, Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

Depression is associated with elevated risk of type 2 diabetes and cardiovascular disease. It is unknown whether depression is associated with markers of physiologic dysregulation that are known risk factors for development of medical comorbidities. This study examined the relationship between depression and C-reactive protein (CRP) and evaluated whether that association was mediated by adiposity. A cross-sectional analysis of the population-based Baltimore Epidemiologic Catchment Area Study, which recently completed its 23-year followup (n=1071). Depression was measured using the Diagnostic Interview Schedule. Multivariable linear regression analyses were used to assess the association between CRP and major depressive disorder and depression syndrome, and characteristics of depression, including recency and number of symptoms and episodes. Persons with a lifetime history of depression syndrome had significantly higher CRP than those who had depression, although no difference (3.19 vs. 2.5 mg/L, p<0.01). In multivariable linear regression models, a lifetime history of depression syndrome was associated with a 32% increase in CRP after adjusting for age, race, sex, smoking status, and alcohol use and comorbid cardiovascular disease and diabetes (p<0.01). Depression syndrome within the past year was associated with a 70% increase in CRP after adjusting for confounders (p<0.05). This association was not modified by overall adiposity as measured by BMI, and only partially mediated by adiposity as indexed by waist circumference. There was a significant interaction between depression and menopausal status, and among pre/peri-menopausal women depression was associated with a 227% (95% CI: 14.9% - 450.0%) increase in CRP. Depression syndrome is associated with elevated CRP among middle-aged men and women, and this association is only partially mediated by adiposity.

Hypertension

293) Abstract 1347
CARDIOVASCULAR REACTIVITY AND BETA-ADRENERGIC RECEPTOR GENE POLYMORPHISMS IN BLACK YOUTH
Robert M. Kelsey, PhD, Bruce S. Alpert, MD, Pediatric Cardiology, Rongling Li,, Preventive Medicine, Shelley R. Gabel, MBA, Jade A. Thompson, BA, Pediatric Cardiology, University of Tennessee Health Science Center, Memphis, TN, Mary K. Dahmer, Ph.D., Michael W. Quasney, MD/PhD, Pediatrics, Medical College of Wisconsin, Milwaukee, WI.

Measures of cardiovascular reactivity to stress are reliable, heritable, and predictive of future cardiovascular disease. Thus, these measures may be useful intermediate phenotypes for genetic studies of cardiovascular risk. We evaluated the associations between cardiovascular reactivity and functional polymorphisms in the beta-1-adrenergic receptor (ADRB1, Arg389Gly) and the beta-2-adrenergic receptor (ADRB2, Arg16Gly). Impedance cardiographic and blood pressure (SBP) measures were recorded from 395 black youth (214 females, 181 males; mean age = 17.8 y) during baseline periods and standard stress tasks (math, video game, cold pressor, whole-body cold). DNA was extracted from buccal cells. Measures of cardiovascular reactivity were calculated by subtracting pre-task baseline levels from task levels, and were analyzed in 2 (Sex) x 3 (Genotype) x 4 (Task) MANCOVAs with age and body mass index as covariates. A significant Sex by Gene interaction emerged for ADRB1 and cardiac reactivity, p < .025, eta squared = .019. Pre-ejection period reactivity was diminished in males who were homozygous for the Arg389 allele (mean = -3.1 ms) as compared to males carrying the Arg389 allele (mean = -3.1 ms) and all females (mean = -3.1 ms and -.7 ms, respectively), F(1, 386) = 7.10, p < .008. In contrast, a significant Gene x Task interaction occurred for ADRB2 and vaso-reactivity, p < .008. The mean difference between pre/peri-menopausal women depression was associated with a 227% (95% CI: 14.9% - 450.0%) increase in CRP. Depression syndrome is associated with elevated CRP among middle-aged men and women, and this association is only partially mediated by adiposity.
Regression analyses were conducted predicting mean 24-hour BP with whereas marital status served as an index of structural support. The perceived social support scale (PSSS) to assess perceived support during participants' routine daily activities. Participants also completed blood pressure. SBP and DBP were measured over a 24-hour period relationship between social support and ambulatory systolic (SBP) and DBP was measured over a 24-hour period (P = .009), and while sleeping (P = .067); higher perceived support also tended to be associated with lower SBP over the 24-hr period (P = .101) as well as at home (P = .075). There were no differences in 24 hr ABP between married (SBP: M = 141.7, SD = 12.4; DBP: M = 86.7, SD = 5.2) and unmarried (SBP: M = 141.0, 12.8; DBP: M = 87.0, 4.9) participants. We conclude that perceived support, but not structural support, is associated with lower levels of ABP measured during daily life.

294) Abstract 1723
NOCTURNAL BLOOD PRESSURE DIPPING STATUS IN DEPRESSION IS DEPENDENT ON THE ENVIRONMENTAL SETTING
Sujith Kuruvilla, MD, Medicine, Sally Aboelela, PhD, School of Nursing, Dorota Gruber, MS GC, Moshe Levison, PhD, Syed Ahsan, MD, Daichi Shimbo, MD, Medicine, Columbia University Medical Center, New York, New York, Joseph Schwartz, PhD, Psychiatry, State University of New- York-Stony Brook, Stony Brook, New York, Karina Davidson, PhD, Thomas Pickering, MD/PhD, Medicine, Columbia University Medical Center, New York, New York
Depression has been linked with altered circadian rhythms. Dysregulation of the circadian blood pressure (i.e. lack of nocturnal blood pressure fall) may act as a pathophysiological mechanism contributing to the increased cardiovascular risk associated with depression. We compared the diurnal patterns of blood pressure (BP) of depressed (D) and non-depressed (ND) persons in their everyday ambulatory setting and in a controlled inpatient environment to see if the difference in environment affects the BP dipping pattern in both groups. A repeated measures study was conducted in 19 participants (mean age 41.5 years, 80% males) who were categorized as (D) or (ND) based on Hamilton scores. The subjects were admitted to the Mount Sinai GCRC in New York City where they wore an ambulatory blood pressure monitor (ABP) for 28 hours. Lights were turned off at 11PM and subjects were asked to stay in bed from 11PM to 8AM. Following the GCRC stay, subjects were discharged home and a second 24-hour ABP monitoring was conducted within a week. Complete data for both visits was available for 12 subjects. Dipping was defined as a drop in nocturnal systolic BP of more than 10% of the mean awake systolic BP levels. Sleep and wake periods were based on subjects diary records. During the GCRC visit there was no significant difference in the proportion of non-dippers between the D and ND groups (40% vs. 43%). In the home environment however, there was a significant difference in the % of non-dippers between the two groups (100% vs. 57%, D vs. ND, P = 0.005). Similar patterns were seen with the diastolic BP levels. The duration of sleep did not differ significantly between the two groups at home. Our results suggest that the prevalence of non-dipping is similar in D and ND persons in a controlled environment but differs in their day-to-day environment, suggesting that the non-dipping pattern in D subjects is determined more by the cycle of rest and activity than any intrinsic change in the circadian rhythm of BP. In contrast, the change in environment does not seem to play an important role in determining circadian BP rhythms in ND subjects.

295) Abstract 1750
PERCEIVED SOCIAL SUPPORT, MARITAL STATUS, AND AMBULATORY BLOOD PRESSURE AMONG ADULTS WITH HIGH BLOOD PRESSURE
Paul W. Smith, BS, Michael A. Babjak, PhD, Julie M. Johnson, PA, Ashley M. Wilson, BS, Kathryn H. Earnhardt, BS, Brian J. Beckman, BS, Psychiatry and Behavioral Sciences, Duke University, Durham, NC, Alan L. Hinderliter, MD, Cardiology, University of North Carolina, Chapel Hill, NC, Andrew Sherwood, PhD, James A. Blumenthal, PhD, Psychiatry and Behavioral Sciences, Duke University, Durham, NC
Previous studies have shown high levels of social support are associated with reduced risk for cardiac events. We investigated the relationship between social support and ambulatory systolic (SBP) and diastolic blood pressure (DBP) among 117 sedentary adults with high blood pressure. SBP and DBP were measured over a 24-hour period during participants' routine daily activities. Participants also completed the perceived social support scale (PSSS) to assess perceived support whereas marital status served as an index of structural support. Regression analyses were conducted predicting mean 24-hour BP with age, gender, ethnicity, body mass index, smoking status, family income level, physical activity, and posture. Higher support was associated with lower DBP over the 24-hr period (P = .027), at home (P = .009), and while sleeping (P = .067); higher perceived support also tended to be associated with lower SBP over the 24-hr period (P = .101) as well as at home (P = .075). There were no differences in 24 hr ABP between married (SBP: M = 141.7, SD = 12.4; DBP: M = 86.7, SD = 5.2) and unmarried (SBP: M = 141.0, 12.8; DBP: M = 87.0, 4.9) participants. We conclude that perceived support, but not structural support, is associated with lower levels of ABP measured during daily life.

296) Abstract 1787
HYPERTENSION LABELING IS ASSOCIATED WITH REDUCED QUALITY OF LIFE
Tanya M. Spruill, Ph.D., Medicine, Columbia University Medical Center, New York, NY, Joseph E. Schwartz, Ph.D., Psychiatry, SUNY-Stony Brook, Stony Brook, NY, Thomas G. Pickering, M.D., D.Phil., Benga Ogedegbe, M.D., Medicine, Columbia University Medical Center, New York, NY, Linda Gerber, Ph.D., Public Health, Weill Medical College of Cornell University, New York, NY
Previous research has shown that assigning medical diagnoses to patients (i.e., labeling) can have unintended negative effects on physical and psychological functioning, but few studies have examined the separate effects of diagnostic label and disease status. We investigated whether persons who have been labeled as hypertensive in the past report poorer quality of life compared to those who have never been labeled, independent of their true blood pressure (BP) status, determined by ambulatory BP monitoring (ABPM). The sample included 238 black and white normotensive and hypertensive subjects who were 18-65 years old, free of major medical conditions other than hypertension, and free of antihypertensive medications for at least 2 weeks. Subjects underwent 24-hour ABPM and completed demographic, medical and psychosocial questionnaires. The primary outcome measures were physical and mental component summary scores (PCS, MCS) derived from the SF-36. "True" hypertension was defined as average awake ABP >= 135/85 mmHg, and "labeled" hypertension was defined as subjects' self-reports of ever having been diagnosed with hypertension, high BP, or prescribed medications for lower BP. Multivariate analysis of covariance was used to test the effects of labeled and true BP status on PCS and MCS, adjusting for age, sex, race, body mass index and comorbidities. Subjects who reported having been previously labeled as hypertensive had significantly lower PCS scores compared with unlabeled patients (49.3 vs. 53.2, p<.01); MCS scores were not significantly different. True hypertension status based on ABP was not related to either measure. Secondary analysis of subgroups showed that labeled normotensives and labeled hypertensives both reported poorer physical functioning than unlabeled normotensives (p<.05); unlabeled normotensives were not significantly different from unlabeled hypertensives. These findings suggest that labeled BP status has a stronger impact on quality of life than true BP status; subjects who believed they were hypertensive, whether or not they actually were, reported poorer physical functioning than those who believed they were normotensive.

297) Abstract 1312
PERCEIVED RACISM AND MASKED HYPERTENSION
Elizabeth Brondolo, PhD, Nissa VerHalen, BA, Psychology, St. John's University, Jamaica, NY, Jonathan N. Tobin, PhD, Clinical Directors Network, New York, NY, William Gerin, PhD, Medicine / Cardiology, Mount Sinai School of Medicine, New York, NY, Thomas Gerin, MD, Medicine, Columbia University, New York, NY, Alan R. Roth, DO, Family Medicine, Mount Sinai School of Medicine, Jamaica, NY, Joseph E. Schwartz, PhD, Psychiatry and Behavioral Science, Stony Brook University, Stony Brook, NY
The purpose of this study was to examine the relationship of perceived racism to masked HTN, a condition in which resting clinic BP is normal but ABP is elevated. Investigators have suggested that masked HTN is a risk factor for the development of chronic essential HTN. Participants included 411 American-born adults (246 Black, 165 Latin(a); 233 Women, 178 men) with a mean age of 40 years who were either normotensive or unmedicated hypertensives at inclusion. Perceived racism was measured with two scales from the Perceived Ethnic Discrimination Questionnaire Community Version (PEDQ-CV). Life-time Discrimination and Past Week Discrimination. On the first study visit, three electronic measures of BP were obtained under...
conditions of quiet rest. ABP readings were obtained with an Accutrack over a 24-hour period, yielding an average of 38 readings per individual. Participants were classified as having masked HTN if their Visit 1 readings were in the normal range (i.e., SBP d 120mmHg and DBP d 80mmHg) and their average ABP level was elevated (i.e., SBP levels e 135mmHg and/or DBP levels e 85mmHg). At Visit 1, 41% (n = 169) individuals were normotensive. When ABP readings were examined 27% (n = 112) individuals were normotensive. There were 32 individuals with masked HTN. Logistic regression analyses were performed to identify predictors of diagnostic category (i.e., normotension versus masked HTN), with covariates including age, gender, race and body mass index. There were significant effects of difference between BP averages obtained at Visit 1 and those obtained during ABP monitoring. Those who had experienced more racism during the past week were 32 individuals with masked HTN. Logistic regression analyses were examined 27% (n = 112) individuals were normotensive. There...
at the onset of the study and at its conclusion. Lisinopril and atenolol both successfully reduced blood pressure, decreasing systolic blood pressure by 20 mm Hg or more and diastolic by 15 mm Hg or more. A minimally operator dependent MRI voxel count technique, the automated labeling pathway (ALP), was used to measure the volumetric changes in grey matter, white matter, and cerebrospinal fluid (CSF) in brain regions previously shown to be prone to hypertension-induced shrinkage. After controlling for age, body mass index, and drug group, our findings indicated continued volume losses. Among males, the left supplementary motor area (Brodmann Area 6) showed a significant reduction in grey matter volume (GMV) from pre-treatment to post-treatment (p=0.03). For females, GMV loss occurred in the left medial frontal gyrus (p<0.01). Analyzing both genders, the right inferior temporal lobe and the left precentral gyrus both had GMV decreases (p=0.03, p=0.02 respectively), though comparable studies found the relationships in men alone. Lastly, the increase in cerebellum CSF reported in the literature is indirectly supported by our finding of significant GMV loss in the cerebellum (p=0.01). Since the successful treatment of the subjects' hypertension did not prevent GMV loss, our results suggest that peripheral hypertension is not the dominant mechanism by which diffuse brain atrophy occurs.

302) Abstract 1269
EMOTIONAL WELL-BEING IS ASSOCIATED WITH LIFESTYLE ADHERENCE IN HYPERTENSIVE PATIENTS
Ranak Trivedi, PhD, Medicine, Duke University Medical Center, Durham, NC, Brian Ayotte, PhD, David Edelman, MD, HSR&D, Durham VAMC, Durham, NC, Hayden Bosworth, PhD, Medicine, Duke University Medical Center, Durham, NC

Emotional well-being may impact adherence to medication and lifestyle recommendations, a critical component of hypertension treatment. Our objective was to determine whether worse emotional well-being would be associated with poorer blood pressure (BP) control and poorer adherence to medications, diet, and exercise. Six hundred and thirty-six hypertensive patients (48% White; 34% male) were recruited from two primary care settings associated with the Duke University Medical Center for a 24-month trial designed to investigate a psychosocial intervention for hypertension management. Emotional well-being was measured using the mental component summary scale (MCS) of the MOS Short Form 36. Participants were asked to rate their difficulty with adhering to dietary and exercise recommendations on a scale of 1 (not at all hard) to 10 (extremely hard). Scores greater than 5 were recoded as having difficulty with adherence. At baseline, the mean systolic BP (SBP) was 124.86 mm Hg (SD=17.84) and the mean diastolic BP (DBP) was 71.04 mm Hg (SD=10.76). Mean MCS score was 50.59 (SD=10.7). The number of participants endorsing medication adherence was 59%. The number of participants who reported difficulty adhering to dietary and exercise recommendations were 45% and 43%, respectively. Multiple regression analyses did not support the relationship between emotional well-being and baseline SBP (p=0.13) or DBP (p=0.28). Logistic regression analyses indicated that emotional well-being was inversely associated with likelihood of difficulty adhering to diet (OR=0.97 per 1 unit change in MCS, p<0.001, 95% CI=0.95-0.98) and exercise (OR=0.97 per 1 unit change in MCS, p=0.001, 95% CI=0.96-0.99), after controlling for marital status, age, race, and sex. Emotional well-being was not associated with medication adherence (OR=0.99 per 1 unit change in MCS, p=0.20, 95% CI=0.97-1.00). These findings suggest that interventions targeting emotional health may help optimize adherence to lifestyle changes but may not impact medication adherence.

Exercise

303) Abstract 1122
IMPACT OF LEISURE TIME PHYSICAL ACTIVITY ON PSYCHIATRIC DISORDERS IN PATIENTS UNDERGOING EXERCISE STRESS TESTING
Simon L. Bacon, PhD, A Arsenault, PhD, Kim L. Lavoie, PhD, Montreal Behavioural Medicine Centre, Montreal Heart Institute, Montreal, Quebec, Canada

Although there are a number of studies assessing the impact of exercise and exercise interventions on mental health, few have assessed older populations with a high risk of coronary artery disease (CAD). A total of 898 patients, M (SD) age = 61 (10) years and 31% female, undergoing standard exercise stress testing at the Montreal Heart Institute completed a modified version of the physical activity recall (mPAR) scale. The mPAR was used to calculate average leisure time physical activity (LTPA) in MET/hrs/week. To establish the presence of psychiatric disorders all participants completed a brief structured psychiatric interview (the PRIME-MD). Medical history data was also collected. Logistic regression analyses revealed that compared to those that do any amount of physical activity, non-exercisers had a 49% greater chance of being diagnosed with any psychiatric disorder (OR 0.51, 95% CI 0.36-0.71), a 47% greater chance of being diagnosed with a mood disorder (OR 0.53, 95% CI 0.36-0.78), and a 60% greater chance of being diagnosed with an anxiety disorder (OR 0.40, 95% CI 0.26-0.61). Further analyses revealed that for every 1 MET/hr/week increase in LTPA, the risk of being diagnosed with a psychiatric disorder or an anxiety disorder was reduced by 2% (OR 0.98, 95% CI 0.96-0.99) and 5% (OR 0.95, 95% CI 0.93-0.98), respectively. There was no graded relationship between LTPA and mood disorders (OR 0.99, 95% CI 0.97-1.01). All analyses included age, sex, history of CAD, and psychiatric medication as covariates. In an older cardiac population, patients who do not exercise are at an elevated risk of being diagnosed with a psychiatric disorder, especially anxiety disorders. There appears to be a dose-response relationship, such that the greater the level of exercise the decreased risk of being diagnosed with a psychiatric disorder. Thus, engaging in some exercise is better than none, and more is better than less, for risk of psychiatric morbidity.

304) Abstract 1634
WRIST AND WAIST-BASED ACCELEROMETRY MEASURES OF PHYSICAL ACTIVITY ARE INDEPENDENT PREDICTORS OF WITHIN PERSON VARIANCE IN AMBULATORY BLOOD PRESSURE
Jeannette M. Garcia, BS, Health and Physical Activity, University of Pittsburgh, Pittsburgh, Pennsylvania, Todd M. Bear, MS, Psychology, Martica Hall, Ph.D, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Thomas W. Kamarck, Ph. D, Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania

Research examining psychosocial influences on ambulatory blood pressure (ABP) requires accurate controls for the metabolic correlates of ABP. A number of studies have used diary measures of physical activity to examine metabolic influence on ABP. Of those investigations that have used accelerometry measures, the vast majority have used only wrist-based measures. We compared wrist-based accelerometry, waist-based accelerometry, and self-report diary measures of physical activity as correlates of systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) in a sample of 241 adults (60.9±4.7, 51% female, 85% Caucasian) who were participating in a study of psychosocial risk factors for cardiovascular disease. ABP was monitored over 3 days and daytime readings were taken every 45 minutes. Diary measures were assessed on a 4 point scale (1=limited activity - 4=heavy activity). Activity counts were averaged over the 10 minutes prior to each ABP reading. Multi-level modeling was used to examine within-person associations. When all three activity predictors were included along with ratings of posture, all three were significant predictors of SBP and HR. In the SBP model, for diary, wrist-based, and waist-based measures respectively, F(10,000)=5.08, p=0.03, F(10,000)=13.15, p=0.001, F(10,000)=22.00, p=0.001. In the HR model, for diary, wrist-based, and waist-based measures respectively, F(10,000)=107.54, p=0.001, F(10,000)=82.32, p=0.001, F(10,000)=27.36, p<0.001. Both the wrist-based and waist-based accelerometers were independent predictors of DBP, but the diary was not. For DBP diary, wrist-based, and waist-based predictors F(10,000)=2.62, p=0.16, F(10,000)=83.96, p<0.001,F(10,000)=6.06, p=0.01, respectively. These results suggest that efforts to explore the role of psychosocial processes in ABP may require more rigorous examination of physical activity during daily life than has been typical in the literature, including multiple-site accelerometry as well as diary self-report. Research supported by NHLBI grant HL56346
305) Abstract 1491
EFFECTS OF MINDFULNESS-BASED COPING WITH UNIVERSITY LIFE (MBCUL) ON THE STRESS SYSTEMS, A PILOT STUDY
Marie-Louise H. Gander, MD, Siobhan M. Lynch, MSc, Harald Walach, Professor, Psychology, University of Northampton, Northampton, United Kingdom
University life is accompanied by an array of potential stressors, such as changing relationships, new living environments and academic pressure. Additionally, the mental health of students appears to be on the decline. An 8-week course of mindfulness-based coping with university life (MBCUL) has been developed to help students cope with the stresses of university life, based on Kabat-Zinn’s mindfulness-based stress reduction program. The primary objectives were to test the feasibility of this study and whether MBCUL improves mindfulness. Secondary we investigated its impact on mental health and on the stress system via the hypothalamus-pituitary-adrenal (HPA) and the sympathetic-adrenal-system (SNS). The study is a pre/post-intervention design. Psychological and physiological measurements were taken: mindfulness (FMI), mood (HADS), stress (PSS), s-cortisol for HPA and s-alpha-amylase for SNS. We were interested in the change of the cortisol awakening response (CAR) as well as the change of the diurnal profile of the s-cortisol and s-alpha-amylase. Data was collected from 11 MBCUL and from 8 wait-list-control participants. The saliva from 8 MBCUL and 6 control-group participants was used our analysis. There was a sig. change of FMI (z = -2.437, p < .015), HADS (z = -2.243, p < .025) and PSS (z = -2.374, p < .018). We observed a sig. negative correlation between the change of FMI and the change in PSS (ρ = - 74%). The stress levels in MBCUL were lower compared to the stress levels in the control group (rho = 0.861, n = 9), p < .003. A trend could be seen in a change from a slightly flatter to a steeper CAR-curve and an overall lower diurnal profile of cortisol and alpha-amylase. Due to the small number of participants we did not observe any sig. effects. MBCUL increased mindfulness and improved the stress-levels and mental health of students in this pilot study. At present we are replicating the study with a larger sample size.

306) Abstract 1086
UNDIAGNOSED THYROID DISEASE ELEVATES BASELINE CORTISOL LEVELS IN ASYMPTOMATIC YOUNG MEN AND WOMEN
Laura Cousino Klein, Ph.D., Jeanette M. Bennett, M.S., Sandhya Kambhampati, B.S., Michele M. Stine, Ph.D., Biobehavioral Health, Penn State University, University Park, PA, Elizabeth J. Corwin, Ph.D., School of Nursing, The Ohio State University, Columbus, Ohio, Helen M. Deitch, M.D., Gynecology and Obstetrics, Centre Medical and Surgical Associates, State College, PA, Shelley E. Taylor, Ph.D., Psychology, Teresa E. Seeman, Ph.D., Medicine & Epidemiology, UCLA, Los Angeles, CA
Hypothyroidism (underproduction of thyroid hormone; HYPO) affects nearly 15% of the US population and an estimated 13 million thyroid disease cases are undiagnosed. Left untreated, HYPO can lead to weight gain, infertility and increased cardiovascular disease risk. Recent medical attention has been given to individuals with slightly elevated thyroid stimulating hormone (TSH) levels but who appear asymptomatic (i.e., subclinical hypothyroid disease; subHYPO). Left undiagnosed, nearly 5% of these individuals will go on to develop HYPO and its associated long-term health problems. From a research perspective, the unknown presence of neuroendocrine disease can significantly alter study results. Therefore, we examined the prevalence of asymptomatic, undiagnosed hypothyroid disease in a carefully screened group of 56 (36 women, 20 men) healthy, young (mean 21.05 ± 0.37 years) volunteers and the impact of thyroid abnormality on basal cortisol levels as an indicator of hypothalamic-pituitary-adrenal (HPA) axis activity. Participants with pre-existing medical conditions or any medication use were excluded. Baseline morning serum samples were assayed for TSH to determine the presence of thyroid disease and for cortisol. Consistent with prevalence estimates, 15% of participants (N=8) demonstrated subHYPO and HYPO based on published TSH clinical cutoffs (subclinical=4.5-10 mU/L, clinical>10 mU/L). There was no significant relationship between TSH and cortisol levels when using the standard clinical cutoff values. However, when the subclinical cutoffs were slightly widened to a lower limit of 2.0 mU/L, may alter HPA-axis functioning in important ways that could impact laboratory-based neuroendocrine studies.

307) Abstract 1678
A PSYCHO-PHILOSOPHICAL STUDY: APPLICATION OF ASTANGA YOGA AS AN AID IN TREATMENT OF PSYCHOSOMATIC DISORDERS
Alok K. Mishra, Ph. D., Department of Physiology, K.K. Deepak, Ph.D., Physiology, Rajesh Sagar, Ph.D., Psychiatry, R.L. Bijlani, Ph.D., Physiology, All India Institute of Medical Sciences, New Delhi, Delhi, India
Sedentary life style, obesity and faulty habits along with mental stress are known risk factors for Psychosomatic disorders such as Hypertension, Diabetes Mellitus and Coronary Heart Disease. Yoga as a method of lifestyle modification has been shown to help prevent and treat mental disorders. The present study was conducted to examine the physiological and psychological effects of astanga yoga in 65 subjects between 18 and 65 years of age who had one or more psychosomatic diseases. Subjects were divided into two groups by random sampling procedure-28 control subjects excluding 3 dropouts (receiving conventional treatment only) and 37 (experiencing an experimental group (receiving conventional treatment and Yoga Training in Integral Health Clinic, Department of Physiology, AIIMS, New Delhi). Standardized tools were used to assess the physiological state (Systolic and Diastolic blood pressure), emotional/mental state (Health, Wellness and Quality of Life Questionnaire), depression (Beck Depression Inventory, 1961), subjective well-being (Subjective Well-Being Inventory, Well-Being Inventory, JIPMER, Pondicherry, India) of subjects. Assessment was done at 0 day, 9th day and 60th day. t-Test, ANOVA, Chi-Square Test were performed using SPSS.SBP was significantly lower in both control group (125.76±7.33, intragroup p value=0.0) and control group (128.58±11.0, intragroup p value=0.0). The physical and mental state, stress level and level of depression showed significant improvement in experimental group as compared control group. The inter group p value=0.044, 0.055, 0.016, 0.119 respectively for above variables. The study demonstrates that adding an integrated yoga based intervention to conventional care leads to significant improvement especially in psychological variables, over and above the improvement, if any achieved by conventional care alone.

308) Abstract 1724
BODY AWARENESS: CONSTRUCT AND MEASURES
Wolfgang Eulehling, MD, Vrinarini Gopisetty, MD/MPH, Integrative Medicine, Jennifer Daubenmier, PhD, Health Psychology, University of California San Francisco, San Francisco, CA, Cynthia J. Price, PhD, School of Nursing, University of Washington, Seattle, WA, Anita Stewart, PhD, Social and Behavioral Sciences, University of California San Francisco, San Francisco, CA
Objective: Heightened body awareness can be adaptive and maladaptive. Improving body awareness has been suggested as an innovative approach in treating patients with various diagnoses: low back pain, chronic pain, obesity and PTSD. It has been proposed as mechanism of action for benefits from specific cognitive therapies and mind-body and manual therapy approaches (Yoga, Tai Chi, meditation, Feldenkrais). Research in these fields requires a measure of body awareness. Are existing self-report measures of body awareness reliable and valid? What is the understanding of the body awareness construct in these instruments? Methods: An operational definition was developed by a multi-disciplinary group of researchers in the field. By systematic review, abstracts in PubMed, PsychINFO, HaPI, Embase, Digital Dissertations were screened, instruments obtained and reviewed for inclusion criteria for psychometric evaluation and conceptual review. Using an iterative qualitative process, items were organized by underlying domains to synthesize the current understanding of the body awareness construct. Results: Body awareness is a multi-dimensional construct representing the sensory awareness which originates from the body's physiological states, processes (including pain and emotion) and actions (including movement) as an interactive process which is shaped by attitudes, beliefs and experience in their social and cultural context. 112 instruments in 39 journals, 20 definitions, 128 measures and 7 psychometric review. Multiple dimensions of the body awareness
constructs used in these measures were identified and the construct was repeatedly revised. An integrated framework for this complex construct was established to be presented at the conference. Conclusion: Existing instruments for body awareness exhibit a limited, mostly one-dimensional understanding of the construct and are either not appropriate, incomplete, too complicated, or of limited psychometric properties. There is need for the development of a multi-dimensional measure that includes defined key domains which potentially enable us to discern between adaptive and maladaptive aspects of body awareness.

309) Abstract 1659
A CROSS-SAMPLE EXAMINATION OF TRAUMA IDENTIFICATION PROCESSES IN SELF-REPORT MEASURES AND EXPRESSIVE WRITING INTERVENTIONS
Deborah Nazarian, MS, Joshua M. Smyth, PhD, Adrienne P. Barschuk, Psychology, Syracuse University, Syracuse, NY
A Trauma history is reliably associated with a range of adverse consequences and risk profiles. Research relies upon accurate assessment of trauma, and often uses self-report measures anchored to a person's most traumatic life event. Interventions targeting past trauma, such as expressive writing [EW], also require self-identification of the most traumatic event. In principle, participants should identify the same traumatic event when completing both self-report measures and a disclosure intervention if these tasks are only minutes apart, yet this has not been examined. This study evaluated the concordance rates between the trauma identified on a self-report measure and what was subsequently disclosed in an EW intervention. Three samples were examined: participants with HIV (n=17), a high stress community sample (n=34), and a student sample (n=61). All participants were first asked to identify their most traumatic event, and then complete a trauma context of a questionnaire (Impact of Events Scale revised; IES-R) and then provided instructions to engage in EW about their most traumatic experience across three writing sessions. There was surprisingly little overlap between the most traumatic experience identified on the questionnaire and that selected as the topic for EW. Overall, only 39% of EW sessions focused on the same trauma as identified on the IES-R. Raw agreement rates were highest on the day when participants wrote significantly over sessions (Day 1=61%, 2=40%, 3=27%). Samples also differed significantly, with HIV patients showing the lowest overall agreement (29%) compared to community (41%) or undergraduate (47%) samples. Factors influencing the identification of a traumatic experience on a questionnaire may be dissimilar from those that determine topic selection for EW (e.g., active inhibition, avoidance of emotional distress). Further, even when EW initially focuses on the same trauma identified in self-report, it often shifts to other topics across sessions, and this process may differ by sample characteristics.

310) Abstract 1520
A PILOT STUDY OF A MIND-BODY GROUP THERAPY FOR COMBAT VETERANS WITH POSTTRAUMATIC STRESS DISORDER
Anthony P. King, PhD, Thane Erickson, PhD, Nicholas Giardino, Ph.D., Elizabeth Robinson, Ph.D., Israel Liberzon, M.D., Psychiatry, University of Michigan and Ann Arbor VA Hospital, Ann Arbor, MI
This is a pilot study of the feasibility, acceptability, and efficacy of a novel Mind-Body treatment for combat posttraumatic stress disorder (PTSD). Eleven veterans seeking treatment at the Ann Arbor VA Hospital outpatient PTSD clinic were enrolled. The therapy was adapted from previous efforts (The Stress Inoculation and Cognitive Therapy) to design a Mind-Body treatment for treatment of PTSD, and involved 8 weekly group sessions of present-focused Cognitive Therapy) to design a Mind-Body treatment for treatment of PTSD, and involved 8 weekly group sessions of present-focused therapy and Mind-Body exercises in session and daily home practice, PTSD psychoeducation, and exercises for managing intrusive thoughts and feelings. We collected pre- and post therapy psychiatric and psychophysiological assessments, and baseline and stress-reactive HPA axis neuroendocrine measures. The patients dropped after 2 weeks: the 8 who completed at least 6 sessions showed reasonable compliance in practicing assigned home Mind-Body exercises, and also showed significant pre- to post-treatment improvement in PTSD symptom severity in the Clinician Administered PTSD Scale (CAPS; total PTSD symptom scores reduced from 70 to 52, t(4)=2.45, p<.05). Explained by decreased "avoidant" cluster symptoms. Significant improvements were also seen on the PTSD Symptom Cluster inventory (Posttraumatic Cognitions Inventory). Available pre-post psychophysiological data found nonsignificant trends of reduced heart rate, skin conductance, and cortisol reactivity to trauma recall. Data from this uncontrolled pilot study suggest a time-limited Mind-Body PTSD group intervention appears reasonably clinically acceptable to veterans seeking treatment for chronic PTSD and potentially beneficial, reflected in improvement in PTSD symptoms and related cognitions, including avoidance symptoms and guilt cognitions. It is also suggestive of potential alterations in physiological stress reactions to trauma cues. Further study is ongoing to identify factors influencing acceptability and effectiveness, as is a comparison to a 'treatment-as-usual' control group intervention for chronic combat PTSD.

311) Abstract 1582
HEALTH AND ADAPTATION FOLLOWING BEREAVEMENT: THE ROLE OF SOCIAL CONSTRAINTS
Vanessa Jath, BA, Joshua M. Smyth, PhD, Michael P. Carey, PhD, Psychology, Syracuse University, Syracuse, New York
Responses to the loss of a loved one vary widely across individuals, and factors predicting differential post-bereavement reactions are important to identify. Research has identified disclosure and social support as integral components for coping with loss, but much less work has examined the role of social constraints (i.e., the objective and subjective contexts that lead individuals to refrain from or limit disclosure of loss-related events, feelings, and behaviors). To examine why disclosure of loss-related events vary in the context of a bereavement, we conducted a cross-sample examination of trauma processing in relation to mental and physical health outcomes following bereavement. Public service and paid announcements were used to recruit individuals who had experienced loss in the past two years. A total of 244 bereaved individuals (87% female, 92% Caucasian) completed a survey by mail. Participants reported on demographic and loss-related information, social constraints, and self-ratings of mental and physical health, depression, stress, and impact of the loss (indexed by intrusive and avoidant thoughts). Greater social constraints predicted worse overall functioning: poorer health (4% variance explained, p<.05), more physical symptoms (7% variance, p=.0001), more depression (22% variance, p=.0001), more stress (14% variance, p<.0001), and greater impact of the event of loss (13% variance, p=.0001). Results remained significant after controlling for demographics of EW and indices of health (i.e., participant's age at time of bereavement, gender, ethnicity, education, income, length of relationship with deceased). Findings emphasize the importance of supportive interactions and disclosure for processing loss. The real or perceived absence of social integration and support (as indexed by greater social constraints) is related to markedly worse outcomes in the two years following bereavement. These findings have implications across an array of clinical care settings, hospice, and other circumstances where researchers and/or clinicians attend to individuals who have experienced a loss.

312) Abstract 1100
CARDIAC VAGAL CONTROL VARIES WITH SOCIAL FUNCTION IN OLDER WOMEN
Victoria B. Egizio, B.S., J. Richard Jennings, PhD, Israel C. Christie, PhD, Lei K. Sheu, PhD, Karen A. Matthews, PhD, Peter J. Gianaros, PhD, Psychology & Psychiatry, University of Pittsburgh, Pittsburgh, PA
Adaptive social behavior has been linked to greater resting cardiac vagal control (high frequency heart rate variability, HF-HRV) rather consistently. However, while some studies find that less HF-HRV during stressful laboratory challenges is linked to positive social functioning, others report that higher HF-HRV (Mindful-Based Stress Reduction Therapy) is associated with better social function, active emotion regulation, and positive mood. Also, most studies are with children. As such, we examined whether resting or stress-related changes in HF-HRV predicted social function in 50 healthy, post-menopausal women. The Interpersonal Support Evaluation List (ISEL), the Marital- Adjustment Test (MRS), the Social Rhythm Metric (SRM), and the Negative Interactions Scale (NIS) assessed social function. Given their significant correlations, a principal components analysis was conducted yielding the social functioning factor (factor loadings; SRM (.49), MRS (.81), ISEL (.83), NIS (.60); 49% total variance, Eigenvalue=.95). Cognitive challenges included the Stroop and a mental arithmetic task. Electrocardiogram measures were collected at baseline and task. On average, task-related HF-HRV decreased from baseline (.50, p<.01). But, in a 3-step hierarchical regression with the covariates education level (highest
level of education completed) and body mass index entered at step 1, baseline HF-HRV entered at step 2, and task-related HF-HRV entered at step 3. Only step 3 was significant (beta=.50, t=3.16, SE=.16, R^2 change=.25, p<.05). Though stress-related suppression of HF-HRV was common for most women, those with less of a decrease in HF-HRV from resting baseline also reported greater social functioning. While our findings contrast with predictions derived from some theoretical accounts, they complement prior work suggesting that emotion regulation could plausibly modulate cardiac vagal control creating an association with adaptive social functioning.

313) Abstract 1498
URINARY 8-HYDROXY-2’-DEOXYGUANOSINE (8-OHGD) COVARIATES POSITIVELY WITH HOSTILITY AMONG MID-LIFE COMMUNITY VOLUNTEERS
Judith E. Carroll, M.S., Anna L. Marsland, Ph.D., Psychology, Frank J. Jenkins, Ph.D., Pathology, University of Pittsburgh, Pittsburgh, PA, Andrew Baum, Ph.D., Psychology, University of Texas, Arlington, Arlington, TX, Matthew F. Muldoon, MD, MPH, Medicine, Stephen B. Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA
Recent evidence suggests that individuals high in dispositional hostility are at elevated risk for cardiovascular disease, although the mechanisms by which hostility confers such risk remain uncertain. One possibility is that hostility is associated with oxidative stress, which is thought to play a role in atherogenesis. Here, we examine the covariation of hostility with a measure of systemic oxidative stress, the urinary excretion of 8-hydroxy-2’-deoxyguanosine (8-OHdG) among a community sample of 224 volunteers aged 30-54 years (87% white, 9% black, 4% other, mean age = 38.1, SD = 7.1) participating in the Adult Health and Behavior Project. An abbreviated 39-item Cook Medley Hostility scale was administered to assess hostile affect, hostile attributions, cynicism, and aggressive responding. Levels of 8-OHdG were determined from a 24-hour urine collection. Regression analyses accounting for age, gender, race, years of education, and relevant medical covariates (i.e. arthritis, use of inhaled corticosteroids) showed the Cook Medley total hostility score (b = .16, p < .02), as well as hostile affect (b = .20, p < .002) and aggressive responding (b = .15, p < .03) subscale scores, to covary positively with urinary 8-OHdG levels. Further adjustment for current smoking status only marginally reduced the magnitude of associations between the hostility dimensions and 8-OHdG. These findings provide initial evidence of a positive relationship between trait hostility and urinary levels of 8-OHdG, raising the possibility that oxidative stress may contribute to the heightened cardiovascular risk associated with hostility-related traits of personality. (Supported by Grants PO1HL040962 (SBM) & NR008237 (ALM))

314) Abstract 1369
A DIARY STUDY ON THE FLUCTUATIONS OF PERCEIVED STRESS, FATIGUE AND QUALITY OF LIFE IN A MULTIPLE SCLEROSIS POPULATION
Raluca A. Topciu, M.A., Clinical and Social Sciences in Psychology, University of Rochester, Rochester, NY, Paul R. Duberstein, PhD, Jeffrey M. Lyness, MD, Nathan M. Franses, MS, Department of Psychiatry, Andrew Goodman, MD, Department of Neurology, University of Rochester Medical Center, Rochester, NY, Ashley H. Fan, University of Rochester, Rochester, NY
This study examined the relationship between weekly fluctuations of perceived stress, fatigue and quality of life in patients with relapsing-remitting multiple sclerosis (MS). Previous studies associated stressful or traumatic life events with disease exacerbations; about the week-to-week variations of stress and their effect on disease symptoms (fatigue) and quality of life. METHODS: 40 patients diagnosed with relapsing-remitting MS (age: M = 50, SD = 11, range 23 to 70; 78% females) completed a baseline assessment of personality (NEO-FFI) and defense mechanisms and short weekly diaries recording perceived stress, fatigue, and quality of life (QL), for 52 consecutive weeks. RESULTS: Multilevel analysis (Hierarchical Linear Modeling) related significantly the fluctuations of both fatigue and QL to the fluctuations of stress. Two separate models were fitted for fatigue and QL, respectively. Fatigue: Levels of fatigue changed systematically with the levels of stress. On weeks when patients experienced more stress they also experienced more fatigue: for 1 SD increase in stress above the group average, an individual experiences .33 SD increase in fatigue above the group average (p<0.0001). This relationship is moderated by defense style. Specifically, the increase in stress-related fatigue is higher among those with an intrapunitive style (turning against self) than for people with a less predominant use of this style (p = .03). QL: Levels of QL changed systematically with the levels of stress. On weeks when patients experienced more stress they also experienced a lower QL: for 1 SD increase in stress above the group average, an individual experiences a .27 SD decrease in QL below the group average (p = .0001). Age, neuroticism and intrapunitive defensive style are independently associated with lower QL (p = .05). IMPLICATIONS: Two further lines of research are suggested: one looking at mechanisms of action and the second looking at the development of clinical interventions aimed at uncoupling the relationship between stress and important indicators of QL.

315) Abstract 1635
ANGER AFFECT MAY MODULATE PRURITUS PERCEPTION IN PATIENTS WITH CHRONIC IDIOPATHIC URTICARIA
Rupert Conrad, MD, Franziska Geiser, MD, Psychosomatic Medicine and Psychotherapy, Georg Haidl, MD, Dermatology, Markus Hunthacher, MD, Reinhard Liedtke, MD, Florentine Wermter, MD, Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, Germany
There is evidence that chronic idiopathic urticaria (CIU) and psoriasis (Pso) are personality based. We investigated how emotional regulation particularly with regard to the feeling of anger. This deficit in emotional awareness could lead to the phenomenon that emotions are rather experienced in bodily symptoms such as pruritus. We investigated whether there is a relationship between pruritus as major symptoms in CIU and psoriasis and the experience of negative emotions. 41 CIU patients and 44 psoriasis patients treated at Bonn University Hospital Hospital and 49 healthy controls were included. Patients and controls were compared on questionnaires measuring alexithymia (TAS-20), emotional distress (SCL-90-R) and anger (STAXI). In skin disorder patients separate stepwise regressions with pruritus severity as dependent variable and questionnaires, skinstatus, duration, sex and age as independent variables were calculated. CIU and psoriasis patients showed higher alexithymia (p<0.01), emotional distress (CIU p<0.05; Pso p<0.01) and state anger (CIU p<0.05; Pso p<0.01) compared to controls. State anger was the only significant predictor of pruritus severity in CIU explaining 19% of variance. Depression was the only significant predictor of pruritus severity in psoriasis explaining 12% of variance. Our findings suggest a relationship between pruritus severity and anger in CIU. We discuss possible pathophysiological pathways such as an involvement of corticotrophin releasing hormone in the release of histamine. With regard to clinical implications we discuss psychopharmacological and psychotherapeutic treatment options of pruritus in CIU.

316) Abstract 1734
DEPRESSION AND ILLNESS INTRUSIVENESS IN PREDIALYSIS PATIENTS
Dora M. Zalai, MD, Department Psychiatry, University of Toronto, Toronto, Ontario, Canada, Lilla Szefert, MD, András Szentkirályi, Agnes Kovacs, MD, Andrea Dunai, MD, Rezzo Zoller, MD, Institute of Behavioral Sciences, Semmelweis University, Budapest, Hungary, David Mendelsohn, MD, Department of Nephrology, Humber River Regional Hospital, Weston, ON, Canada, Gerald M. Devins, PhD, Department of Psychiatry, University of Toronto, Toronto, ON, Canada, Miklos Molnar, MD, Dr. Istvan Mucsi, MD, Department of Nephrology, Semmelweis University, Budapest, Hungary, Istvan Mucsi, MD, Department of Nephrology, Humber River Regional Hospital, Weston, ON, Canada, Marta Novak, MD, Department of Psychiatry, University of Toronto, Toronto, ON, Canada
Illness intrusiveness represents illness-induced disruptions to lifestyles, activities, and interests that compromise quality of life. According to the central hypothesis disease and treatment factors influence health related quality of life indirectly through their effects on illness intrusiveness. Psychological and social factors moderate the extent of illness intrusiveness. In this study we set out to analyze the association between depression and illness intrusiveness in patients with chronic kidney disease (CKD) not yet requiring renal replacement therapy. 421 patients with varying degree of chronic renal failure followed at two predialysis clinics were enrolled to participate in this cross-sectional study. The Illness Intrusiveness Rating Scale (IIRS) and the Centre for
Epidemiological Studies - Depression Scale (CES-D) were utilized to assess illness intrusiveness and depression, respectively. Socio-demographic variables, background of kidney disease and laboratory parameters were also recorded. Mean Age was 61±18 years, 55% was female, 35% had diabetes. 48% of the patients were at CKD stage 2 or 3 (estimated glomerular filtration rate [eGFR] greater that 60 ml/min/1.73m2), 40% of them had stage four CKD (eGFR between 15 and 30 ml/min/1.73m2) and 11% had an eGFR less than 15 ml/min/1.73m2. The prevalence of clinically significant psychological distress (cutoff of 16 on the CES-D scale) was 46%. Scores on the CES-D scale and the IIRS were significantly correlated (rho=0.482, p<0.001). Psychological distress remained the strongest predictor of the IIRS score in multivariate analysis even after adjusting for multiple co-variables (beta=0.513, p<0.001). On the basis of the above result we conclude that the severity of depressive symptoms is independently associated with illness intrusiveness in CKD patients. The cross-sectional design does not allow us to speculate about the directionality of this association. Targeted psycho-social interventions, however, are still likely to reduce illness intrusiveness and improve quality of life in this patient population.

317) Abstract 1664
WHEN DO THE DISPARITIES IN CARIES DUE TO SOCIOECONOMIC STATUS OCCUR?
Deborah E. Polk, PhD, Robert J. Weyant, DMD, DrPH, Dental Public Health, Mary L. Marazita, PhD, Oral Biology, University of Pittsburgh, Pittsburgh, PA, Richard J. Cruot, DDS, PhD, Restorative Dentistry, Daniel W. McNeil, PhD, Psychology, West Virginia University, Morgantown, WV, Gema Barkanic, BA, Oral Biology, University of Pittsburgh, Pittsburgh, PA
Although there are several possible preventive interventions targeting socioeconomic disparities in caries that could be implemented, the optimal time of delivery of these interventions remains unknown. At a minimum, they need to occur prior to the development of the disparity. We examined when the disparity due to socioeconomic status occurs in caries in the primary and permanent dentition of children ages 1 to 18. From the population-based cohort of families ascertainment by the Center for Health Research in Appalachia (YRCC), 592 children with at least one primary tooth from 342 families and 248 children with at least one permanent tooth from 148 families. Children's parents self-reported household income. Children's and mothers' caries severity was determined by clinical examination using the NHANES III criteria. Multilevel regression was used, nesting children within families and controlling for age, number of primary or permanent teeth, and mothers' decay. If a model with all predictors entered simultaneously, the disparity in caries in the primary dentition was present by age 1, F(2,247)=4.43, p < .01. Children in the lowest tertile of household income had more caries than did children in the highest income tertile, t(247)=2.94, p < .004. This disparity was not larger in older children. Thus, interventions targeting caries in the primary dentition should start by the first year of life. In the permanent dentition, the disparity in caries did not appear until age 9. Children in the lowest income tertile had more caries than did children in the highest income tertile, t(292) = 2.09, p < .03. By contrast, this disparity was larger in older children, F(2,92) = 4.24, p < .02. Thus, although preventive interventions should start prior to age 9, their full effects may not be evident for several years. Overall, the development of the disparity differed depending on whether the outcome was the primary or permanent dentition. These findings may be used to inform the planning of preventive interventions. NIH Grant #R01-DE014889.

318) Abstract 1467
THE EFFECTS OF QUERCETIN ON LEARNING ABILITY OF STRESSED RATS IN THE SKINNER BOX
Irina Tubaltsceva, Master of science, Physiology of human and animal, Kyiv National Taras Shevchenko university, Kyiv, Ukraine
According to the modern stress concept, its adaptive character can turn into pathogenic in cases of prolonged exposure to stressors. It has been proposed that the initiation and development of the stress reaction includes an activation of free radical oxidation as a consequence of stress-related disturbances of redox-homeostasis with simultaneous attenuation of the cellular antioxidant defense systems. Therefore, treatment with antioxidants may theoretically prevent stress-related disturbances of redox-homeostasis with simultaneous improvement of the behavioral capacities in the stressed organism. One of the most common and efficient antioxidant agents are bioflavonoids, which are naturally occurring phenolic compounds. The aim of this study was to assess the effect of prophylactic administration of bioflavonoid Quercetin (100 mg kg (-1)) on the locomotive, exploratory and emotional activity of rats in the Skinner box. Male nonlinear rats were used for this experiment. The animals were divided into four groups. Rats in groups 1 and 2 were subjected to chronic electric footshock of 0.8 mA intensity (10s duration with a 25±22s interval for 40 min) which is supplied once in two days for 2 weeks. Rats in groups 1 and 3 obtained Quercetin (100 mg kg(-1)) per os daily for 2 weeks before stress exposure. Rats in group 4 served as control animals. All the animals were tested in the Skinner box to estimate the influence of stress on the behavioral repertoire of rats and its potential treatment by the Quercetin. Results showed that chronic foot-shock stress depressed the behavioral activity of both stress groups, but Quercetin administration increased the number of lever presses and the acceptance of reinforcement that particularly exceeded the control group level. This data allowed us to conclude that antioxidant administration can attenuate the development of stress-related behavioral activity, inhibition, and that excessive uptake of bioflavonoids can have unpredictable consequences, admittedly due to its capacity to impact the natural antioxidant balance of the organism, evidenced by the alteration of learning ability.
communicate their wishes. Often, an individual is named to be a substitute decision-maker during this time. When helping patients & families communicate their end-of-life wishes, ACP can be used to ensure that a person's preferences are respected & can ease psychosocial distress for patients, families & health care professionals. We conducted a study to learn how diverse cultural groups in Canada might respond to ACP becoming part of the health care system. Because we know the largest & most prevalent cultural groups may have different cultural frameworks about participating in a conversation about terminal illness, suffering & dying, our aim was to increase understanding of the diverse perspectives to ensure ACP practices are effectively incorporated & utilized by these cultural groups. One hundred and twenty-five key informant interviews & 4 focus groups were conducted. Content analysis revealed culturally specific themes around P/EOLC including how to break the news, importance of discussing ACP, how to discuss ACP and the advantages & disadvantages of ACP. Other themes include public awareness & around normalizing death, eligibility to P/EOLC as well as helping the family in conjunction with the patient. ACP can play an important role in P/EOLC for patients & families as well as for the health care providers & system in which they serve. The results from this study provide valuable insight into how this tool can be used with positive results.

321) Abstract 1160
QUALITY OF LIFE IN MS: DOES AGING ENHANCE PERCEPTIONS OF MENTAL HEALTH?
Terry A. DiLorenzo, PhD, Psychology, Stern College for Women, Yeshiva University, New York, NY, June Halper, ANP, Mary Ann Picone, MD, Bernard W. Gimbel Multiple Sclerosis Center, Holy Name Hospital, Teaneck, NJ.

The literature examining the association between age, duration of illness, and quality of life in individuals with multiple sclerosis (MS) is inconsistent. Moreover, much of the research employs relatively young samples, and most investigations examine age in a linear fashion. As a result, little is known about similarities and differences between older individuals with MS and their younger counterparts. The present study was designed to examine the quality of life for individuals with MS by way of comparisons to younger individuals with MS. A total of 79 people with MS for at least 5 years were recruited through a Comprehensive Care Center and local registries of the National Multiple Sclerosis Society. Participants completed a telephone interview which incorporated several scales of the MS Quality of Life Inventory: SF-36, Modified Fatigue Impact, MOS Pain Effects, Sexual Satisfaction, and MOS Modified Social Support. Participants were divided into three age groups reflective of developmental transitions in adulthood, young adult (beginning midlife transition, age 35-49), middle age (midlife through late adult transition, age 50-64), and older adult (late adulthood, age 65 and above). Analyses of variance identified significant group differences in duration of MS [F(2,74)=2.74, p<.01] and physical functioning [F(2,74)=5.35, p<.01]. Post-hoc tests revealed that the young adult group had a shorter duration of MS and better physical functioning than the other 2 groups. Analyses of Covariance controlling for physical functioning and duration of illness revealed that the older adult group reported better mental health (SF-12 mental health subscale) than the middle age group [F(2,74)=3.39, p<.05], but not the young adult group. Differences between the middle age and young adult groups were not significant. Results suggest that perhaps factors related to the process of aging, rather than an adaptive response to MS, enhance perceptions of mental health among older MS patients. Results can be considered within the context of social comparison theory, which might be an adaptive strategy that underlies response shift in older individuals with MS.

322) Abstract 1712
REGULATION OF CARDIAC ACTIVITY ALONG WITH EVALUATION OF STRESSOR -SIMULTANEOUS RECORDING OF EVENT-RELATED POTENTIAL AND AUTONOMIC NERVOUS ACTIVITY
Kenta Kimura, M.A, Psychology, Nagoya University, Nagoya-city, Aichi, Japan, Hideki Ohira, Ph.D, Psychology, Nagoya University, Nagoya-city, Aichi, Japan

According to several stress theories, it is critical for survival to modulate peripheral nervous activity such as cardiovascular, endocrine, and immune system along with an evaluation of stressor. Our previous study demonstrated that mobilization of natural killer cells into blood circulation under an acute stressor could be regulated along with progression of behavioral adaptation to it. And, the study also revealed that modulation of cardiac activity through autonomic nervous system mediated the regulation. These previous results led us to hypothesize that modulation of autonomic nervous activity should have close relation to the evaluation of stressor in brain system. Thus, we examined it by simultaneous recording of autonomic nervous and brain activity under a stochastic learning task which is modified to elicit transient stress responses. We used heart rate variability (HRV) as a parameter of autonomic nervous activity and one component of event-related potentials called feedback-related negativity (FRN), which could reflect the progression of contingency learning in stochastic learning, as a parameter of brain activity. Eleven participants experienced a 5 min baseline period and performed three blocks of 5 min stochastic learning task as an acute psychological stressor. After the task, the participants experienced a 5 min resting period. In the experimental session, subjective stress feeling, correct response rate in the task, heart rate, HRV, and FRN were estimated. As a result, subjective stress feeling and heart rate was elevated by the task (p < .05), which could indicate a validity of the present task. Although FRN did not show significant change through the blocks, we found significant correlations among the amplitude of FRN, HRV, and correct response rate. For instance, there were significant correlations between the amplitude of FRN and high frequency component of HRV negatively and between LF/HF ratio of HRV and correct response positively. These findings support our hypothesis and suggest that autonomic nervous activity should be regulated along with the evaluation of the stressor in the brain system.

323) Abstract 1434
FUSION OF STAT1 TRANSCRIPTION FACTOR WITH GREEN FLUORESCENT PROTEIN (GFP) USED TO STUDY INTERFERON-INDUCED DEPRESSION
Thomas Meyer, PhD, MD, Psychosomatics and Psychotherapy, University of Marburg, Marburg, Germany, Christoph Herrmann-Lingen, Psychosomatics and Psychotherapy, University of Goettingen, Goettingen, Germany, Uwe Vinkemeier, School of Biomedical Sciences, Nottingham University Medical School, Nottingham, UK.

Major depression is characterized by abnormal gene expression in brain tissue, and serum levels of inflammatory cytokines are critically altered in depressive patients. Cytokines are known to exhibit their pleiotropic transcriptional effects through phosphorylation of intracellular proteins termed signal transducers and activators of transcription (Stat). In interferon-stimulated cells phospho-Stat1 accumulates in the nucleus, where it binds to specific DNA elements in the promoter region of interferon-responsive genes. In resting cells Stat proteins are also subjected to nucleocytoplasmic shuttling. Because therapeutically administered interferon often causes clinically relevant depression, we tested the use of recombinant Stat1 proteins fused to green fluorescent protein (GFP) as a tool to study cytokine-induced gene expression. We found that cytokine-induced nuclear accumulation of Stat1 occurred with identical kinetics irrespective of GFP-tagging. This indicated that the import kinetics of the phosphorylated Stat1-GFP was similar to the untagged protein. However, the nucleocytoplasmic cycling of the unphosphorylated GFP-tagged Stat1 was critically impaired. The decreased shuttling rate of unphosphorylated Stat1-GFP significantly prolonged the duration of interferon-induced nuclear accumulation. Interestingly, despite prolonged nuclear presence of phospho-Stat1 the translocation of a cytokine-responsive reporter gene was significantly reduced upon this protein modification. Taken together, GFP tagging critically affects the activity of Stat1 transcription factors. Moreover, these results confirm the functional importance of efficient translocation of nonphosphorylated Stat1 for cytokine-dependent gene activation. Thus, nucleocytoplasmic shuttling of Stat1 plays an important role in cytokine-induced signal transduction and may therefore be considered in further studies on the pathophysiology of interferon-induced depression.
324) Abstract 1084
NEIGHBORHOOD SOCIOECONOMIC FACTORS AND PSYCHOSOCIAL FUNCTION IN THE ELDERLY
Susan Everson-Rose, PhD, Medicine, University of Minnesota, Minneapolis, MN; Kimberly Skarupski, PhD, Rush Institute for Healthy Aging, Lisa Barnes, PhD, Neurological Sciences, Todd Beck, MS, Denis Evans, MD, Carlos Mendes de Leon, PhD, Rush Institute for Healthy Aging, Rush University Medical Center, Chicago, IL.
Neighborhoods within which people live impact both their mental and physical health. Mechanisms linking disadvantaged neighborhoods to poor health are unknown. One potential mechanism is an accumulation of stress that leads to poor psychosocial functioning. Using a population-based sample of 5,331 elderly and white residents of Chicago (61.1% female; 72.9% black; mean age, 72.1 years), we investigated the impact of neighborhood socioeconomic status (NSES) on three indicators of psychosocial function, depressive symptoms, perceived stress and cynical hostility. Participants lived in 3 contiguous community areas in south Chicago, covering 82 census block groups. We calculated a composite z-scored NSES variable separately for Blacks and Whites using four block variables from Census 2000: % on public assistance, % earning $25,000 per year or less, % with a college degree or higher, and % of dwellings valued at $200,000 or higher. In a multi-level mixed regression model, with adjustments for individual-level measures of age, race and education, each lower NSES score was associated with a 0.117 higher hostility score (p=0.035). NSES was unrelated to depressive symptoms or perceived stress (p>0.5) in separate, adjusted models. Results did not differ for Blacks and Whites. Findings show that living in disadvantaged neighborhoods is associated with higher levels of hostility, independent of individual socioeconomic and demographic factors, but does not adversely affect perceptions of stress or depressive symptoms in this elderly sample. Further research is warranted to determine if adverse neighborhood effects on physical health outcomes, such as cardiovascular disease, are mediated via levels of hostility or other indicators of poor psychosocial function. Supported by NIH (grants HL84209, AG11101 and ES10902).

325) Abstract 1357
"PHYSICAL OR PSYCHOLOGICAL?" - A COMPARATIVE STUDY OF CHRONIC FATIGUE IN BRAZILIAN AND BRITISH PRIMARY CARE
Hyung Jin Cho, MD/PhD, Cousins Center for Psychoneuroimmunology, UCLA, Los Angeles, CA; Dinesh Bhugra, PhD, Simon Wessely, MD, Institute of Psychiatry, King's College London, London, United Kingdom.
PURPOSE: Causal attribution influences symptom experience, help-seeking behavior and outcome in chronic fatigue syndrome (CFS). Less explored is possible variation in causal attribution of chronic fatigue between sociocultural settings. This large scale study compared causal attribution, perceived chronicity and disability of primary care patients with unexplained chronic fatigue (UCF) in Brazil, where CFS is rarely known or diagnosed, and in Britain. METHODS: Consecutive primary care attenders in São Paulo (n=3914) and London (n=2459), aged 18-45 years, were screened for the presence of UCF. Those with UCF (452 in São Paulo and 178 in London) were assessed for causal attribution (physical vs. psychosocial), perceived chronicity (i.e. reported duration of fatigue) and disability. RESULTS: British patients with UCF were more likely to attribute their fatigue to physical causes (adjusted odds ratio 1.70, P=0.037) and perceived their fatigue to be more chronic (adjusted standardized beta 0.15, P=0.002). There was no significant difference in current disability (adjusted standardized beta -0.01, P=0.81). CONCLUSIONS: Despite similar disability levels, patients with chronic fatigue in different cultural settings presented different attributions and perceptions about their illness. In particular, physical attribution - consistently associated with a poor prognosis of CFS - may be enhanced by several sociocultural variables more frequently observed in Western affluent countries. These include a biomedical world view incorporating mind-body dualism, the awareness of CFS, the official endorsement of CFS as a medical condition and the possibility of disability benefits for CFS. In conclusion, sociocultural factors seem to have an important role in shaping illness attribution and perception around chronic fatigue.

326) Abstract 1401
A COMPARISON OF THE EFFECTS OF MINDFULNESS-BASED AND COGNITIVE-BEHAVIORAL STRESS REDUCTION
Jennifer Bernard, BS, Kathryn Wiggins, BS, Erin Toohey, BS, Jeanne Dalen, MS, Bruce W. Smith, Ph.D., Psychology, University of New Mexico, Albuquerque, New Mexico, Brian M. Shelley, MD, Integrative Medicine, University of New Mexico Medical School, Albuquerque, New Mexico, Bruce W. Smith, Ph.D., Psychology, University of New Mexico, Albuquerque, New Mexico, USE.
This study compared effects of Mindfulness-Based Stress Reduction (MBSR) and Cognitive-Behavioral Stress Reduction (CBSR). Cognitive-behavioral approaches focus on replacing unhealthy thoughts and feelings with more healthy ones. Mindfulness-based approaches encourage acceptance and non-judgmental observation of thoughts and feelings. Hypotheses were that both MBSR and CBSR interventions would decrease perceived stress and depression and that MBSR would increase mindfulness. Subjects: Fifty subjects self-selected to 8 week MBSR (N=36) or CBSR (N=44) courses taught over a 1½ year period. Methods: MBSR and CBSR courses were matched for number of instructors and number and length of sessions. The main difference was that MBSR focused on accepting thoughts and feelings while CBSR focused on changing thoughts and feelings. Measures were administered the week before the course began, the week after the course ended. Measures assessed neuroticism, depressive symptoms, perceived stress, well-being, energy, pain, and mindfulness (using the Mindful Awareness Attention Scale). Results: There were no differences between MBSR and CBSR groups in age (M=44.94), gender (80% female), education, or income. MBSR subjects improved on all eight outcomes (Mean d=.819), with all of the differences being significant (p<0.05). CBSR subjects improved on 6 of the 8 outcomes (Mean d=.384), significantly on well-being, perceived stress and depression. Multivariate analyses showed better outcomes for MBSR subjects across all variables when compared with CBSR subjects (F=3.139, p<.01). Univariate analyses showed better outcomes for MBSR subjects with regard to mindfulness, energy and pain levels. Conclusion: While MBSR and CBSR may both be effective in reducing perceived stress and depression, MBSR may be more effective in increasing mindfulness and energy and reducing pain.

327) Abstract 1262
THE RELATIONSHIP BETWEEN PSYCHOSOCIAL STATUS, ACCULTURATION AND COUNTRY OF ORIGIN IN MID LIFE HISPANIC WOMEN: DATA FROM THE STUDY OF WOMEN's HEALTH ACROSS THE NATION
Robin R. Green, Psy.D., Ob/Gyn, Alleen P. McGinn, PhD, Epi & P. Health, Nanette F. Santoro, MD, Ob/Gyn, Carol A. Derby, PhD, Epi & P. Health, Alex J. Polotsky, MD, Kavitha T. Ram, MD, Lhasa Ray, BS, Ob/Gyn, Rachel P. wildman, PhD, Epi & P. Health, Albert Einstein College of Medicine, Bronx, New York, Gerson Weiss, Ob/Gyn, UMDNJ, Newark, New Jersey.
Increased acculturation has been shown to be associated with poorer health outcomes. Given that the Hispanic subgroups in SWAN, the Study of Womens Health Across the Nation, have varying levels of acculturation we hypothesized that psychosocial factors may differ between these groups. Thus, we examined the relationship of acculturation and psychosocial status in a cross sectional sample of 277 Hispanic women aged 42-52 at baseline from SWAN. Hispanic women recruited to the New Jersey site of SWAN were categorized into 4 groups based upon self reported country of origin: Central or South American (C/S; n=135), Puerto Rican (PR, n=56), Dominican (D, n=42) and Cuban (Cu, n=44). Acculturation was dichotomized based on responses to questions about language preference. Baseline questionnaire data assessed depression, physical functioning, hostility/cynicism, mistreatment/discrimination, sleep quality, social support, trait anxiety, dispositional optimism, anger, and perceived stress, all were compared across the 4 subethnicities.

Women with high acculturation had higher levels of optimism (p=0.03), lower trait anxiety (p=0.02), and greater mistreatment/discrimination (p=0.01) compared to women with low acculturation. When examining country of origin effects on psychosocial factors PR exhibited greater depressive symptoms (p=0.01), lower physical functioning (p=0.01), more sleep problems
(p=0.02) and higher trait anxiety (p=0.06) compared to the other Hispanic subethnicities. However, PR women were more acculturated (21.4%) than the other subethnicities [C/S (3.8%), D (4.8%), (2.3%); p<0.001].

In regression models, country of origin and acculturation appeared to be independent of one another. High levels of acculturation were favorably associated with psychosocial status (PS), while PR ethnicity was adversely related to, PS status in mid-life women. It does not appear that acculturation is the underlying mechanism by which PR women exhibit an adverse psychosocial profile compared to other Hispanic sub-ethnicities. In regression models, country of origin and acculturation appeared to be independent of one another.

328) Abstract 1580

RESPIRATION IN MOTHERS AND INFANTS DURING THE STILL FACE PARADIGM: A PILOT STUDY
Michelle Bosquet, Ph.D., Psychiatry, Children's Hospital Boston, Harvard Medical School, Boston, MA, Antje Kullowatz, Ph.D., Environmental Health, Harvard School of Public Health, Boston, MA, Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Rosalind J. Wright, M.D., M.P.H., Channing Laboratory, Brigham & Women's Hospital, Harvard Medical School, Boston, MA

Emotion-induced variation in breathing patterns have been documented for adults, but research on infants or mother-child interactions are scarce. We pilot-tested a new ambulatory respiratory inductance plethysmography device (LifeShirt, Vivometrics Inc) to explore changes in breathing patterns in 6-month-old infants and their mothers during the Still Face Paradigm. Indices of respiratory timing, volume, and flow as well as thoraco-abdominal coordination (phase relation during inspiration, PhRIB, and expiration, PhREB) were recorded from 12 mother-infant dyads using adult and infant versions of the equipment. The protocol included an initial play phase followed by two Still Face episodes with subsequent Reunion periods. Analyses revealed that mothers showed a reduction in ventilation and heart rate during Still Face phases, as well as reduced PhREB and PhRIB. In contrast, heart rate increased from the initial play phase in infants, as did volume and flow, with particularly high values in the final Reunion period. Infants, in contrast to mothers, also showed higher PhREB and PhRIB values in Still Face phases compared to Reunion periods. The results suggest that emotional activation induced by the Still Face Paradigm was accompanied by pronounced changes in breathing patterns and heart rate, often in opposite directions in these mother-infant dyads. Thoraco-abdominal coordination seemed particularly sensitive to the experimental tasks. The influences of physical activity (e.g., play behavior) and crying need to be further studied in this paradigm. Within certain limits, ambulatory measurement of respiration using inductance plethysmography is a feasible technique for studying the psychophysiology of mother-infant dynamics.
Depression and anxiety are overlapping constructs and often difficult to separate. Both have been related to dysfunctions in the hypothalamic-pituitary-adrenal axis. The present prospective study tested in children whether depression and anxiety might have different patterns of activation at the molecular level, i.e., in terms of glucocorticoid receptor (GR) expression, which is central to cortisol signaling. Since GR expression is also thought to play an important role in immune-receptor (GR) expression, which is central to cortisol signaling. Since GR expression is also thought to play an important role in immune-receptor (GR) expression, which is central to cortisol signaling.

Using multiple regression, we found significant interaction effects, such that only in healthy children, higher levels of anxiety were associated with greater decreases over time in children's GRa and GRb expression (R2=.68, p<.001; p=.007; respectively). Contrary, greater levels of depression were associated with greater increases over time in healthy children's gene expression (groupXGRa: beta=.56, p<.004; groupXGRb: beta=.53, p=.036). Children with asthma did not show any anxiety- or depression-related changes in gene expression. The present results suggest that depression and anxiety show distinctive features at the molecular level, with decreases in GR expression in response to anxiety and increases in GR expression in response to depression. Interestingly, changes in GRalpha and GRbeta expression were of comparable magnitude, suggesting counter-balance processes.

Children with asthma, however, may have an immune system that has less flexibility in responding dynamically to negative psychosocial states, at least in terms of alterations to molecular pathways involving GR. Future studies are needed to explore the health implications of these findings.

**Abstract 1053**

**GREATER DEPRESSIVE SYMPTOM SEVERITY IS RELATED TO ATTENUATED AMYGDALA - SUPRAGRANULUM CINGULATE FUNCTIONAL COUPLING IN INDIVIDUALS WITH MAJOR DEPRESSIVE DISORDER**

Scott C. Mathews, M.D., Alan N. Simmons, Ph.D., Psychiatry, University of California San Diego and VASDSH, La Jolla, CA, Irina A. Strigo, Ph.D., Tony T. Yang, M.D., Ph.D., Psychiatry, University of California San Diego, La Jolla, CA, Martin P. Paulus, M.D., Psychiatry, University of California San Diego and VASDSH, La Jolla, CA

Existing evidence reveals that individuals with major depressive disorder (MDD) show increased amygdala activity and decreased modulation of the amygdala by the prefrontal and anterior cingulate cortex (ACC) during emotion processing. However, the relationship between amygdala-cingulate connectivity and clinical depressive symptoms has not been previously reported. The objective of this study was to examine whether individuals with current MDD show altered functional connectivity (FC) between primary emotional processing areas, i.e. the amygdala, and top-down modulatory control areas, i.e. the ACC, during an emotion processing task. Fifteen young, unmedicated, medically healthy subjects with current MDD and 16 matched subjects with no lifetime history of MDD performed an emotion processing task during functional magnetic resonance imaging. Brain responses related to emotional face processing, and FC between the amygdala and ACC, were contrasted between the groups. Three main results were observed: (1) increased task-related activity in bilateral amygdala in the MDD relative to the non-MDD group, (2) greater strength of FC between bilateral amygdala and subgenual ACC, and attenuated FC between bilateral amygdala and dorsal ACC, in MDD relative non-MDD individuals, (3) greater depressive symptom severity was correlated with decreased strength of FC between bilateral amygdala and dorsal ACC in MDD subjects. These results support the hypothesis that individuals with MDD show attenuated top-down cognitive control of limbic areas that are important for emotion processing. Thus, altered FC in MDD patients may provide the neural basis for dysregulated cognitive processing, which is a hallmark of this disorder.

**Abstract 1387**

**ALTERATIONS IN NEURAL CORRELATES OF AUTONOMIC CONTROL IN FEMALES WITH MAJOR DEPRESSIVE DISORDER**

Allison C. Nugent, PhD, Section on Neuroimaging in Mood and Anxiety Disorder, National Institute of Mental Health, Bethesda, MD, Earle E. Bain, MD, Neuroscience and Anesthesia Development, Abbott, Abbott Park, IL, John J. Sollers, PhD, Julian F. Thayer, PhD, Psychology, Ohio State University, Columbus, OH, Wayne C. Drevets, MD, Section on Neuroimaging in Mood and Anxiety Disorder, National Institute of Mental Health, Bethesda, MD

Major depressive disorder (MDD) with or without coronary artery disease is a predictor of increased mortality from myocardial infarction[1]. Decreased heart rate variability(HRV) may underlie this differential risk[2]. We compared simultaneously acquired functional neuroimaging and electrocardiographic(ECG) measures in MDD and controls to investigate alterations in CNS control of HRV. Ten healthy females with MDD and seven controls underwent CBF-PET scanning and ECG recording while performing motor and cognitive tasks. HRV was described by indices derived from spectral analysis of the ECG. High frequency power was considered as a measure of parasympathetic tone, low frequency power(LF) reflected a combination of sympathetic and parasympathetic tone[3] and the ratio of LF/HF represented the relative balance of sympathetic to parasympathetic activity. The natural logs of LF and HF were calculated, and SPM2 was used to derive the dependence of regional cerebral blood flow (rCBF) on autonomic variables. MDD subjects exhibited lower than controls rCBF in this region in MDD. In contrast, regression coefficients for the dependence of rCBF on LF/HF were significantly greater in controls than MDD subjects in the frontal polar cortex and medial orbitofrontal cortex (OFC) during the motor task. These areas form part of a visceromotor network modulating autonomic, endocrine and behavioral responses during emotional and motivated behavior, and studies showed positive correlations between metabolism and depression severity in these areas in MDD. In contrast, regression coefficients were significantly greater in MDD subjects in the left lateral OFC during performance of the cognitive task. The lateral OFC participates in the visceromotor network, but studies demonstrated that metabolism and rCBF were elevated in MDD and correlated inversely with depression severity, suggesting that this area may modulate or inhibit emotional expression[4]. The greater correlation between LF/HF and rCBF in this region in MDD may indicate a compensatory response maintaining balance between sympathetic and parasympathetic control of HRV.


**Abstract 1563**

**ACUTE TRYPTOPHAN DEPLETION (ATD) ALTERS THE EFFECTIVE CONNECTIVITY OF AN EMOTIONAL AROUSAL NETWORK DURING VISCERAL PAIN**

Jennifer S. Labus, PhD, Psychiatry and Biobehavioral Sciences, Emeran M. Mayer, MD, Medicine, Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, T.J.C. Kilken, MD, Psychiatry and Neuropsychology, University of Maastricht, 6202AZ Maastricht, the Netherlands, E.A. T. Evers, MD, Psychiatry and Neuropsychology, University of Maastricht, 6202AZ Maastricht, the Netherlands, R-J. M. Brunner, MD, Gastroenterology, W H. Backes, MD, Radiology, University of Maastricht, 6202 AZ Maastricht, the Netherlands, M A. van Nieuwenhoven, MD/PhD, Gastroenterology, University of Maastricht, 6202AZ Maastricht, the Netherlands

Acute tryptophan depletion (ATD) alters the effective connectivity of an emotional arousal network during visceral pain. Ten healthy, unmedicated, medically healthy subjects performed an emotion processing task during functional magnetic resonance imaging. Brain responses related to emotional face processing, and FC between the amygdala and ACC, were contrasted between the groups. Three main results were observed: (1) increased task-related activity in bilateral amygdala in the MDD relative to the non-MDD group, (2) greater strength of FC between bilateral amygdala and subgenual ACC, and attenuated FC between bilateral amygdala and dorsal ACC, in MDD relative non-MDD individuals, (3) greater depressive symptom severity was correlated with decreased strength of FC between bilateral amygdala and dorsal ACC in MDD subjects. These results support the hypothesis that individuals with MDD show attenuated top-down cognitive control of limbic areas that are important for emotion processing. Thus, altered FC in MDD patients may provide the neural basis for dysregulated cognitive processing, which is a hallmark of this disorder.
ATD temporarily reduces serotonin (5-HT) synthesis in the brain and has been shown to produce disinhibition of central arousal circuits, and alterations in visceral perception and emotional memory in IBS patients (Kilkens et al. 2004). We hypothesized that ATD-induced reduction in 5-HT synthesis would alter activity in an emotional arousal network previously shown to be involved in central pain amplification. BOLD responses of 12 healthy women were assessed using fMRI (1.5 T) during 6 low and 6 high, individualized rectal balloon distensions (INF) and 12 non-INF or rest periods, following ATD by oral administration of a tryptophan-depleted drink, or placebo (PL). Multivariate spatiotemporal partial least squares (ST-PLS) was applied to test the interaction of treatment (ATD, PL) with a distributed pattern of brain activity discriminating the low and high INF conditions. Structural equation modeling (SEM) tested for group differences in the effective connectivity of the emotional arousal network. ST-PLS revealed a network of brain responses that differentiated low and high INF and showed stronger engagement during ATD compared to PL. The network accounted for about 73% of the variance in the data analyzed, and permutation testing revealed significance at p<.01. This network included regions comprising the emotional arousal network (medial orbital frontal cortex (mOFC), rostral sACC, and subgenual anterior cingulate cortices (sACC), and amygdala) as well as thalamus, insula, ventral tegmental area and periaqueductal grey. While most regions generally demonstrated sustained activity, amygdala and thalamic activity were only evident during the first 3 seconds (1st scan). Subjects receiving ATD showed the greatest engagement of the emotional arousal circuitry during high INF. Specifically, network analyses with SEM revealed significantly greater positive coupling between sACC -> sACC and sACC -> Amygdala circuits (p-values<.05) in ATD as compared to PL during the high INF. Together with our previous demonstration of ATD on visceral pain perception, these findings are consistent with the concept that acute lowering of 5-HT levels results in greater engagement of a central arousal network which is involved in central pain amplification.

Abstract 1595
5-HTTLPR GENOTYPE MODERATES BRAIN NETWORK ACTIVITY DURING VISCERAL PAIN.
Jennifer S. Labus, PhD, Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, California, Emeran A. Mayer, MD, Medicine, Psychiatry and Biobehavioral Science, University of California, Los Angeles, Los Angeles, CA, T Hamaguchi, MD, T Mizuno, MD, Behavioral Medicine, Tohoku University Graduate School of Medicine, Aoba, Sendai, Japan, M Kano, MD, MD, Behavioral Medicine, University Graduate School of Medicine, Aoba, Sendai, Japan, Shin Fukudo, MD/PHD, Behavioral Medicine, Tohoku University Graduate School of Medicine, Aoba, Sendai, Japan
The 5-HTTLPR s/s polymorphism has been identified as a vulnerability factor for affective disorders. We hypothesized that 5-HTTLPR genotype would moderate: 1) a significant pattern of brain activity discriminating pain from non-pain conditions and 2) the effective connectivity in an emotional arousal network previously shown to be involved in central pain amplification. Regional cerebral blood flow (rCBF) of 21 healthy controls (Ctrls; 5 females and 16 males) was assessed using PET (H215O) during an intense (40 mm Hg) colorectal balloon inflation (INF) or during no INF (0 mm Hg). Polymerase chain reaction was used to determine the genetic polymorphism of the 5-HTTLPR (10 short (s/s) and 11 long (l) (included 9 l/s, 2 l/l). Task partial least squares (PLS) tested for distributed patterns of brain activity discriminating the INF compared to the sACC genotype. Structural equation modeling (SEM) tested for group differences in the effective connectivity of an emotional arousal network during INF. PLS revealed a significant network of regions (p<.01, 59% cross-covariance matrix variance) differentiating INF from non-INF. Compared to s/s, 1 carriers showed greater engagement of this network, which comprised regions of activation (including thalamus, insula, sACC, pons) and deactivation (including medial orbital frontal cortex, amygdala, and infragenual ACC) during INF. SEM showed genotype differences in the effective connectivity within the emotional arousal network. That is, s/s showed strong positive connectivity from sACC to amygdala (lack of feedback inhibition of amygdala), while l carriers showed the expected negative connectivity (sACC to AMYG [r=.46, -.40, p<.05]). In healthy Ctrls, s/s genotype is associated with altered connectivity within an emotional arousal network activated by visceral pain. The resultant disinhibition of the amygdala may play a role in central pain amplification.

Abstract 1420
CHANGES IN BRAIN FUNCTION BY HYPNOTIC SUGGESTION IN PATIENTS WITH IRITABLE BOWEL SYNDROME AND HEALTHY SUBJECTS
Shin Fukudo, Takehiro Terai, MD, Satoshi Watanabe, PhD, Toyohiro Hamaguchi, PhD, Behavioral Medicine, Kazuhiro Yanai, MD, PhD, Pharmacology, Masatoshi Itoh, MD, PhD, CYRIC, Mototore Kanazawa, MD, PhD, Behavioral Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan
Background & Aims: Hypnotherapy is effective in intractable patients with irritable bowel syndrome (IBS). Hypnotic suggestion changes somatosensory sensation via modifying activity of the anterior cingulate cortex (ACC). We hypothesized that hypnotic suggestion would change the brain activity in IBS patients and that the modulation pattern would be different from that of healthy controls. Methods: Subjects were 14 healthy subjects and 14 IBS patients. Barostat bag was inserted into the rectum. During hypnosis, neutral, hyperalgesic, and analgesic suggestions were given in random order. Immediately after the suggestion, the rectum was distended with 40 mmHg. Radioactive H2 [150] saline was injected at the bag inflation and pain scores was performed. fMRI (1.5 T) during 6 low and 6 high, individualized rectal balloon distensions (INF) and 12 non-INF or rest periods, following ATD by oral administration of a tryptophan-depleted drink, or placebo (PL) were analyzed using Statistical Parametric Mapping. Results: Left amygdala was more activated at 40mmHg-rectal distention in IBS patients than in normal subjects (p<.001). Hyperactivation of the left amygdala by distention in IBS patients remained during hyperalgesic suggestion and posterior cingulate cortex was more activated by hyperalgesic suggestion in IBS patients than in controls (p<.005). Significantly and differentially activated regions between IBS patients and controls were detected during analgesic suggestion. In IBS patients relative to controls, analgesic suggestion significantly induced brain activation in the right ventrolateral prefrontal cortex (rVLPFC) and the right parahippocampal region (p<.005). Conversely, analgesic suggestion induced significantly less activation by rectal distention in the subgenual ACC in IBS patients than in controls (p<.0001). Conclusion: These data suggest that hypnosis induces differential activation in the brain of IBS patients from those of controls.

Paper Session: Biopsychosocial Predictors of Health and Well-being in Cancer

Abstract 1673
PSYCHOLOGICAL PREDICTORS OF POOR SLEEP THE NIGHT BEFORE BREAST CANCER SURGERY
Caroline E. Wright, Ph.D., Guy H. Montgomery, Ph.D., Dana H. Boybjerg, Ph.D., Oncological Sciences, Mount Sinai School of Medicine, New York, NY
Studies indicate that poor sleep the night before surgery is a common patient complaint; however few studies have used objective measures to examine sleep quantity or quality at that time. Since poor sleep prior to surgery is aversive to patients and may also negatively impact postsurgical recovery patterns, a better understanding of this phenomenon is important. Based on the chronic insomnia literature, we hypothesized that psychological factors including intrusive thoughts about impending surgery, anxiety and depressed mood would be predictive of poor sleep prior to breast cancer surgery. Patients (n=39) scheduled for breast cancer surgery (lumpectomy/excisional biopsy/mastectomy) (mean age=47yrs) wore an actiwatch at home on the three nights prior to surgery to provide an objective indication of sleep duration (total minutes asleep) and efficiency (% of time asleep during the total time in bed) based on validated relationships between arm movement (1 min blocks) and sleep. Participants also completed three well validated scales (Impact of Event Intrusions Subscale, Profile of Mood States Tension-Anxiety Subscale, Center for Epidemiologic Studies Depression Scale) regarding their experience over the week prior to surgery. Results revealed that sleep duration was significantly lower the night before surgery compared with 3 nights before surgery (F=5.80, p=.029); sleep efficiency did not change significantly over this period. Multiple regression analyses revealed that levels of intrusive thoughts and anxiety were related to sleep efficiency (B=-.45, p=.022; B=-.35, p=.049); as well as sleep quantity (B=-.38, p=.035; B=-.49, p=.009), controlling for body mass index and surgery type. No relationships...
were found between depressed mood and sleep duration or efficiency. Results suggest that anxiety and intrusions related to impending surgery are predictive of patients' experiences of sleep disruption and efficiency the night before surgery. Additional research is warranted to explore the consequences of such effects, as well as possible interventions to improve sleep in this clinical setting.

Abstract 1406
OBJECTIVE AND SUBJECTIVE CAREGIVER BURDEN FOLLOWING AUTOLOGOUS STEM CELL TRANSPLANT
Virginia M. Boguiren, MSc, Psychology, Rosalind Franklin University of Medicine & Science, North Chicago, IL, Patricia B. Mumbry, PhD, Department of Psychiatry and Behavioral Neuroscience, Patrick Stiff, MD, Department of Medicine, Hematology/Oncology, Loyola University Medical Center, Maywood, IL
The caregiving demands for a patient undergoing an autologous stem cell transplant (ASCT) are quite substantial. The caregiver(CG) performs treatment-related tasks such as IV catheter care, dressing changes and non-medical duties such as handling altered roles, and overcoming financial stress. Two types of Caregiver Burden(CGB) have been defined: a)objective burden(OB)-concrete activities such as dealing with financial strain and restrictions on personal activity; b)subjective burden(SB)-feelings and attitudes about caregiving. The primary study examined OB and SB in CGs of ASCT patients, from pre-transplant to 1 yr-post transplant; and coping efficacy(CE) for dealing with cancer. It was hypothesized that CGB would be highest at the time of transplant and decrease over the following year and that CE would be negatively associated with CGB. A 2nd goal was to examine the specific CG concerns strongly endorsed during the year following transplant. CGs (N=35) completed all timepoints. Measures were completed at baseline and 1, 3, 6 and 12 months(M12) later. Measurement of Burden Scale was used to assess OB and SB and was given at all time points. The Cancer Behavior Inventory-Brief Form assessed CE and was completed at B, M1, and M12. Repeated measures ANOVA showed a significant difference in OB across time [F(4,80)=8.059, p<.001]. No significant difference was observed in either SB or CE over time [F(4,24) =0.88, p=.4; F(4,24) =0.026, p=.4]. Results showed a negative relationship between CE and SB at all time points [r=-0.419 to -0.623, p<.01]. Analysis of OB and SB items strongly endorsed by CGs indicate strain due to money concerns, decreased personal time, and relationship tension. While OB decreases over time, levels of SB and CE don't appear to parallel the changing cancer experience and point to times when psychological intervention may be needed most.

Abstract 1205
DAILY STRESS PREDICTS PSYCHOLOGICAL AND PHYSICAL SYMPTOMS AND HPA PROFILES AMONG CANCER SURVIVORS
Erin S. Costanzo, PhD, Carol Ryff, PhD, Psychology, University of Wisconsin, Madison, WI, Sean Banks, MS, Human Development & Family Studies, Penn State, State College, PA, Christopher Coe, PhD, Psychology, University of Wisconsin, Madison, WI, David Almeida, PhD, Human Development & Family Studies, Penn State, State College, PA
Among cancer survivors, fatigue, depression, and other somatic and mental health symptoms are commonly reported quality-of-life concerns, and altered diurnal cortisol patterns have been documented. The current study examined everyday stressors and the extent to which they were associated with these biobehavioral concerns. Cancer survivors (N=111) and a demographically-matched comparison group of individuals with no cancer history were drawn from a national telephone diary study of daily experiences. Over an 8-day period, participants reported the occurrence and impact of stressful events and physical symptoms in daily interviews, and salivary cortisol was sampled 4 times per day. Participants also provided information on depression and positive and negative affect. Results indicated that survivors experienced similar numbers and types of stressful events as the comparison group but rated numbers and types of stressful events as more stressful and disruptive (both ps<.05). Multiple regression analyses adjusting for age and time since diagnosis revealed that stressor severity and negative affect experienced in response to stressors predicted more depressive symptoms, greater overall negative affect, and lower positive affect among survivors (ps<.05). Greater stressor severity also predicted the occurrence of more adverse physical symptoms, greater fatigue, and a flatter diurnal cortisol slope (ps<.05). Stressor severity further interacted with cancer status to predict the cortisol patterns (beta=.17, p=.02). While stressor severity was associated with flatter slopes among survivors, there was no relationship between stress and diurnal slope in the comparison group. In sum, cancer survivors' experience of daily stress appears to play a role in driving psychological and physical symptoms as well as the release of adrenal hormones. While survivors report a normal amount of daily stress, interpersonal conflict is experienced as more disturbing and disruptive, and survivors may have heightened physiological sensitivity to everyday stressful experiences.

Abstract 1440
MODERATORS OF CELL-MEDIATED IMMUNE RESPONSE TO HPV IN HEAD AND NECK CANCER PATIENTS
Carolyn Y. Fang, PhD, Population Science, John A. Ridge, MD, PhD, Miriam L. Nango, MD, Medical Science, Margret Einarson, PhD, Basic Science, Fox Chase Cancer Center, Philadelphia, PA, Jamie L. Studts, PhD, Behavioral Science, University of Kentucky School of Medicine, Lexington, KY, Donald E. Campbell, PhD, Steven D. Douglas, MD, Immunology, The Children's Hospital of Philadelphia, Phila
Palliative and nontumor alcohol are well-established risk factors for head and neck squamous cell carcinoma (HNSCC). However, a subset of HNSCCs occurs in nonsmokers and nondrinkers, suggesting the presence of other risk factors. Data indicate that human papillomavirus (HPV) infection of the upper aerodigestive tract promotes the development of HNSCC. However, HPV infection alone does not lead to cancer, suggesting that co-factors, such as host immunity, are critical in initiating disease. Prior studies indicate that patient's treatment, immune, biobehavioral, and psychosocial and behavioral factors can lead to immune alterations, which may have implications for the surveillance and control of HPV-related infections. Thus, the purpose of the present study was to explore the interrelations among HPV status, cell-mediated immunity to HPV, and psychosocial and behavioral moderators of immune response to HPV in HNSCC patients. Prior to treatment, participants (N=81) completed psychosocial assessment and a blood sample was drawn for immunologic assays. Tumor tissue was obtained during surgery for HPV-typing. Over 51% of tissue samples contained HPV DNA, and the majority (53%) were positive for HPV16. Functional assays of T-cell proliferative response (TCP) to HPV16 were conducted using synthetic peptides derived from HPV16 E6, E7, and L1 proteins as antigens. Approximately 32% displayed positive TCP responses to HPV16. Chi-square analyses indicated that individuals with HPV-tumors were less likely to have TCP responses to HPV16 compared to patients with HPV-negative tumors (p<.001). Hierarchical logistic regression analyses indicated that higher levels of depressive symptoms were associated with a non-response to HPV16 (OR=.71, 95% CI=.50–.99, p=.05). In sum, our data demonstrate that absent responses to HPV16 are associated with the presence of HPV DNA in tumor tissue. The data also suggest that depressive symptoms are associated with a deficient T-cell response to HPV, which may have implications for the resolution of HPV infection and disease progression.

Abstract 1089
INFLAMMATORY PROCESSES, DIURNAL CORTISOL, AND VEGETATIVE DEPRESSION IN OVARIAN CANCER PATIENTS
Inflammatory processes have been implicated in the pathogenesis of both depression and cancer. Links between depressive symptoms, interleukin-6 (IL-6) and cortisol dysregulation have been demonstrated in both depressive symptoms and physical symptoms in ovarian cancer patients. In addition, a recent study has shown that depressive symptoms and cortisol have been minimally examined. The objective of the current
study was to examine associations between IL-6, diurnal cortisol rhythms, and facets of depression in epiphelial ovarian cancer patients. Patients awaiting surgery for a pelvic mass suspected for ovarian cancer completed questionnaires, collected salivary samples for 3 days pre-surgery and gave a pre-surgical blood sample. Ascites was obtained during surgery. IL-6 was measured by ELISA and cortisol by a chemiluminescence immunoassay. The final sample included 113 invasive ovarian cancer patients (87 advanced-stage; 26 early-stage) and 26 patients with tumors of low malignant potential (LMP).

Advanced-stage ovarian cancer patients reported elevations in vegetative and affective depressive symptoms, plasma IL-6, and the cortisol area under the curve (AUC) compared to patients with LMP tumors (all P values < 0.05). Among invasive ovarian cancer patients, greater vegetative depression was related to elevations in plasma and ascites IL-6 and evening cortisol levels (all P values < 0.027). Higher plasma and ascites IL-6 were also related to higher evening cortisol (all P values < 0.047).

Advanced-stage ovarian cancer patients demonstrated elevated depressive symptoms, IL-6, and cortisol AUC. Vegetative rather than affective depression showed positive associations with IL-6 and evening cortisol. These findings may have implications for patient outcomes and treatment of depression in ovarian cancer patients.

Abstract 1246

GLUCOSE AS A PROGNOSTIC FACTOR IN OVARIAN CARCINOMA

Donald M. Lamin, MA, Psychology, Douglas R. Spitz, PhD, Radiation Oncology, Bridget Zimmerman, PhD, Biostatistics, Koen DeGeest, MD, Obstetrics & Gynecology, David M. Luberoff, PhD, Urology, University of Iowa, Iowa City, Iowa, Amil K. Sood, MD, Gynecologic Oncology, M.D. Anderson Cancer Center, University of Texas, Houston, Houston, Texas, Susan K. Lutgendorf, PhD, Psychology, University of Iowa, Iowa City, Iowa

Ovarian carcinoma is the deadliest of the gynecological cancers and the fifth leading cause of cancer mortality in women, with a five-year relative survival rate of 45% in the United States. Although prognosis at the time of diagnosis has been shown to vary according to standard clinical variables such as disease stage, mounting evidence indicates that patient glucose levels may also have prognostic value. It is also known that cancer cells rely on glucose to reduce their own oxidative stress. Thus, the purpose of this study was to examine the relationship between glucose and recurrence as well as survival in patients with ovarian carcinoma. Data was obtained from medical records for 74 ovarian cancer patients, and Cox proportional hazards regression models were used to estimate the hazard ratio (HR) for time to recurrence (diabetes free interval (DFI)) and survival time in relation to pre-surgical non-fasting plasma glucose level and other standard clinical variables at the time of diagnosis. Mean follow-up time after surgery was 2 years. Higher glucose level was associated with shorter DFI (HR, 1.127; 95% CI, 1.000 to 1.268; p = .05) and shorter survival time (HR, 1.105; 95% CI, 1.000 to 1.207; p = .04), adjusting for age, disease stage, and circadian effect on glucose metabolism. Risk of recurrence and risk of death from disease was 2.3 and 2.0 times higher, respectively, for patients with an abnormal glucose level (140 mg/dL) vs. those at the low end of the normal range (70 mg/dL). Tumor grade, CA125, and optimal debulking status were not associated with DFI or survival time. These findings provide new support for the prognostic value of glucose in this disease and suggest potential applications for psychosomatic medicine in the comprehensive treatment of ovarian carcinoma.

Paper Session: Depression and CVD

Abstract 1231

ASSOCIATIONS AND TIME COURSE OF DEPRESSION AND VITAL EXHAUSTION IN CORONARY ARTERY DISEASE PATIENTS

Chi-woon Hsiao, M.A., Medical & Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD, Willem J. Kap, PhD, Division of Cardiology, U of Maryland Medical Center, Baltimore, MD, Heather L. Rogers, M.S., Anna Ghambarian, M.S., Kerry Whittaker, B.S., David S. Kranz, PhD, Medical & Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD

Depression and Vital Exhaustion (VE) are risk factors for coronary artery disease (CAD) progression. These two conditions often co-exist, but it is unknown about their associations over time. We examined the predictive ability of each measure for the other over a 1-year period and whether this predictive ability varied with time. 74 patients with stable CAD completed the Beck Depression Inventory (BDI), the 23-item Maastricht Questionnaire (MQ; a measure of VE), and the Perceived Stress Scale (PSS) as part of a larger study. Repeated assessments were collected at baseline, 3, 6, 9, and 12 months. Mixed-Model Regression was used to assess temporal patterns for each measure, controlling for baseline levels of each variable. Baseline means were 7.4±6.7 on BDI, 14.5±8.4 on VE, and 18.4±8.7 on PSS. Baseline VE scores were correlated with baseline BDI scores (r=.64, p<.001). VE showed significant linear and quadratic changes over 1 year with an overall decrease over time (p<.0001); whereas BDI scores were stable and did not significantly change with time (p linear = .54; p quadratic = .70). VE and BDI scores were correlated with PSS scores across all time points (r=.51-.86, p<.001). Depression strongly modified the type of course of VE, such that higher depression led to higher exhaustion and this predictive ability of depression on VE increased over time (Linear F=30.95, p=.0001, beta =.17[.11,.23]; Quadratic F=15.53, p<.001, beta =-.01[-.02,-.01]). Similarly, VE influenced the time course of depression (Linear F=12.23, p<.001, beta =.05[.02,.08]; Quadratic F=16.7, p<.01, beta =-.006[-.006,-.001]). We examined the effect was considerably weaker than the effect of depression on VE over time. These results could not be explained by correlations with PSS, age, disease severity, medical history, or functional status as indicated by exercise performance. It is concluded that depression is stable in CAD patients whereas VE tends to decrease over a 1-year period. Depression strongly predicts the time course of VE. Future research is needed to examine the clinical course of depression and exhaustion in CAD patients who meet clinical cut-off criteria for these constructs.

Abstract 1619

MECHANISMS OF ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS AND CARDIOVASCULAR EVENTS IN THE HEART AND SOUL STUDY

Mary A. Whoolery, MD, Medicine, University of California, San Francisco, San Francisco, CA

Depressive symptoms predict adverse cardiovascular (CV) outcomes in patients with coronary heart disease, but the mechanisms responsible for this association are unknown. In a prospective study of 1024 outpatients with coronary heart disease recruited between 9/00 and 12/02, we measured depressive symptoms using the Patient Health Questionnaire (PHQ). CV events (heart failure, myocardial infarction, stroke, and CV death) were defined by review of medical records during 4.4 years of follow-up. We used Cox proportional hazards models to evaluate the extent to which the association of depressive symptoms with subsequent CV events was explained by baseline comorbidities, disease severity, potential biological mediators (e.g., heart rate variability), and potential behavioral mediators. Follow-up information was available for 99% (1015/1024) of participants. CV events occurred in 26% (52/198) of participants with depressive symptoms (PHQ>=10) and 21% (170/817) of those without depressive symptoms (p=.002). After adjustment for CV disease severity, depressive symptoms were associated with a 39% greater rate of events. Further adjustment for biological mediators somewhat attenuated this association. However, adjustment for behavioral mediators, especially physical inactivity, virtually eliminated this association (Table). Results were similar when PHQ score was entered as a continuous variable. In summary, we found that the association of depressive symptoms with adverse CV events is almost entirely explained by behavioral factors, particularly physical inactivity.

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<th>Association between depressive symptoms (PHQ&gt;=10) and CV events</th>
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**Abstract 1064**

**HSB’S BEHAVIORS MEDIATE THE RELATIONSHIP BETWEEN DEPRESSIVE SYMPTOMS AND CVD AND ALL-CAUSE MORTALITY: THE FRAMINGHAM HEART OFFSPRING STUDY**

Jennifer L. Gordon, BSc, Eric B. Loucks, PhD, Kim L. Lavoie, PhD, Blaine Dito, PhD, AndréArsenault, MD, Simon L. Bacon, PhD, Montreal Behavioural Medicine Centre, McGill/ UQAM/ MHI/ HSCM/ Concordia, Montreal, Quebec, Canada

**Introduction:** Depressive symptoms predict mortality and cardiovascular disease (CVD). Though poor health behaviours (HB’s) have often been proposed as a potential mechanism explaining this relationship, evidence to support this hypothesis is lacking. Furthermore, because men and women differ in HB’s and experiences of depression it is important to examine the role of sex in the potential causal pathway between depression, HB’s, and CVD.

**Methods:** The depressive symptoms of 5124 men and women in the Framingham Offspring Study (mean age: 59, 53% women) were recorded using the CES-D scale (range 0-51). Participants completed a questionnaire assessing physical activity, alcohol consumption and smoking. Waist circumference was directly measured. Six-year incidence of CVD events was assessed using physician-administered patient interviews and hospital records. Multivariate logistic regression analyses assessed the likelihood of CVD events or mortality per 1 point increase in the CES-D scale.

**Results:** When adjusting for age and SES, depressive symptoms predicted mortality in men (OR=1.036; CI=1.011-1.063). However, the strength of association was reduced by 25% (OR=1.027; CI=0.996-1.059) when HB’s were also included in the model. In women, depressive symptoms did not predict mortality either before (OR=1.022; CI=0.988-1.057) or after (OR=1.016; CI=0.978-1.054) controlling for HB’s (although the non-significant effect size was reduced 27% following adjustment for HB’s). Depressive symptoms were predictive of CVD events in both women (OR=1.032; CI=1.001-1.062) and men (OR=1.042; CI=1.015-1.070) when age and SES were introduced as covariates. When HB’s were also included in the model, the association was not statistically significant for women (OR=0.029; CI=0.997-1.062, a reduction of 9% effect size), but remained for men (OR=1.035; CI=1.004-1.067; a 17% reduction in effect size).

**Conclusion:** Poor health behaviors appear to partially account for the association of depressive symptoms with all-cause mortality and CVD events in men and women.

**Abstract 1451**

**NIGHTTIME HEART RATE AND SURVIVAL IN DEPRESSED PATIENTS FOLLOWING ACUTE MYOCARDIAL INFARCTION**

Robert M. Carney, PhD, Kenneth E. Freedland, PhD, Psychiatry, Washington University, St. Louis, MO, James A. Blumenthal, PhD, Psychiatry, Duke University, Durham, NC, William A. Steinhoff, B.S, Psychiatry, Washington University, St. Louis, MO, Mona Watkins, PhD, Psychiatry, Duke University, Durham, NC

**Depression is a risk factor for mortality following acute myocardial infarction (AMI). It is also associated with sleep disturbances, and with elevated heart rate (HR), which may be more pronounced at night. Resting and 24 hour HR have been found to predict mortality in patient and community samples. The purpose of this study was to determine: 1) whether depressed patients with a recent AMI have higher nighttime HR than nondepressed patients, and 2) whether elevated nighttime HR is associated with increased survival following AMI.**

Ambulatory ECG data were obtained from 344 depressed and 396 nondepressed patients with a recent AMI. They were followed for up to 30 (median = 24) months. Depressed patients had higher nighttime (70.7 ± 7 vs. 67.7 ± 6 bpm; p=001), and daytime (76.4 ± 7 vs. 74.2 ± 6 bpm; p=02) HR than nondepressed patients, even after adjusting for potential confounders. Depression (H.R. = 2.19; p=02) and nighttime HR (H.R. = 1.03; p=004), but not daytime HR, predicted survival after adjusting for other major predictors and for each other. Daytime and nighttime HRs are higher in depressed than in nondepressed patients following an AMI. Both depression and nighttime HR are independent predictors of survival in these patients. Although depressed patients have a higher nighttime HR than nondepressed patients, elevated nighttime HR predicts survival independent of depression status.
cortisol levels, and showed decreases in cortisol in response to stress, followed by steady declines in cortisol during the recovery period. Children who exhibited dysregulated eating showed an atypical stress response. That is, children with higher levels of intake in baseline (time 1 and 2), immediate post-stress (time 3) and during recovery (times 4 and 5). Dysregulated eating behavior was assessed using a behavioral procedure designed to measure energy intake in the absence of hunger. After a self-selected standard dinner, children were asked to indicate their satiety level. They were then left alone in a private room for 10 minutes, with ad libitum access to large portions of 10 palatable snack foods, as well as a small box containing games and toys. Foods were pre- and post-weighted, and total calorice intake was calculated using the food manufacturer's nutrient information. Results revealed two patterns of cortisol reactivity; low reactors had higher baseline levels of cortisol, and showed decreases in cortisol in response to stress, followed by little change, or increases in cortisol during the recovery period. High reactors showed an increase in cortisol in response to stress, followed by steady declines in cortisol during the recovery period. Children who exhibited dysregulated eating showed an atypical stress response. That is, children with higher levels of intake in the absence of hunger showed greater increases in cortisol post-stress (r = .71, p < .01), and continued elevations in cortisol during recovery. To the extent that stress reactivity is a measure of children's self-regulatory capacity, the results from this study provide evidence to suggest that self-regulation generalizes across domains of development, in that children with deficits with self-regulation in the eating domain also exhibit deficits in HPA axis functioning.

**Abstract 1530**

**GENETIC INFLUENCES ON APPETITE IN CHILDREN: A TWIN STUDY**

Jane Wardle, PhD, Susan Carnell, PhD. Epidemiology and Public Health, University College London, London, UK, Claire M. Haworth, MSc, Robert Plomin, PhD, Social, Genetic and Developmental Psychiatry Centre, Institute of Psychiatry, London, UK

The aim of this study was to assess the relative contribution of genes and environment to two aspects of appetite that are related to childhood obesity; sensitivity to internal cues to satiety and responsiveness to external food cues. Using a twin analysis, participants were families with 8-11 year-old twins (n=5435 pairs) from a UK population cohort of families with twin children (TEDS). The main outcome measures were parental ratings of satiety sensitivity and food cue responsiveness in each twin. Genetic model-fitting gave estimates of 63% (95% confidence interval 39% to 81%), 21% (0% to 51%) and 16% (10% to 21%) for genetic, shared and non-shared environmental influences on satiety sensitivity, and corresponding estimates of 75% (52% to 85%), 10% (0% to 38%) and 15% (10% to 18%) for food cue responsiveness. These results indicate that genetic vulnerability to weight gain could operates through behavioral as well as metabolic pathways, even in young children. An appreciation of the genetic origins of early appetite control should help clinicians understand why some children are more likely to become obese than others despite similar upbringing.

**Abstract 1529**

**APPETITE AND ADIPOSITY IN CHILDREN**

Jane Wardle, PhD, Susan Carnell, PhD. Epidemiology and Public Health, University College London, London, London, UK

Pressures from the obesogenic modern environment are driving up rates of obesity, but adiposity still varies greatly across the population. We hypothesised that early-appearing differences in appetite could underlie differential susceptibility to the environment. We focused the relationship between adiposity and two appetitive traits, satiety sensitivity and responsiveness to food cues, in children. Parents of two groups of children: pre-schoolers (n=572) from a community sample and 8-11 year-olds from a population-based twin cohort (n=10,364) completed a standardized, validated, psychometric measure of appetite (Child Eating Behaviour Questionnaire; CEBQ). Adiposity was indexed with BMI sd scores based on researcher-measured heights and weights for the preschoolers and parent-reported data for the twins. Obesity was determined according to IOF criteria. For the twins, waist circumferences were also available and used to derive waist sd scores. In both groups, obese children had lower satiety sensitivity and higher responsiveness to food cues than normal weight children. Higher BMI sd scores were associated with lower satiety sensitivity (pre-schoolers: r=-.19; twins: sd = -.22) and higher responsiveness to food cues (r=.18 and .18). In the twins, waist sd scores were also associated with satiety sensitivity (r=-.23) and food cue reactivity (r=.16). The association was apparent throughout the distribution and did not simply reflect abnormal appetite in obese children. The associations between appetite and adiposity observed in these two samples are consistent with a behavioral susceptibility model of obesity. Assessing appetite at an early age could help identify higher-risk individuals when they are still at a healthy weight, enabling targeted interventions to prevent development of obesity.

**Abstract 1299**

**INCREASED INTRA-ABDOMINAL FAT IN WOMEN AND MEN WITH MAJOR DEPRESSIVE DISORDER**

Wiebke Greggersen, MD, Eva Fassbinder, MD, Sebastian Rudolf, Kai G. Kahl, MD, Psychiatry and Psychotherapy, Achim Peters, MD, Internal Medicine I, University of Luebeck, Vera K. Tsenkova, MA, Psychology, Luebeck Medical School, Luebeck, Germany

Purpose of study: Major depressive disorder (MDD) is known as an independent risk factor for non-insulin-dependent diabetes mellitus, cardiovascular disorders and increased mortality. Accumulation of intra-abdominal fat is a potential link between MDD and the metabolic syndrome.

Subject sample and statement of methods: Visceral fat was measured by means of MRI in 39 patients with major depression (23 women, 16 men). Obese patients or patients with any major medical disorder were excluded. Thirty-five healthy women and 10 healthy men served as comparison group. Intra-abdominal fat was examined at the level of the first lumbar vertebral body and 10 mm above and below L1. Summary of results: The depressed and the healthy group were similar with respect to height, weight and alcohol consumption. Patients were slightly older (37 vs. 31 years), smoked more (8.7 vs. 1.5 pack years) and exercised less (exercise score 2.7 vs. 3.9). Intra-abdominal fat area was higher in women (sum of the 3 levels: 7913 ± 9812 mm2) and men (mean 11238 ± 7895 mm2) with MDD, than in healthy women (mean 1212 ± 926 mm2) and men (mean 2783 ± 1196 mm2). ANCOVA with the covariates age, weight, height, exercise and smoking showed significant differences between both genders (F= 39; df= 1; p<.001) and depression patients vs. controls (F= 17.5; df= 1; p<.001). Mean sum of intra-abdominal fat correlated positively with concentrations of IL-6 (p = .008) and TNF-alpha (p = .03). The data suggest that body composition is already altered in otherwise healthy men and women with MDD.

**Abstract 1143**

**BIOPSYCHOSOCIAL APPROACH TO NONDIABETIC GLUCOSE METABOLISM: THE INTERACTING INFLUENCES OF AGE, STRESS, COPING, AND OBESITY**

Vera K. Tsenkova, MA, Psychology, Gayle D. Love, PhD, Burton Singer, PHD, Institute on Aging, Carol D. Ryff, PHD, Psychology, University of Wisconsin-Madison, Madison, WI

Glycosylated hemoglobin (HbA1c) is an indicator of long-term glycemic control in people with diabetes. Recent findings have linked HbA1c in nondiabetic people to cardiovascular outcomes, thereby
providing interest in factors influencing pre-diabetic glucose metabolism, such as psychosocial factors (stress, coping) and health status (obesity). How these factors work together was the focus of the present study, which used data from the non-diabetic subsample (n = 448, age: 34-83) of a national sample of adults known as MIDUS (Midlife in the U.S.).

We found that while BMI was positively linked to HbA1c levels, perceived stress amplified the effects of obesity (R^2= .31, b=.16, p<.05): normal weight people who reported high perceived stress had similar HbA1c levels to obese people. We also extended previous findings on the benefits of effective coping strategies on non-diabetic HbA1c (Tsengkova et al., in press) by showing that problem-focused coping buffered the negative impact of obesity on HbA1c for the older participants (60 and above), (R^2=.43, b=.16, p<.05). Importantly, coping skills were associated with clinically significant differences in HbA1c levels: HbA1c levels were between .5 and 1% lower in obese people who coped well, compared to obese people with poor coping skills. All analyses controlled for extensive sociodemographic and health factors in documenting the effects of age, stress, coping, and obesity, working in combination, on levels of HbA1c. Because the obtained relationships were evident in a people without diabetes, the findings indicate that psychosocial influences on glucose metabolism are not exclusively mediated by diabetes-related regimens, but rather reflect more general biological processes related to the biological substrates of psychological processes. The age findings also suggest that the influence of psychosocial factors, working together with biological factors, begins earlier than is normally recognized. Overall, the results underscore the utility of applying the biopsychosocial model that predict particular outcomes and underscore the importance of viewing psychosocial and biological factors as complementary in their relationship to glycemic control.

Abstract 1163
LEVELS OF ALLOSTATIC LOAD VARY BY SELF-RATING OF HEALTH
Tara Gruenewald, PhD, Arun Karlamangla, MD/PhD, Perry Hu, MD/PhD, Teresa Seeman, PhD, Medicine/Geriatrics, Geffen School of Medicine at UCLA, Los Angeles, CA

Self-rated health (SRH), typically measured as a single rating of self-perceived health, has been found to be a strong predictor of mortality in many studies. However, we know little about the mechanisms underlying this association. This study examines the association between SRH and levels of multisystem biological dysregulation, or allostatic load (AL), in a sample of men and women aged 35 to 84. We hypothesized that level of AL would be inversely related to SRH. Data come from the second Study of Midlife in the U.S. (MIDUS II), a national phone and mail survey of 4,963 U.S. adults, and from the MIDUS II Biomarker Substudy, which collects biomarker data on a subset of MIDUS II subjects. SRH, measured as a single rating of health (5-point scale: poor to excellent), was assessed during a phone interview. A summary AL score was constructed as the total number of 20 biological variables, representing inflammatory processes (e.g., interleukin-6, C-reactive protein), heart rate variability (e.g., low and high frequency power), metabolic processes (e.g., HDL cholesterol, triglycerides), and endocrine parameters (e.g., cortisol and norepinephrine), for which a subject's value fell into the high-risk quartile of the biomarker distribution. AL scores were computed for 462 subjects in the Biomarker Substudy (actual AL score range = 0 to 15, M = 5.1). As hypothesized, age- and gender-adjusted AL level varied as a function of SRH (linear trend p < .001), with higher level of AL in those with poorer ratings of health (AL mean in each SRH category: fair/poor = 6.0, good = 5.8, very good = 4.7, excellent = 4.0). This linear trend remained significant when adjusting for self-report of chronic/major health conditions (p < .01), but was reduced to marginal significance (p < .10) when including body mass index into the model. Overall, findings suggest that self-ratings of health may reflect underlying levels of biological dysregulation, although this association may be driven, in part, by knowledge of weight status.
that the hepatic vagus nerve plays an important role in attenuating Fas-induced hepatocyte apoptosis through alpha-7 nAChR on Kupffer cells. Given clinical evidence that report several anti-stress therapies, such as hypnosis, meditation, and acupuncture, to be able to stimulate the vagus nerve, these findings lead to the intriguing possibility that the efferent vagus nerve stimulation might ameliorate the progression of liver injury.

**Paper Session: CHD Risk Factors**

**Abstract 1650**

**WORKPLACE MANAGERIAL LEADERSHIP AND ISCHEMIC DISEASE AMONG EMPLOYEES: THE SWEDISH WOLF STUDY**

Anna Nyberg, master in psychology, Stress Research Institute, Stockholm University, Stockholm, Sweden, Lars Alfredsson, Environmental Medicine, Töres Theorell, Public Health Sciences, Karolinska Institute, Stockholm, Sweden, Hugo Westerlund, PhD, Stress Research Institute, Stockholm University, Stockholm, Sweden, Jussi Vahtera, Professor, Finnish Institute of Occupational Health, Helsinki, Finland, Mika Kivimäki, Professor, Epidemiology and public health, UCL, London, UK.

Based on a consensus on work stress as a major risk factor for cardiovascular disease can be reached, evidence from population interventions aiming at preventing this risk factor are needed. To take steps towards a clear intervention focus, we tested whether specific managerial behaviours were associated with reduced risk of cardiovascular disease. Data were drawn from a prospective cohort study of employees aged 19 to 70 in Stockholm, Sweden. Baseline screening was carried out between 1992-1995. In 1999, 23,839 participants in the study of menopause. Participants were 499 (35% Black, 65% White) women enrolled in SWAN Heart, aged 45-58, without clinical CVD, as a study of menopause. Participants were 499 (35% Black, 65% White) women enrolled in SWAN Heart, aged 45-58, without clinical CVD, the Study of Women's Health Across the Nation, a community-based study of women aged 40-74. The study aimed to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health. The study aim was to examine relations between hot flashes and women's health.

**Abstract 1050**

**THE HEPATIC VAGUS NERVE ATTENUATES FAS-INDUCED APOPTOSIS IN THE MOUSE LIVER VIA ALPHA-7 NICOTINIC ACETYLCHOLINE RECEPTOR**

Tetsuya Hiramotot, M.D., Psychosomatic Medicine, Graduate School of Medical Sciences Kyushu Univ, Fukuoka, Japan, Yoichi Chida, M.D., PhD, Epidemiology and Public Health, University College London, London, England, Junko Sonoda, MD, Kazu fumi Yoshihara, M.D., PhD, Nobuyuki Sado, M.D, PhD, Chiharu Kubo, M.D. PhD., Psychosomatic Medicine, Graduate School of Medical Sciences, Kyushu Univ, Fukuoka, Japan

Although accumulating evidence has recently shown that the efferent vagus nerve attenuates systemic inflammation, it remains unclear whether or not the vagus nerve can affect Fas-induced liver apoptosis. In this study, using a selective hepatic vagotomy, we assessed the mortality and apoptosis in Fas-induced fulminant hepatitis in sham-operated and vagotomized Male C57BL/6 mice. The mortality in the vagotomized mice was significantly higher than that in the sham-operated mice following intravenous administration with anti-Fas antibody, Jo-2. This result was also supported by the data of both terminal deoxynucleotidyl transferase mediated biotin nick end labeling and caspase-3 assay, in which vagotomized livers showed a significant elevation in the number of apoptotic hepatocytes and increased caspase-3 activity after Jo-2 treatment compared with sham operated livers. The supplementation of tropisetron, an alpha-7 nicotinic acetylcholine receptor (nAChR) agonist, dose-dependently inhibited such detrimental effect of the vagotomy. Moreover, pre-treatment with a mammalian target of rapamycin inhibitor also completely inhibited the vagotomy triggered exacerbation of Fas-induced hepatitis. These results suggest that the hepatic vagus nerve plays an important role in attenuating Fas-induced hepatocyte apoptosis through alpha-7 nAChR on Kupffer cells. Given clinical evidence that report several anti-stress therapies, such as hypnosis, meditation, and acupuncture, to be able to stimulate the vagus nerve, these findings lead to the intriguing possibility that the efferent vagus nerve stimulation might ameliorate the progression of liver injury.

**Abstract 1252**

**HOT FLUSHES AND SUBCLINICAL CARDIOVASCULAR DISEASE: FINDINGS FROM THE STUDY OF WOMEN'S HEALTH ACROSS THE NATION HEART STUDY**

Rebecca C. Thurston, PhD, Psychiatry, Kim Sutton-Tyrrell, DrPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Susan Everson-Rose, PhD, Program in Health Disparities Research, University of Minnesota, Minneapolis, MN, Rachel Hess, MD, Medicine, Karen Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Purpose: Hot flashes are the classic symptom of menopause. Previous evidence has suggested adverse vascular changes among women with hot flashes. The study aim was to examine associations with acute MI and cardiac death as the outcome.

Sample and Methods: The SWAN Heart Study is an ancillary study to the Study of Women's Health Across the Nation, a community-based study of menopause. Participants were 499 (35% Black, 65% White) women enrolled in SWAN Heart, aged 45-58, without clinical CVD.
and with a uterus and at least 1 ovary. Measures included a brachial artery ultrasound to assess flow mediated dilation (FMD), electron beam tomography to assess coronary artery (CAD) and aortic calcification (AC), reported hot flashes, and a blood sample for measurement of estradiol (E2). Cross-sectional associations were evaluated with linear regression and proportional odds models.

Results: Women with hot flashes had significantly decreased FMD (beta(SE)=−0.96 (0.40), p=0.02), and significantly increased CAD (OR=1.48, 95% CI 1.04-2.12, p=0.03) and AC (OR=1.55, 95% CI 1.10-2.19, p=0.01) relative to women without HF in age and race adjusted models.

Conclusions: Women with hot flashes had evidence of impaired endothelial function and aortic calcification. Hot flashes may mark adverse underlying vascular changes among midlife women.

SWAN and SWAN Heart have grant support from the NIH, DHHS, through NIA, NHLBI, NINR and NIH ORWH (AG012505, AG012546, HL065581, HL06591)
demonstrated heart rate levels were consistently lower in those with high self-esteem \((p = .011)\), although heart rate reactivity to stress was not related to self-esteem. There were no differences in baseline HRV, TNF-\&alpha or IL-1Ra. Multiple linear regressions revealed greater self-esteem was associated with a smaller reduction in heart rate variability during the speech task \((p = .040)\), but not the color-word task. Greater self-esteem was associated with smaller TNF-\&alpha \((p = .046)\) and IL-1Ra \((p = .020)\) responses immediately following acute stress and also smaller IL-1Ra responses 45 minutes after stress \((p = .014)\). In conclusion, global self-esteem is associated with lower heart rate and attenuated HRV and inflammatory responses to acute mental stress and could be one factor that protects against the development of CAD.

**Abstract 1288**

**THE EFFECTS OF PSYCHOLOGICAL AND EXERCISE STRESSORS ON INFLAMMATORY AND BLOOD PRESSURE RESPONSES IN HEART FAILURE (HF)**

Paul J. Mills, PhD; Barbara Woods, MS; Christopher Pruitt, Chrystalline Zapanta, BS; Douglas DeJardin, MS; Sarah E. Linke, MS; Suzi Hong, PhD; Laura S. Redwine, PHD; Joel E. Dimsdale, MD; Thomas Rutledge, PhD; Psychiatry; Alan Maisel, MD; Michael G. Ziegler, MD; Barry H. Greenberg, MD; Medicine, UCSD, San Diego, CA

Purpose: HF is characterized by neuroimmune activation. Few studies have examined the effects of acute stressors on inflammatory and/or adhesion molecule responses in HF.

Subjects and Methods: Forty optimally treated HF patients (NYHA Class II-IV) (mean age 62 years, SD=14) and 41 healthy controls (mean age 52 years, SD=12) completed two moderate intensity stressors: a 15 min public speech/mental arithmetic challenge and a 15-17 min moderate bicycle exercise challenge. Blood was drawn at rest and 0, 10 and 30 min after each challenge. Blood pressure (BP) was assessed by an automated monitor. Circulating IL-6, TNF-alpha, IL-1RA, sP-selectin, and sICAM-1 levels were determined by ELISA. HF patients completed the Minnesota Living with Heart Failure Questionnaire (MLHFQ). Data were analyzed by repeated measures ANCOVA and correlation.

Results: Controlling for age, gender and BMI, as expected, HF patients had higher mean IL-6 \((F=8.9, p<.01)\), TNF-alpha \((F=5.2, p<.05)\), IL-1RA \((F=8.8, p<.01)\) and sICAM-1 \((F=8.9, p<.01)\) levels and lower BP \((F's >15, p's<.01)\). Speech/math led to an increase in IL-6 \((F=3.2, p<.05)\) and blood pressure \((F's >15, p's<.01)\) levels and lower BP \((F=8.9, p<.01)\) compared to the control group, controlling for pre-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level.

Discussion: The findings indicate that HF patients mount similar inflammatory responses to acute stressors as healthy individuals in spite of higher resting levels. A patient's perception of HF severity is related to their BP responses to psychological stress. Future studies should examine effects of other factors (e.g., depression) that are associated with inflammatory and BP responses to stressors in HF.

**Abstract 1587**

**CARDIAC EFFECTS OF EXPERIMENTAL WORRY AND PROBLEM-SOLVING**

Jos F. Broosschot, Ph.D., Psychology, University of Leiden, Leiden, RL, The Netherlands; Julian F. Thayer, Ph.D., Psychology, Ohio State University, Columbus, OH; Bart Verkuil, Ph.D., Psychology, Leiden University, Leiden, RL, The Netherlands

Worry has been associated with health outcomes and increased cardiovascular dysregulation in several studies. However, experimental effects have been scarce, and have not controlled for the effects of cognitive problem solving as a possible confounder. The present experiment compared the cardiac effects of induced worry with relaxation and short bouts of problem solving concerning issues that were not personally relevant to the participant. Fifty-three research participants, age 17-50 years (mean 24.4), were exposed to three experimental phases (worry, relaxation and problem solving; each 10 minutes) in random order. Heart rate (HR) and heart rate variability (HRV) were measured continuously using a Polar heart meter. Although self-reported worry and negative emotions were higher during the worry condition than in both other conditions, HR was higher and HRV lower during both the worrying condition (77.1 beats-per-minute (BPM) and 43.1 ms, respectively) and problem solving (77.06 BPM and 41.1 ms, respectively) than during relaxation (74.7 BPM and 45.5 ms, respectively; F(2,40)=6.67, p<.001 (three conditions x two cardiac variables plus post hoc tests). Differences in emotional responses did not account for these results. Thus, the cardiac effects of induced worry were not different from cognitive problem solving per se. This may imply that mere mental load is an important determinant of the physiological effects of worry, irrespective of the personal relevance of worrisome problem-solving. Consequently, long-term health effects of worry may be partly due to prolonged mental load of worry rather than to its emotional aspects.

**Abstract 1571**

**BRIEF SLOW-BREATHING TRAINING OVER 1 WEEK DECREASES HEART RATE AND BLOOD PRESSURE RESPONSES DURING STRESS**

Kathleen Salomon, PhD; Lauren M. Byloma, B.A.; Mardís Karlsdóttir, B.A.; Jonathan Rottenberg, PhD; Psychology, University of South Florida, Tampa, FL

The purpose of this study was to examine brief slow-breathing training (BSBT) effects on resting and task levels of RSA and cardiovascular function. BSBT involves participants engaging in slow-breathing training at their resonant frequency, i.e., a frequency near 6 breaths per minute, at which heart rate variability (HRV) is greatest. BSBT has been shown to produce short-term changes in respiratory sinus arrhythmia (RSA). Longer term health and performance benefits of BSBT are an active topic of investigation (Lehrer et al., 2005). However, BSBT has been investigated primarily in specialized populations and using control groups that have not also engaged in practiced breathing. Participants included 42 female college students, aged 18-22 years, and 44 community members. Participants engaged in two laboratory sessions one week apart. At both sessions participants engaged in a resting baseline, paced breathing at their resonant frequency (RF), a speech task and a mental arithmetic task. Practice consisted of two 16-minute web-administered daily breathing sessions at home between sessions. The BSBT group practiced breathing at their RF (4.5-5.5 breaths per minute) while the control group practiced at 12 breaths per minute. Post-training HR \((F(1,35) = 7.13, p < .01)\) and systolic BP \((F(1,36) = 4.55, p = .04)\) levels during the math task were lower for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level. The effect demonstrating that post-training math RSA levels were higher for the RF group compared to the control group, controlling for pre-training math level and post-training baseline level.

Discussion: The findings indicate that HF patients mount similar inflammatory responses to acute stressors as healthy individuals in spite of higher resting levels. A patient's perception of HF severity is related to their BP responses to psychological stress. Future studies should examine effects of other factors (e.g., depression) that are associated with inflammatory and BP responses to stressors in HF.
of significant critical life events. Based on previous research, a larger endocrine stress response is expected for those individuals carrying the short allele and an additional history of life stress. However, whether, or not new borns carrying the short and low expressing allele and having not experienced any critical life events show an elevated endocrine stress response remains unknown. We therefore studied the impact of the 5-HTTLPR on the acute stress response to a heel prick in 216 three- days-old newborns. The response to this heel prick was quantified by endocrine and behavioral measures. DNA was genotyped for the 5- HTTLPR polymorphism including the A/G SNP. The heel prick induced significant responses in cortisol (F1,162=30.28, p<.001, 2=0.16) and behavioral (F4,190=18.03, p<.001, 2=0.49) increases in all newborns. However, no effect for 5-HTTLPR genotype groups on the endocrine (F2,162=1.12, p=.33) or behavioral (F2,190=1.14, p=.32) stress response could be found. Thus, a differential stress response profile cannot be attributed to 5-HTTLPR genotypes alone without the additional influence of environmental factors such as critical life events. These negative findings in three-day-old newborns without prior critical life events are thus in line with previous studies on the interactions of genetic and environment in adult study populations.

Abstract 1305
EVIDENCE OF DYSREGULATED PERIPHERAL OXYTOCIN RELEASE AMONG DEPRESSED WOMEN
Jill M. Cyranowski, PhD, Tara L. Hofkins, BA, Ellen Frank, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA; Howard Seltman, PhD, Statistics, Carnegie Mellon University, Pittsburgh, PA; Hou-Ming Cai, MD, Janet Amico, MD, Pharmaceutical Sciences, University of Pittsburgh, Pittsburgh, PA
Oxytocin is a hypothalamic neuropeptide that plays a key role in mammalian female reproductive function, including milk ejection at lactation and uterine contraction at parturition. Animal research indicates that central oxytocin facilitates adaptive social attachments and modulates stress and anxiety responses. Depression has long been associated with perturbations in social attachments, dysregulation of the HPA stress axis, and anxiety comorbidity. Thus, depressed females may be at risk to display oxytocin dysregulation. Currently depressed (N=17) and never-depressed (N=17) females underwent an affiliation task designed to stimulate, measure and compare peripheral oxytocin obtained intermittently before, during and following two laboratory tasks: an affiliation-focused guided imagery task and a speech stress task. Depressed women were more likely to display highly variable patterns of pulsatile oxytocin release, with about 40% of depressed women versus 6% of controls displaying elevated oxytocin variability (Wald statistic=4.46, df=1, p<.05 for stress session]. Depressed women displayed greater oxytocin concentrations during the affiliation-focused task, an effect that remained following control for task order, age, and oral contraceptive use [F(1,26)=4.43, p<.05]. Oxytocin concentrations obtained during the affiliation-focused task were also associated with greater symptoms of depression, anxiety, and interpersonal dysfunction [partial r’s=.57-.65, p’s<.05]. Results suggest that depressed women are at risk to display a dysregulated pattern of peripheral oxytocin release. Further research is warranted to elucidate the clinical significance of peripheral oxytocin release in both depressed and non-depressed women.

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Abstract 1336
VARIABILITY IN DIURNAL SLOPE: EXTENT, SOURCE, AND PREDICTORS
Suzanne C. Segerstrom, PhD, Psychology, University of Kentucky, Lexington, KY; Sandra E. Sephton, PhD, Psychological and Brain Sciences, University of Louisville, Louisville, KY
Diurnal slope is a clinically relevant parameter of cortisol regulation. Current recommendations suggest at least three days of collection to represent individual differences in slope. The generalizability of daily slope and health and mood predictors of variability in slope were examined in first-year law students (n=125) who completed daily questionnaires and collected saliva at waking, 1200, 1700 and 2100 hours over three consecutive days at five waves. Samples were analyzed with EIA. Data were missing for dropouts (129), missing values (N=17) and dropouts missing values (89% of total possible). Generalizability analyses indicated 3-6 days of saliva collection would be needed to reach reliability of .60, with 6-15 days needed for reliability of .80. Multi-level models examined whether daily mood and health behavior could account for day, wave, and person variability. Of 11 health predictors (e.g., exercise, sleep, carbohydrate consumption), only differences in pain accounted for significant variability in slope (chi square (3) = 11.8, p < .01), such that waves in which an individual reported more pain were characterized by flatter slopes. No health predictors accounted for daily variability. Of 11 affect predictors (e.g., fear, guilt, sadness, joviality, serenity), only fatigue accounted for significant variability in slope (chi square (3) = 12.8, p < .01) such that days on which the person had higher fatigue were also characterized by flatter slopes. Finally, examination of missing data indicated that, across waves, the third day of saliva collection had the most missing samples. These results point to the importance of balancing reliability and burden in salivary collection schemes. Collecting fewer samples across more days and reducing the scope of health behavior questionnaires may be more effective, at least in young, healthy samples. Results also extended the relationships among fatigue, pain, and flat diurnal slopes in clinical samples (e.g., cancer, fibromyalgia) to a young, healthy sample.

Abstract 1592
OLFACTORY INFLUENCES ON MOOD AND AUTONOMIC, ENDOCRINE, AND IMMUNE FUNCTION
Janice K. Kaerch-Glaser, PhD, Institute for Behavioral Medicine Research, Ohio State University College of Medicine, Columbus, OH; Jennifer E. Graham, PhD, Department of Biobehavioral Health, Pennsylvania State University, University Park, PA; William B. Malarkey, MD, Internal Medicine, Kyle Porter, M.A.S., Center for Biostatistics, Ohio State University College of Medicine, Columbus, OH; Stanley Lemeshow, PhD, Ohio State University College of Public Health, Ohio State University, Columbus, OH; Ronald Glaser, PhD, Institute for Behavioral Medicine Research, Ohio State University College of Medicine, Columbus, OH
Despite aromatherapy's popularity, efficacy data are scant, and potential mechanisms are controversial. This randomized controlled trial examined the psychological, autonomic, endocrine, and immune consequences of one purifying (N=20) and two relaxing (N=17) fragrances used to elicit stress. Participants were assigned to one of three conditions: odor (lemon), and a no-odor control (water), before and after a stressor (cold pressor); 56 healthy men and women were exposed to each of the odors during three separate visits. To assess the effects of expectancies, participants randomized to the “blind” condition were given no information about the odors they would smell; “primed” individuals were told what odors they would smell during the session, and what changes to expect. Experimenters were blind. Repeated-measures linear models were fit to dependent variables. Self-report and unobtrusive mood measures provided robust evidence that lemon oil reliably enhances positive mood compared to water and lavender regardless of expectancies or previous use of aromatherapy, all ps < .01. Moreover, norepinephrine levels following the cold pressor remained elevated when subjects smelled lemon, compared to water or lavender, p=.01. DTH responses to Candida were larger following inhalation of water than lemon or lavender, p=.01. Odors did not reliably alter IL-6 and IL-10 production, salivary cortisol, heart rate or blood pressure, skin barrier repair following tape stripping, or pain ratings following the cold pressor. Many complementary/alternative therapies have not been subjected to well-controlled tests. The data from this randomized controlled trial are important because they directly address both purported mechanisms and clinical efficacy. This research was supported by grant NC22 from the National Center for Complementary and Alternative Medicine (NCCAM) at NIH.

Abstract 1704
SPIRITUAL TRANSFORMATIONS IN PEOPLE WITH HIV PREDICTS LOWER MORTALITY
Gail Ironson, MD,PhD, Heidemarie Kremer, MD, PhD, Psychology & Behavioral Medicine, University of Miami, Coral Gables, FL
Being diagnosed with a life threatening illness such as HIV is associated with changes in spirituality. We examine one such change: positive spiritual transformations, which are positive changes in spiritual development along with major changes in beliefs, self views and attitudes. Little is known about whether these spiritual transformations...
have an impact on health and longevity. The current study examines the relationship between spiritual transformations in people with HIV and their longevity. To examine people with chronic HIV disease and include people who had spiritual transformations, two samples were recruited. The first (chronic disease sample; n=74) was recruited from a larger longitudinal study of people with chronic HIV disease who were not selected for spirituality; the second (spiritual sample) recruited people with HIV who considered themselves as spiritual. Both qualitative and quantitative methods were used. Study recruitment occurred between 4/2002 until 5/2004. Mortality data is reported up to 5 years from entry into the study (ranging from 3.33 to 5.24 years). Qualitative content analysis revealed that 54% (80/147) of the total sample had a spiritual transformation. Spiritual transformations (ST) were more common in the spiritual than in the chronic disease sample (73%, 53/73 vs. 36%, 27/74, p < .001), although the number in the chronic disease sample was still substantial. In the follow-up period 10 people died. In our sample, people who had had an ST were 4 times less likely to die within 3-5 years than those without an ST (20% (2/10) vs. 80% (8/10), Chi-square = 5.125, p = .024); whereas 54% of those who died would have been expected to have had an ST in our sample only 20% who died had had an ST. In conclusion, it may be useful to measure spirituality in patients and explore spiritual transformations not only because of its use for coping, but also for potential health benefits.

Abstract 1065
DOES POSITIVE AFFECT INFLUENCE MORTALITY?: A META-ANALYSIS
Yoichi Chida, MD, PhD, Andrew Steptoe, DPhil, Department of Epidemiology and Public Health, University College London, London, UK
Recent years have witnessed increased interest in the relationship between positive psychological states and physical health. We systematically reviewed prospective observational cohort studies of the association between positive affect and mortality using meta-analytic methods. We searched general bibliographic databases: Medline, PsycINFO, Web of Science, and PubMed up to September 2007. Two reviewers independently extracted data and assessed the methodological quality and estimates of associations. There were 30 studies (24 papers) investigating the association between positive affect and mortality in initially healthy populations and 38 studies (30 papers) of disease populations. The meta-analyses showed that positive affect was associated with reduced mortality in both the healthy population (combined hazard ratio 0.81, 95% confidence interval 0.74-0.89, p<0.001) and disease population (0.98, 0.95-1.00, p=0.030) studies. However, there were indications of publication bias in this literature. Intriguingly, meta-analysis of studies that controlled for negative affect showed that the protective effect of positive affect was independent of negative affect. We divided studies according to the type of positive affect measure examined, and found that both personality/coping style factors (e.g., hopefulness, cheerfulness, optimism, humor, and life satisfaction) and emotional factors (e.g., positive well-being, positive mood, joy, happiness, vigor, and energy) were associated with greater survival in healthy population studies, but that only personality/coping factors were related to survival in disease populations. Positive affect was significantly associated with reduced cardiovascular mortality in healthy population studies, and with reduced death rates in patients on maintenance hemodialysis or peritoneal dialysis and with human immunodeficiency virus-infection. The current review suggests that positive affect has a favorable effect on survival in healthy and diseased populations. However, given the presence of publication biases, these findings should be interpreted very cautiously.

Abstract 1747
THE RELATIONSHIP OF OPTIMISM AND ACCULTURATION ON MENTAL WELL-BEING AND BIRTH OUTCOMES
Jeanne Ruiz, PhD, Nursing, University of Texas Medical Branch, Galveston, Texas, Sheryl Bishop, PhD, Nursing, UTMB, Galveston, Texas
Relationships between optimism, acculturation (language proficiency and years in the U.S.) and emotional distress (stress, anxiety and depression) were explored in 468 low-income, pregnant Hispanic women as part of a larger observational prospective study. Optimism was negatively correlated with state and trait anxiety, pregnancy related anxiety, depression and stress (p<.000). Positive correlations were found between number of close friends living nearby (p=.018), baby father's support (p=.000), family cohesion (p=.000) and gestational age (p=.021). A positive relationship with Spanish proficiency (p=.000) indicated greater optimism with stronger Hispanic acculturation and a negative correlation with English proficiency (p=.011) indicated lower optimism associated with higher English acculturation. Dichotomizing optimism into low and high, t-tests indicated that the low optimism group was characterized by more years in the U.S. (p=.02), higher English proficiency (p<.05), higher depression, trait and state anxiety, pregnancy related anxiety and stress scores (all p<.001). High optimism groups are characterized by high Spanish proficiency and higher family cohesion scores (both p<.001). Chi square analyses of optimism categories across demographics indicated low optimism participants associated with less education (p=.04) and having insurance (p=.003). This finding was illuminated when the low optimism group was found to be associated with individuals with high English proficiency (p=.04), i.e., American acculturated. Although failing to reach significance, it is worth noting that the low optimism group had the majority of women with preterm birth histories and low birth weight outcomes. It appears that optimism is consistently associated with acculturation indicators and negative health indicators. Levels of optimism, in fact, differentiate between levels of acculturation in such a way as to reflect the Hispanic Paradox, i.e., less acculturated women have better health outcomes. Longer tenure in the U.S. and greater acculturation are associated with less optimism and higher rates anxiety, stress, depression and pregnancy related anxiety.

Abstract 1391
POSITIVE FEELINGS AND LONGEVITY
Laura D. Kubzansky, PhD, Society, Human Development, and Health, Harvard School of Public Health, Boston, MA, Rebecca C. Thurston, PhD, Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA
Folk wisdom extols the health benefits of thinking and feeling positively, but empirical evidence is still limited. Emotional vitality, characterized by a sense of positive energy, well-being and the ability to effectively regulate emotion is hypothesized to influence health via broad-based effects on multiple systems. We test this hypothesis, and examine whether emotional vitality is associated with greater longevity. Study participants are respondents to the First National Health and Nutrition Survey, a U.S. multistage, national probability survey conducted between 1971 and 1975. At baseline a detailed medical examination and an in-person structured interview were obtained on a subsample of adults aged 25 to 74 (n = 6913). Follow-up studies were conducted in 1982, 1987, and 1992. Emotional vitality (also depressive and anxiety symptoms) were measured using separate subscales from the General Well-Being Schedule. Participants were tracked via the National Death Index and death certificates were obtained for decedents. A total of 6879 participants had complete and valid data. Relative risks (RRs) of premature mortality and 95% confidence intervals (95% CIs) were estimated using multivariate Cox proportional hazards regression. Over the follow-up period (M = 15.1 years), 1935 deaths occurred. After adjusting for age, race/ethnicity, gender, and educational attainment, individuals with the highest levels of emotional vitality had a 22 % reduced risk of premature death relative to those with the lowest levels (RR = 0.78, 95% CI: 0.70-0.87, p < .0001). Follow-up analyses controlled for depression or anxiety, and to address concerns about confounding by initial health status, excluded individuals who died in the first 3 years of follow-up. For all analyses, emotional vitality remained significantly associated with mortality. Results suggest that greater emotional vitality may protect against premature mortality. A greater focus on the biology of positive feelings may further inform our understanding of how feelings influence health.
Abstract 1282
POOR SOCIAL INTEGRATION IS AN INDEPENDENT RISK FACTOR FOR INCIDENT HEART FAILURE IN ELDERLY MALES BUT NOT FEMALES: THE NHLBI CARDIOVASCULAR HEALTH STUDY LIMITED ACCESS DATASET
Heather L. Rogers, MPH, David S. Krantz, Ph.D., Medical and Clinical Psychology, Uniformed Services University of the Health Sciences, Bethesda, MD
Lack of social support is a risk factor for cardiovascular disease and poor outcomes after myocardial infarction. Social Integration (SI), or number of social contacts, predicts outcomes and survival in heart failure (HF) patients. The importance of SI and Perceived Social Support (PSS) for incident HF was assessed via analyses of prospective data from the Cardiovascular Health Study (CHS). CHS enrolled community-dwelling elderly men (N=2,495) and women (N=3,393) age 65-100 yrs (mean 72.4 yrs) beginning in 1989 with follow-up through 2007. Incident HF was verified from medical records. SI was measured via the Lubben Social Network Scale and PSS via a shortened Interpersonal Support Evaluation List. Analyses excluded those with HF at baseline. Incident HF occurred in 1,247/2,521 (22.6%) individuals, and controlling for sociodemographics, SI was significantly greater in women (p<.05). Incident HF was associated with a .37 mm/Hg higher diastolic blood pressure. Results persisted after additional unit in the discrimination score was associated with a .37 unit increase in systolic blood pressure. Findings were also significant. SI was not associated with incident HF among older males but was associated with incident HF among older females (p<.01). SI was also a significant interaction for diastolic blood pressure in African-Americans, but this has not been studied in older adults. Available social contacts and social participation may affect risk factors for HF in both males and females. SI provides a unique window on risk of HF.

Abstract 1654
EXPERIENCES OF DISCRIMINATION AND BLOOD PRESSURE IN OLDER AFRICAN-AMERICAN AND WHITE ADULTS
Téné Lewis, PhD, Epidemiology & Public Health, Yale University, New Haven, CT, Lisa Barnes, PhD, Neurology, Julia Bienias, ScD, Denis Evans, MD, Carlos Mendes de Leon, PhD, Internal Medicine, Rush University Medical Center, Chicago, IL
Elevated blood pressure is a risk factor for cardiovascular disease (CVD) and other common conditions of aging. Studies have consistently observed higher rates of elevated blood pressure in older African-Americans compared to non-Hispanic whites. Discriminatory treatment has been hypothesized to be a risk factor for elevated blood pressure in African-Americans, but this has not been studied in older adults. We examined the cross-sectional and longitudinal associations between self-reported experiences of discrimination and blood pressure in a biracial cohort of 4,694 (60% African-American, 60% female) community-dwelling older adults (Mean age=74). Experiences of discrimination and other relevant risk factors were assessed via interview, and blood pressure was measured using standard sphygmomanometers. Multivariable linear and mixed effects regression models were conducted to test cross-sectional and longitudinal associations between self-reported experiences of discrimination and blood pressure in African-American and white older adults. Discriminatory experiences were associated with higher levels of diastolic (p<.01), but not systolic blood pressure (p=.10). There was also a significant race*discrimination interaction for diastolic (p<.02) but not systolic (p=.43) blood pressure. The effect of discrimination on diastolic blood pressure among older whites was slightly, but non-significantly negative (coefficient=-.20); while the effect among older African-Americans was positive (coefficient=.37), indicating that every additional unit in the discrimination score was associated with a .37 mm/Hg higher diastolic blood pressure. Results persisted after adjustments for smoking, BMI and self-reported diseases. Longitudinal associations were not significant. Findings provide support for the notion that discriminatory experiences might be a unique risk factor for elevated blood pressure in African-American older adults. These associations were observed at baseline and did not change over time, findings may reflect the effect of discrimination on increases in blood pressure prior to older age.

Abstract 1689
LOW INCOME PREDICTS INCREASED SYSTEMIC INFLAMMATION IN A NATIONAL SAMPLE OF MIDDLE AGED ADULTS (MIDUS)
Elliot M. Friedman, PhD, Institute on Aging, Pamela Herd, PhD, Sociology, Burton H. Singer, PhD, Institute on Aging, Carol D. Ryff, PhD, Institute on Aging and Psychology, University of Wisconsin-Madison, Madison, WI
Socioeconomic status (SES) has been positively linked to multiple health outcomes, but the pathways that mediate these links are unclear. One focus of research is inflammation, which predicts many disease outcomes to which SES has been linked. Some indices of SES are associated with inflammatory proteins, but findings are not consistent. This study examined the associations of household income and three markers of systemic inflammation: interleukin-6 (IL-6), C-reactive protein (CRP), and fibrinogen. Specifically, we tested the hypothesis that low income would predict higher circulating levels of all three proteins. Data were from a sample of participants (n = 507) from the national population-based survey of Midlife in the United States (MIDUS). Information on pre-tax household income was determined from responses to self-administered questions asking for annual income in a prior year. The analysis was conducted with the lowest quartile of household income vs. highest quartile. Findings were adjusted for household size. Data on potential confounds -- age, gender, health status, and health behaviors -- were collected by questionnaire. All participants stayed overnight at a General Clinical Research Center (GCRC) at which time additional health measures were obtained. Fasting blood samples were obtained in the GCRC the following morning and assayed for IL-6, CRP, and fibrinogen. Compared to other income levels, low income was significantly associated with higher levels of IL-6 and fibrinogen in bivariate analyses (IL-6: b = -.17, P<.001; Fibrinogen: b = -.12, P<.05), and the association remained significant after controlling for potential confounds (IL-6: b = -.15, P<.01; fibrinogen: b = -.10, P>.05). Low income also predicted higher CRP levels in bivariate and multivariate analyses (b = -.15, P<.05 for both), but only in men. Finally, additional analyses showed that IL-6 accounted for 11% of the variance in income and both CRP and fibrinogen. These results suggest that inflammation may be an important mechanism through which socioeconomic disadvantage is linked to poor health.

Abstract 1715
THE SEROTONIN TRANSPORTER GENE MODERATES ENVIRONMENTAL STRESS EFFECTS ON SELF-ESTEEM
Charles R. Bonnasse, MA, Allison Ashley-Koch, PhD, Psychiatry, Duke University, Durham, NC, Keith Whitfield, PhD, Psychology, Redford B. Williams, MD, Psychiatry, Duke University, Durham, NC
Low self-esteem is associated with poor mental and physical health outcomes. Prior research suggests that social support, socioeconomic status (SES), parental factors, maltreatment and stressful life events may influence self-esteem level and trajectory during adolescence and early adulthood. Although no molecular genetic studies on self-esteem exist, stress in childhood has been shown to interact with a serotonin transporter gene polymorphism (5HTTLPR) to predict adulthood depression - a correlate of self-esteem. The current project examined the effects of 5HTTLPR genotype, known environmental stressors, and their interaction on self-esteem in a subsample of 1199 unrelated participants from the Add Health study. Initial data was collected at age 15 years, and approximately every 2 years for 7 years later. Data was compared to a latent variable in a structural equation model (SEM), partial genetic factors, social support and stressful life events, were associated with self-esteem during adolescence (1.5 year follow-up) but not self-esteem 7 years later in young adulthood. In contrast, indicators of SES -- poor housing and neighborhood conditions -- were only associated with self-esteem in adulthood. In the genetic analyses, ANOVA showed that 5HTTLPR genotype significantly influenced self-esteem (p<.05), an effect that was not moderated by race or sex. Individuals carrying the less active S allele had lower self-esteem across all three time points -- adolescents through young adulthood -- than individuals with the L/L genotype. Furthermore, in SEM, the 5HTTLPR moderated the effect of adolescent SES on adulthood self-esteem (p<.004). Carriers of the S allele who lived in low SES conditions during adolescence reported lower self-esteem in adulthood than individuals in a higher SES environment. In contrast, individuals with the L/L genotype were
protected from the deleterious effects of low SES and reported high self-esteem in adulthood, regardless of their SES in adolescence. These associations withstood controlling for demographic measures. Furthermore, engaging in more restorative activities was associated with higher levels of positive psychosocial traits (e.g., positive affect, life satisfaction, life engagement, and social support) (betas ranged from .29 to .33, ps < .001) and lower levels of depression and negative affect (betas = -.31 and -.21, respectively, ps < .001). Conclusion: Restorative activities, taken in the aggregate, are associated with psychosocial and physical measures relevant for health and well-being. Future studies should determine the extent to which restorative behaviors are useful predictors of disease and other health outcomes.

Abstract 1120
RESOLVING CAUSE AND EFFECT IN THE ASSOCIATION BETWEEN EXERCISE PARTICIPATION AND DEPRESSION AND ANXIETY
Eco J. De Geus, PhD, Marleen H. De Moor, PhD, Janine H. Stubbe, PhD, Gonneke Willemsen, PhD, Dorret I. Boomsma, PhD, Biological Psychology, Vrije Universiteit Amsterdam, Amsterdam, Amsterdam, The Netherlands
We previously reported robust cross-sectional associations between participation in regular leisure time exercise and mental health in the population at large. Here we aimed to resolve the causality driving these associations. Specifically we tested whether the association of exercise with anxiety, neuroticism, and depression are best explained by causal effects of regular exercise on mental health, by reverse causal effects of mental health on exercise behavior, or by a third underlying factor influencing regular exercise and mental health. We used a population-based twin sample and participants who adopted a self-distanced vs. self-immersed perspective in analyzing their feelings surrounding an anger experience. Consistent with prior research, participants who analyzed their feelings from a self-distanced perspective reported reliving their recalled anger experience less than participants in the immersed-analysis group (F = 9.20, p < .001). In addition, they displayed lower blood pressure reactivity during both the manipulation and the recovery periods (F = 4.00, p < .05) and the respiration (r = .37, p < .05) than a physiological threat perspective in the spontaneous use of distancing in coping with negative experiences. Consistent with experimental findings, individuals who reported greater distancing while thinking about an autobiographical anger experience showed greater sympathovagal activation (r = .32, p < .05) than a physiological threat perspective. The psychological and clinical implications of these findings will be discussed.

Abstract 1270
RESTORATIVE ACTIVITIES ARE ASSOCIATED WITH PHYSIOLOGICAL AND PSYCHOLOGICAL WELL-BEING
Sarah D. Pressman, PhD, Karen A. Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Sheldon Cohen, PhD, Michael Scheier, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA, Lynn M. Martire, PhD, Richard Schulz, PhD, University Center for Social and Urban Research, Andy Baum, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA
Objective: Little research has examined the health benefits of the restorative activities that individuals participate in their free time (e.g., taking vacations, spending time in nature). This study examined whether higher frequency engagement in these activities was associated with better physiological and psychological functioning. Design: Participants from four different studies (1399 total, 74% female; ages 19 to 89) completed a self-report measure assessing their general participation in 10 different types of restorative activities as well as measures of positive and negative psychosocial traits. Main Outcome Measures: Three blood pressure (systolic and diastolic) measures were taken within 2 minutes between readings to determine resting cardiovascular function. Salivary cortisol production was assessed using multiple salivary samples (five times per day) over two consecutive days. Catecholamines were examined via an overnight 15-hour urine analysis. Body Mass Index (BMI) and waist circumference were also measured. Results: Higher levels of engagement in restorative activities were associated with lower systolic and diastolic blood pressure (betas = -1.17 and -0.98, ps < .01), lower total cortisol production (beta = 0.08, p < .01), and a smaller waist circumference and body mass index (betas = -1.7 and -0.75, ps < .05). These associations were significant after controlling for demographic measures. Furthermore, engaging in more restorative activities was associated with higher levels of positive psychosocial traits (e.g., positive affect, life satisfaction, life engagement, and social support) (betas ranged from .29 to .33, ps < .001) and lower levels of depression and negative affect (betas = -.31 and -.21, respectively, ps < .001). Conclusion: Restorative activities, taken in the aggregate, are associated with psychosocial and physical measures relevant for health and well-being. Future studies should determine the extent to which restorative behaviors are useful predictors of disease and other health outcomes.

Abstract 1182
THE EFFECT OF RELIGIOUS INVOLVEMENT ON HEALTH IN 25 EUROPEAN COUNTRIES
A Nicholson, PhD, Epidemiology & Public Health, University College London, London, UK, R Rose, DPhil, Centre for Study of Public Policy, University of Aberdeen, Aberdeen, UK, M Bobak, PhD, Epidemiology & Public Health, University College London, London, UK
Evidence for a protective effect of religious involvement on health is strongest for attendance at religious services but is largely restricted to US populations. Comparative studies in European populations, including both highly secularised societies (eg Sweden, Czech Republic) and societies where religious beliefs are dominant (eg Poland, Greece), will allow the robustness of these findings to be assessed.

The European Social Survey is a cross-sectional survey of nationally representative samples of adults (18 years and over) from 25 European countries, with a total sample size of 45,763. This paper investigates the associations between three dimensions of religious involvement (attendance and negres, never vs. regular, self-report as religious person: bottom vs. top quartile; frequency of private prayer, never vs. daily) and poor or very poor self-rated health. Socio-economic position was assessed by education.

In the least secular countries, never attending services, not being religious and never praying were associated with worse health in men and women. In more secular countries these effects were also seen, although more weakly, in men but not in women. With minor
exceptions, these associations persisted after controlling for the presence of longstanding illness. The association between religious involvement and health did not show any consistent differences across educational level. The associations between religious involvement and better health differed across European countries, perhaps reflecting differing social and psychological functions of religion in different societies.

Odds ratios (OR) for poor health by sex and country

<table>
<thead>
<tr>
<th>ORs adjusted</th>
<th>High secular</th>
<th>Mid secular</th>
<th>Low secular</th>
</tr>
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<tbody>
<tr>
<td>for age &amp; educ</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Never attends</td>
<td>1.58</td>
<td>1.00</td>
<td>1.29</td>
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<td>[1.01-</td>
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<td>[1.21-</td>
<td>[1.00-</td>
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<tr>
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<td>[0.71-1.29]</td>
<td>[0.54-0.93]</td>
</tr>
<tr>
<td>Never prays</td>
<td>1.17</td>
<td>0.80</td>
<td>0.71</td>
</tr>
<tr>
<td>[1.13-1.22]</td>
<td>[0.74-0.87]</td>
<td>[0.71-1.29]</td>
<td>[0.54-0.93]</td>
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Paper Session: Biological, Psychological and Behavioral Correlates of Health and Function in Late-life

Abstract 1258
HEART RATE VARIABILITY AND COGNITIVE FUNCTION IN THE BALTIMORE LONGITUDINAL STUDY OF AGING
Jessica P. Brown, PhD, Epidemiology and Preventive Medicine, University of Maryland, School of Medicine, Baltimore, MD, John J. Sollers, III, PhD, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, OH, Alan B. Zonderman, PhD, Laboratory of Personality and Cognition, Gerontology Research Center, NIA, Baltimore, MD, Shari R. Waldstein, PhD, Psychology, University of Maryland Baltimore County, Baltimore, MD

Several indexes of autonomic dysregulation have been associated previously with stroke, silent cerebrovascular disease, and decreased cognitive function. We examined the cross-sectional relations among measures of heart rate variability (HRV) and cognitive function in a sample of stroke- and dementia-free older adults (n=73, 53% male, mean age=70.14 years) from the Baltimore Longitudinal Study of Aging. Age, education, baseline and reactive HRV measures were regressed on cognitive test scores measuring attention, learning and memory, verbal functions/language skills, and psychomotor ability. Higher levels of the natural log of high frequency (lnHF) power, a measure of vagally mediated HRV, were associated with poorer performance on Alpha Span (R²change = .144; p<0.013), the California Verbal Learning Test (CVLT) slope (R²change = .054; p<0.008), and Letter Fluency (R²change = .071; p<0.008). Increased lnLF power, a measure of a mix of sympathetic and parasympathetic activity, was associated with poorer performance on Alpha Span (R²change = .083; p<0.013). The ratio of LF to HF (LF/HF) was not associated with any cognitive domain assessed. Supplemental analyses revealed that an alternative measure of vagally mediated HRV (e.g. mean squared successive difference, rMSSD) was also associated with poorer performance on CVLT slope (R²change = .277; p<0.008). Thus, measures reflecting an inflexibility of HRV response were associated with lower levels of performance on tests of attention and verbal learning. HRV may be a biobehavioral risk factor for lowered levels of cognitive performance.

Abstract 1668
VARIABILITY IN CORTISOL AMONG THE AGING: RELATIONSHIP TO CHRONIC STRESS AND GOOD SLEEP
Michele L. Okan, Ph.D., Charles F. Reynolds III, MD, Timothy Monk, Ph.D., Martica Hall, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA

Variability in cortisol concentrations has been observed among the aging, including hypocortisolism and blunted diurnal variation (O'Hara, 2006). Contradictory findings are due to great inter-individual variability in cortisol production, as well as age-related cortisol changes that are often difficult to distinguish from changes linked to stressful conditions (Ferrari et al., 2007). We provided initial descriptive data on the relationship among subjective sleep, indices of stress, and salivary cortisol concentrations in a 24-hour period (AUC) in two groups of stressed individuals: bereaved (BR) (N = 27, 71.6 ± 6.4 yrs, 76% female) and spousal caregivers (CG) of patients with dementia (N = 42, 73.5 ± 7.1 yrs, 74% female), and in a group of elders (HC) without significant sleep complaints or medical comorbidity (N = 49, 79.4 ± 3.2 yrs; 47% female). Data are from the baseline assessment during which participants completed sleep diaries, questionnaires (the Pittsburgh Sleep Quality Index, Hamilton Depresson Scale, and Perceived Stress Scale), and provided five saliva samples (wake-up, wake-up +30 minutes, 3pm, 6pm, and bedtime) using Salivettes. HC (M = 11278 ± 4117 nmol/L) had higher cortisol levels than either the BR (7794.6 ± 2804 nmol/L) or the CG (9513.5 ± 3365 nmol/L) (F(3,117) = 9.0, p < .001). No association between depressive symptomatology or perceived stress and cortisol was observed (all groups p’s > .05). Higher 24-hr cortisol values, only among the HC, were associated with shorter sleep latency (τ = -.34, p < .05) and greater sleep efficiency (τ = -39, p < .05), as well as fewer sleep complaints as assessed by the PSQI (τ = -.42, p < .01). These data suggest that older adults enduring a chronic stressor have blunted 24-hr levels of cortisol. Hypocortisolism may be causally related to disinhibition of inflammatory processes thereby increasing stress-related pathology. These data also suggest that "appropriate" cortisol secretion across a 24-hr period, and subsequent reduced medical morbidity, may be facilitated by good sleep. A better understanding of these complex interactions is needed to identify subpopulations at risk of medical morbidity.

Abstract 1721
PRIOR DEPRESSION HISTORY PREDICTS PHYSICAL HEALTH DECLINE IN COMMUNITY-DWELLING OLDER ADULTS - A PROSPECTIVE COHORT STUDY
Dae Sung Jun Cho, MD, PhD, Helen Lavretsky, MD, Richard Olmstead, PhD, Michael R. Irwin, MD, Cousins Center for Psychoneuroimmunology, UCLA, Los Angeles, CA

PURPOSE: Depression is known to worsen outcomes of physical illness. However, it is unclear whether such negative effects persist after depressive symptoms remit, especially in older adults. This study examined whether prior depression history predicts decline of physical health functioning independently of mental health functioning in community-dwelling older adults. METHODS: A prospective cohort study was conducted in 3 urban communities in the United States with 351 older adults aged 60 or older - 145 with a history of major or non-major depression in full remission and 206 controls with no history of mental illness. Participants were assessed at baseline, 6 weeks, 1 year and 2 years for physical and mental health status (measured using the 36-Item Short-Form Health Survey), chronic medical disease, depressive symptoms and episodes, and sleep quality. Given the repeated nature of measurement, linear mixed model regression was performed. RESULTS: Physical health functioning declined more rapidly over time in the group with prior depression history compared to the control group, and these changes were independent of the measures of mental health functioning, depressive symptoms and sleep quality (adjusted regression coefficient of group-by-time interaction -0.02; P=0.004). Chronic medical disease, an objective measure of physical health status, also worsened more rapidly in the former group. Similar results were observed when those who developed depressive episodes during follow-up were excluded. CONCLUSION: The current study is the first to demonstrate that depression produces adverse effects on physical health of older adults even after depressive symptoms remit. Moreover, this association is not explained by current levels of mental health functioning. Older adults may retain and accumulate physiological 'wear and tear' from prior depression even after a long period of full remission, which in turn leads to functional decline in physical health status. Supported by AG18367, MH52525 and VA-CSP.

Abstract 1697
GENDER DIFFERENCES PROMINENT IN LINKING SLEEP TO LONG-TERM MORTALITY AMONG THE ELDERLY
Jianping Zhang, MD, PhD, Psychiatry and Psychology, Cleveland Clinic Foundation, Cleveland, OH, Boa Kahana, PhD, Psychology, Cleveland State University, Cleveland, OH, Eva Kahana, PhD, Sociology, Case Western Reserve University, Cleveland, OH, Bo Hu, PhD, Quantitative Health Sciences, Leo Pozuelo, MD, Psychiatry and Psychology, Cleveland Clinic Foundation, Cleveland, OH

A-113
Purpose: Research on anxiety predicting mortality has yielded mixed results. Limitations of previous studies include mostly one-time assessment of anxiety, short follow-ups, and disregard for gender difference. Few studies examined the change in anxiety over time. To address these limitations, we explored gender differences in the association of changes in anxiety and long-term mortality among community dwelling elderly. Methods: At baseline, 1000 people (M age = 79.8 years, 65.8% women) had comprehensive psychosocial assessment, including an anxiety scale derived from the Positive and Negative Affect Scale. They were then assessed annually up to 12 years. Trajectories of changes in anxiety were modeled by a joint modeling method of repeated measures and survival data, traditional Cox regression, and individual growth curve analysis to predict mortality at follow-up. Five classes of covariates were controlled: demographic, health behavior, chronic disease, health and functional status, and cognitive impairment. Results: Total all-cause mortality rate, determined by the Social Security Death Index, was 71.2% at 15-year follow-up. In the whole sample, both baseline anxiety and increasing anxiety over time was predictive of higher mortality. However, there was an interesting interaction between gender and baseline anxiety/longitudinal change of anxiety scores in predicting mortality. For men, baseline anxiety was not predictive of anxiety, but increase in anxiety scores over time was associated with 45% higher risk of mortality, HR=1.45, p<.001, after adjusting for covariates. For women, lower baseline anxiety was predictive of higher mortality, HR=0.91, p<.001, after adjusting for covariates. In contrast, the change of anxiety scores over time was not significantly associated with mortality. Conclusion: The association between anxiety and mortality may be dependent on gender. Anxiety may be protective for women, potentially through increased health care utilization. In contrast, increasing anxiety over time is more detrimental to men. More research is needed to understand the mechanisms.

Paper Session: Interpersonal Processes and Health

Abstract 1603
PREGNATAL PSYCHOSOCIAL STRESS EXPOSURE AND NEUROENDOCRINE, IMMUNE AND METABOLIC FUNCTION IN HUMAN ADULTS
Sonja Entringer, PhD, Psychiatry & Human Behavior, University of California, Irvine, Orange, CA, Robert Kunsta, PhD, Dirk H. Hellhammer, PhD, Psychobiology, University of Trier, Trier, Germany, Edward L. Nelson, MD, Department of Medicine, University of California, Irvine, Irvine, CA, Stefan Wuest, PhD, Psychobiology, University of Trier, Trier, Germany, Pathik D. Wadhwa, PhD, MD, Psychiatry & Human Behavior, University of California, Irvine, Irvine, CA

Purpose of study: The importance of examining the developmental origins of health and disease is becoming increasingly recognized. Epidemiological studies in humans have uncovered robust associations between birth phenotype and subsequent risk for physical as well as mental disorders. It is unlikely that birth phenotype plays a causal role; it more likely represents a marker of intrauterine conditions that also program physiological processes in the developing fetus. Exposure to high levels of prenatal stress has been proposed as one such intrauterine condition. Subjects and methods: In the present study 40 healthy young adults whose mothers experienced severe stress during their pregnancy in form of major stressful life events (e.g. death of someone close, loss of pregnancy or newborn death) were compared to a group of young women of non-stressed women. Prenatal Stress (PS) group underwent extensive assessment of their metabolic, endocrine and immune function. Results: Adults who were exposed to such prenatal stressors exhibited significantly elevated 2h insulin (p=.01) and C-peptide levels (p=.03) after an oral glucose tolerance test. PS subjects also showed a bias for T-helper 2 (Th2) cytokine production due to an overproduction of IL-4 relative to IFN-γ after PHA stimulation (IFN-γ/IL-4 ratio 0.56 ± 14 vs. 1.2 ± 30, p = .04). Adrenocortical (cortisol) responses to psychosocial stress (TSS) were sex-specific; in men, PS was associated with a higher cortisol response, whereas in women PS was associated with a lower cortisol response (p = .01). After dexamethasone ingestion, PS men showed significantly higher, while PS women showed lower ACTH levels than CG men and women (p = .007). Conclusion: These findings are consistent with the notion of developmental programming of adult disease, and, to the best of our knowledge, our study is the first to suggest a direct link between prenatal stress and physiological disregulation in human adults.

Abstract 1525
LONGITUDINAL RELATIONSHIPS BETWEEN FAMILY ROUTINES AND BIOLOGICAL PROFILES IN YOUTH WITH ASTHMA
Hannah M. Schreier, B.A., Jennifer A. Munch, B.A., Edith Chen, PhD., Psychology, UBC, Vancouver, BC, Canada

We investigated how family routines and socioeconomic status (SES) relate to disease-relevant biological processes in youth with asthma. Family routines have been linked to physical health outcomes in youth, but most studies are cross-sectional and focus on clinical outcomes; hence it remains unclear whether family routines can predict biological profiles over time. In this study, 73 youth with asthma (ages 9-18, M = 12.59, 77% male) participated in 4 laboratory visits, each 6 months apart. Family routines were measured by administering the CHAOS scale and the Family Routines Inventory to a parent. SES was assessed through family income. At each visit, youth received a blood draw, and mitogen stimulated production of interferon gamma (IFNg) and interleukin 13 (IL13) was measured. After each visit, youths’ diurnal cortisol profiles were assessed through 8 saliva samples over 2 days. Hierarchical linear modelling (HLM) techniques were used to model changes across the 4 visits for corticosterone, IL13 and IL6. Related changes were related to family routines. Routines were significantly related to IL13 (B = -.12, p < .01) and IFNγ (B = -.07, p < .05) profiles over time, such that youth with greater family routines exhibited decreases in cytokine production over time. SES moderated this relationship. For example, the interaction of SES and family routines predicting cortisol output over time (B = .18, p < .01) revealed that low SES youth whose families nonetheless implemented consistent routines showed increases over time in daily cortisol output. Among high SES youth cortisol levels decreased over time regardless of family routines. Thus, family routines prospectively predict changes in immune and cortisol profiles in youth with asthma. More routines are related to better immune trajectories (decreasing cytokine production over time) and appear to be especially beneficial in children from low SES families (predicting increases in the anti-inflammatory hormone cortisol). Family routines may be important to integrate into daily asthma management.

Abstract 1543
INTIMACY AND DAILY CORTISOL LEVELS IN ROMANTIC COUPLES
Beate Ditzen, Ph.D., Clinical Psychology & Psychotherapy, University of Zurich, Institute of Psychology, Zurich, Switzerland, Christiane A. Hoppmann, Ph.D., School of Psychology, Georgia Institute of Technology, Atlanta, GA, Petra Klumb, Ph.D., Department of Psychology, University of Fribourg, Fribourg, Switzerland

Purpose of the Study: The aim of the study was to determine whether intimacy might be associated with reduced daily salivary cortisol levels in couples, thereby adding to the epidemiologic literature on reduced health burden in happy couples (1). Methods: A total of 51 dual-earner couples reported time spent on intimacy, stated their current affect quality, and provided saliva samples for cortisol estimation approximately every three hours in a one-hour time-sampling assessment. In addition, participants provided data on chronic problems of work organization. Summary of Results: Multilevel analyses revealed that intimacy was significantly associated with reduced daily salivary cortisol levels (B = -.32, p < .05). The significant interaction effect of intimacy with chronic problems of work organization in terms of their influence on cortisol levels (t = .699, P < .10), suggesting a buffering effect of intimacy on work-related elevated cortisol levels. Above this, the association between intimacy and cortisol was mediated by positive affect (t = .317, P < .01). Intimacy and affect together explained 7% of daily salivary cortisol variance. These results are in line with previous studies on the effect of intimacy on cortisol stress responses in the laboratory (2) as well as with epidemiologic data on health beneficial effects of happy marital relationships. Bibliography: 1. House JS, Robbins C, Metzner HL: The association of social relationships and activities with mortality: prospective evidence from the Tecumseh Community Health Study. Am J Epidemiol 116:123-40, 1982 2. Ditzen B, Neumann ID, Bodenmann G, von Dawans B, Turner RA, Ehleit U, Heinrichs M: Effects of different kinds of couple
interaction on cortisol and heart rate responses to stress in women. Psychoneuroendocrinology 32:565-574, 2007

Abstract 1232
MATTERS OF THE VARIABLE HEART: RESPIRATORY SINUS ARRHYTHMIA AS AN INDEX OF SEX DIFFERENCES IN SELF-REGULATION IN MARRIAGE
Timothy W. Smith, PhD, Matthew Cribbett, BS, Jill Nealey-Moore, PhD, Bert Uchino, PhD, Paula G. Williams, PhD, Psychology, University of Utah, Salt Lake City, UT, Julian F. Thayer, PhD, Psychology, Ohio State University, Columbus, OH

Marriage confers less health benefit for women than men, perhaps due to greater reactivity to marital conflict. This study explored a second mechanism potentially underlying this pattern - effects of marital strain on high frequency heart rate variability (HRV) or respiratory sinus arrhythmia (RSA). Resting RSA can reflect self-regulatory capacity, a fatigueable resource, whereas acute RSA increases can reflect self-regulatory effort. Young married couples (114 men; 114 women) performed a positive, neutral or negative marital interaction task, preceded and followed by resting RSA assessments. They then discussed a marital disagreement. A sex x condition interaction (p<.01) indicated that for women, but not men, negative interaction decreased resting RSA, F(2,106) = 7.32, p<.001, eta-sq = .10. Marital strain and conflict suggested this was due to women's efforts to manage their husbands' negative affect. In another sex x condition interaction (p<.01), valence of the prior task altered RSA responses to disagreement for women, F(2,106) = 10.62, p<.001, eta-sq = .17, but not men; after the negative task women displayed a significant increase in HRV during disagreement, but after neutral or positive tasks they displayed a significant decrease. This occurred during silent preparation for disagreement, and in speaking, listening and unstructured task phases (each p<.05), reducing potential respiratory artifacts. Hence, a prior negative interaction apparently evoked greater regulatory effort during marital disagreement for women but not men. Negative marital interactions can reduce women's resting HRV and perhaps their related capacity for self-regulation, effects that could adversely affect health. Therefore, women's greater efforts to manage marital quality could lead to reductions in HRV levels and capacity for self-regulation, effects that could produce smaller health benefit from marriage.

Paper Session: Treatment Effects

Abstract 1627
THE USE OF ALPHA-2 AGONIST IN THE PREVENTION OF DELIRIUM AFTER CARDIAC SURGERY
Jose R. Maldonado, MD, Psychiatry & Behavioral Sciences, Biomedical Ethics, Stanford University, Stanford, California, Ashley Wysong, MS, Yale School of Medicine, Stanford, California, Pieter van der Starre, MD, Anesthesia, Thaddeus Block, MD, Psychiatry & Behavioral Sciences, Stanford University, Stanford, California

Methods: Following approval from the Institutional Review Board and written informed consent, 90 patients undergoing elective cardiac surgery were included a prospective, randomized trial. Surgical procedures included mitral valve repair/replacements, aortic valve repair/replacements, ascending aortic replacements with AV preservation, and aortic aneurysm repair. All participants underwent a battery of neuropsychiatric tests prior to surgery and received general anesthesia consisting of a combination of inhalation, intravenous sedation and opiate. Patients were randomly assigned to three post-operative sedation protocols: dexmedetomidine, propofol, or midazolam, started intraoperatively at sternal closure. In the ICU all patients were mechanically ventilated until time of extubation was preceded and followed by resting RSA assessments. They then performed a positive, neutral or negative marital interaction task, and in speaking, listening and unstructured task phases (each p<.05), reducing potential respiratory artifacts. Hence, a prior negative interaction apparently evoked greater regulatory effort during marital disagreement for women but not men. Negative marital interactions can reduce women's resting HRV and perhaps their related capacity for self-regulation, effects that could adversely affect health. Therefore, women's greater efforts to manage marital quality could lead to reductions in HRV levels and capacity for self-regulation, effects that could produce smaller health benefit from marriage.

Abstract A1153
CONDITIONED PHARMACOTHERAPEUTIC RESPONSES IN PSORIASIS
Robert Ador, Ph.D., Psychiatry, Marygail Mercuro, M.D., Dermatology, University of Rochester, Rochester, New York, David F. Fiorentino, M.D., Alexa Kimball, M.D., Dermatology, Stanford University, Stanford, California, James Walton, R.S., Psychiatry, Derboro James, R.N., Dermatology, University of Rochester, Rochester, New York, Michael Davis, B.A., Valerie Ojha RN, Dermatology, Stanford University, Stanford, California

Based on a learning model of placebo effects, we hypothesized that psoriasis patients treated under a partial schedule of pharmacologic reinforcement would show greater amelioration of symptoms and less relapse than patients treated with the same (reduced) amount of drug dispensed under continuous reinforcement.

Forty-six patients met the criterion of a declined Psoriasis Severity Score (PSS) during a baseline period when "target" lesions received a standard dose of topical corticosteroid, 0.1% Aristocort A; only emollient was applied to control lesions. Thereafter, a Group C/100 (N=18) continued on a 100% reinforcement schedule with 100% of the baseline dose of drug; Group P25-50/100 (N=15) was treated with a partial (25 or 50%) reinforcement schedule with 100% of the baseline dose; control patients, C/25-50 (N=13), experienced continuous reinforcement with 25 or 50% of the baseline dose. "Relapse" (return to 2 PSS units of the initial score) in Groups C/100, P25-50/100 and C/25-50 was 22.2, 26.7 and 61.5%, respectively. Planned comparisons showed incidence and rate of relapse in Group P25-50/100 was lower than in control patients treated with the same total amount of steroid (X2=3.45, p<.05 and U=55.5, p<.05) and did not differ from patients receiving 2 or 4 times more drug. ANOVA of the difference between target and control PSSs (a within-subject, natural history of disease control) did not discriminate between Groups C/100 and P25-50/100, but Group P25-50/100 showed a larger decline in severity scores than Group C/25-50 (p<.05).

A partial schedule of reinforcement successfully maintained psoriasis patients with a cumulative amount of steroid that was relatively ineffective when administered under standard treatment conditions. It is not unlikely that drug treatment regimens that incorporate behavioral processes would apply to many other disorders.

Abstract A1320
A RANDOMIZED CLINICAL TRIAL OF THREE PSYCHOSOCIAL TREATMENTS FOR RHEUMATOID ARTHRITIS
Arthur J. Barsky, MD, Psychiatry, Brigham and Women's Hospital/Harvard Medical School, Boston, MA

We conducted a randomized clinical trial of 3 psychosocial interventions to palliate the symptoms and improve role functioning in rheumatoid arthritis. 139 adults with diagnosed rheumatoid arthritis were randomized to 1 of 3 group treatments: cognitive-behavior therapy (CBT) (n = 56), relaxation response training (RR)(n = 33), or rheumatoid arthritis education (EDU)(n = 50). A research battery was administered at baseline and 6 and 12 months following treatment. It included questionnaires on pain, depression, anxiety, and their related functional impairment. Results: Patients in the RR group showed a larger decrease in pain and other arthritis symptoms (p<.003) over baseline, effect size=.37. The effects did not differ significantly from the EDU group. Among patients in the RR group, arthritis symptoms improved by 18% (p=.03) over baseline, effect size=.27. In the RR group, arthritis symptoms improved by 15% (p=.03) over baseline, effect size=.27. And in the CBT group, arthritis symptoms improved by 13% (p<.03) over baseline, effect size=.30. These results did not differ significantly from the EDU group. The effects did not differ significantly from the EDU group. The effects did not differ significantly from the EDU group.
across the 3 groups. At 12 month follow-up, in the CBT group the primary measure of role impairment improved by 6% (p=0.03) vs baseline effects. In the EDU group, role impairment improved by 20% (p=0.02) over baseline, effect size = -0.41. In the EDU group, impairment improved by 23% (p=0.002) over baseline, effect size = -0.45. These effects did not differ significantly across the 3 groups. The 6-month follow-up results were similar in overall pattern, but showed somewhat larger treatment effects. There were no significant changes in rheumatoid arthritis severity and activity or in physical function in any of the 3 groups from baseline to follow-up. These findings suggest that 3 different psychosocial treatments to palliate rheumatoid arthritis symptoms and improve role functioning are roughly comparable in efficacy. Their treatment effects are generally moderate but significant, and are durable over the year following treatment.

Abstract 1236
CITALOPRAM IMPROVES METABOLIC RISK FACTORS AMONG HIGH HOSTILE ADULTS: RESULTS OF A PLACEBO-CONTROLLED INTERVENTION
Thomas W. Kamarck, Ph.D., Psychology, Matthew F. Muldoon, MD, Medicine, Roger F. Haskett, MD, Psychiatry, Stephen B. Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA, Janine D. Flory, Ph.D., Psychology, Queens College, City University of New York, Flushing, NY
Hostility is associated with a number of metabolic risk factors for cardiovascular disease, including waist-hip ratio, glucose and insulin resistance, lipid ratios, and triglycerides (Bunde & Suls, 2006). Along with hostility, many of these measures have also been shown to be associated with reduced central serotonergic function (Muldoon et al., 2000). Here we examine the effects of this serotonergic intervention associated with reduced central serotonergic function (Muldoon et al., 1999). Placebo-controlled intervention was successful in reducing hostility by self-report assessment (Kamarck et al., 2007). Here we examine the effects of this serotonergic intervention on metabolic risk factors. 159 healthy adults with elevated hostility scores (ages 30-50, 50% female, 16% nonwhite, no current Axis I disorder) were randomized to citalopram or placebo for a 2-month period. Maximum likelihood methods (via multilevel modeling) were used to facilitate accommodation of missing data. Treatment was associated with favorable changes in waist-hip ratio (condition by time (CxtInteraction (1, 128) = 8.0, p = 0.005), glucose (Cxt F (1, 142) = 4.61, p = 0.03), insulin (Cxt F (1, 142) = 4.58, p = 0.03), HDL cholesterol (Cxt (1,142) = 725, p<0.001), and triglycerides (Cxt F (1,142) = 4.55, p = 0.03); in each case, the active treatment group showed significant favorable changes over time and the placebo group did not. Treatment was also associated with a small but significant weight loss (Cxt (1, 136) = 10.82, p < 0.001), an effect which explained most but not all of these results: After adjustment for BMI changes, only the effects of citalopram on HDL cholesterol remained significant (Cxt (1,135) = 5.85, p < 0.02). On the other hand, adjusting for hostility changes did not reduce the effects of treatment on weight loss. Results suggest that the association between hostility and metabolic risk factors may be driven by independent serotonergic effects on hostility and weight maintenance, rather than by direct effects of hostility on metabolic risks. Results also have potential implications for treatment among individuals with psychosocial risk factors for CVD. This research was supported by NHLBI grant HL040962.

Paper Session: The Role of Psychological Factors in CVD
Abstract 1522
A PROSPECTIVE STUDY OF PTSD AND CARDIOVASCULAR MORTALITY AMONG US VETERANS
Joseph A. Boscarino, PhD, Center for Health Research, Geisinger Clinic, Danville, PA
Purpose: Recent studies suggest that posttraumatic stress disorder (PTSD) may result in cardiovascular diseases. However, these studies did not control for key confounders, did not prospectively examine disease outcomes, or were based on limited samples. Method: We prospectively examined cardiovascular disease (CVD) mortality among a national, random community sample of 4,328 male Vietnam veterans after military service. These men did not have a history of heart disease, electrocardiograms with abnormal Q-waves, advanced hypertension, and were not taking cardiovascular medications at baseline in 1985-1986. In Cox regressions, we assessed age, race, theater status, family history, obesity, smoking, lifetime alcohol abuse, antisocial personality disorder, lifetime depression, and history of combat exposure at baseline using the RR mortality analyses through to December 31, 2000. Results: Using 2 PTSD measures, a DSM-III measure (D-PTSD) and a one developed by Keane (K-PTSD), it was found that having PTSD at baseline was associated with CVD mortality at follow-up on both measures. Among theater and non-theater veterans combined, having PTSD was associated with CVD mortality for D-PTSD (HR = 2.25, p = 0.045) and approached significance for K-PTSD (HR = 1.74, p = 0.066). However, having higher PTSD symptoms on either scale at baseline was associated with CVD mortality, with a 5-point increase on either scale associated with a 20% increase in mortality risk (p-values < 0.05). Controlling for lifetime depression at baseline only slightly altered the results. Analyzed separately, the results for theater veterans were more pronounced, with an adjusted HR for D-PTSD = 2.58 (p = 0.025) and for K-PTSD = 2.73 (p = 0.022). Among theater veterans, controlling for lifetime depression or combat exposure made little difference in the results. Conclusion: Having PTSD was prospectively associated with CVD mortality among veterans free of CVD at baseline. This research suggests that CVD may be a significant outcome after military service among PTSD-positive veterans.

Abstract 1486
OVERCOMING THE INNER BARRIER: IMPACT OF FEAR OF DYING ON PREHOSPITAL DELAY IN MALE AND FEMALE ACUTE ST ELEVATION INFARCTION PATIENTS RESULTS FROM THE AUGSBURG MYOCARDIAL INFARCTION REGISTRY (AMIR)
Karl-Heinz Ladwig, Professor, Institute of Epidemiology, German Research Center for Environmental Health, Niebuhrh, Bavaria, Germany, Bernhard Koch, Assistant Professor, Internal Medicine I, Klinikum Augsburg, Augsburg, Bavaria, Germany, Heiko Hymer, Master, German Research Center for Environmental Health, Institute of Epidemiology, Neuberg, Bavaria, Germany, Jens Baumert, PhD, Institute of Epidemiology, German Research Center for Environmental Health, Neuberg, Bavaria, Germany, Margret Heier, MD, KORA, Klinikum Augsburg, Augsburg, Bavaria, Germany, Wolfgang von Scheidt, Professor, Internal Medicine I, Klinikum Augsburg, Augsburg, Bavaria, Germany, Christa Meisinger, Assistant Professor, MONICA/KORA Myocardial Infarction Registry, Hospital of Augsburg, Augsburg, Bavaria, Germany
Introduction: Early access to invasive cardiac treatment is essential for survival after acute myocardial infarction (AMI). Patient caused latency is the most important component of pre-hospital delay - though its determinants remain obscure. We aimed to assess the impact of fear of dying in the context of acute somatic symptoms on delay time in patients with ST-segment elevation myocardial infarction (STEMI). Methods: In 2,774 STEMI patients of the Augsburg Myocardial Infarction Registry (AMIR) in the time from 1985-2004 who survived &ge; 24 hours after hospital admission, a standardized bedside interview was obtained. Patients with in-hospital MI and resuscitation were excluded from the analysis. Multiple logistic regression analysis controlling for age and acute somatic symptoms was carried out for men and women separately. Subjects delaying &ge; 120 min were considered as early responders. Results: Mean delay time was 188.5 min (IQR: 98-542) for women and 154.0 min (IQR: 85-497.25) for men (p = 0.0003). A total of 474 (41%) male patients and 219 (32%) female patients were early responders. Fear of dying was reported by 220 (32%) men and associated with a shorter median delay time (122 min/175min, p < 0.0001) and 274 (40%) of women (159 min/232min; p = 0.0001). Among somatic factors, angina pectoris was most prevalent (m: 95%; f: 94%), however did not affect delay time. In the age-adjusted model, fear of dying was significantly predictive for early arrival in women (OR 1.41 95% CI 1.01-1.95; p = 0.04) and men (OR 1.57 95% CI 1.30-1.90; p < 0.001). In the multivariate model, the fear factor lost significance in women (OR 1.20 95% CI 0.82-1.74; p = 0.35) and remained of minor significance in men (OR 1.23 95% CI 1.00-1.52; p = 0.05). In the total adjusted model, nausea yielded the major impact for women (OR 1.95, p = 0.0009) and sweating (OR 1.62; p = 0.0001) for men. Angina pectoris had no measurable impact on early arrival. Conclusions: Fear of dying exhibits a strong impact on the AMI patient decision however its importance is attenuated by somatic symptoms. More precise delineations of circumstances surrounding the acute coronary event are warranted.
Patient expectations have been shown to influence recovery processes in a number of medical conditions. However, past research has primarily focused on functional outcomes such as return to work rather than on subsequent physical health. The present study was designed to extend this work by investigating the ability of expectations to predict mortality while controlling for baseline disease severity as well as potentially important psychological and social variables. Cardiac patients undergoing diagnostic angiography between 1992 and 1996 were administered psychological measures if they had established coronary disease (n=2825). They were followed until the end of 2002, when 978 had died with 66% of the deaths from coronary disease. An 18-item scale measuring patient expectations regarding recovery and resumption of a normal lifestyle was used to predict mortality. The basic model used survival analysis and was controlled for gender, age, and clinical indicators of disease severity. The expectations scale was highly related to survival (p<.0001), with those in the most pessimistic quartile having twice the mortality risk than those in the most optimistic quartile. This association was only modestly reduced and remained significant (p = .0002) in a second model that also controlled for baseline education, income, depressive symptoms, and functional status. These findings demonstrate the magnitude of the impact of patient expectations and illustrate the independence of this effect from other social and psychological conditions. Related research on dispositional optimism and other work on recovery expectations have shown that optimism is associated with fewer stress responses with lower sympathetic reactivity as a result. It may be useful to more systematically assess patient perceptions of their prognosis as part of clinical evaluations.

### Abstract 1226

**HAPPINESS AND STRESS INFLUENCE SUSCEPTIBILITY TO CARDIAC EVENTS IN PATIENTS WITH LONG QT SYNDROME**

Richard D. Lane, M.D., Ph.D., Psychiatry, University of Arizona, Tucson, AZ, Harry T. Reis, Ph.D., Psychology, Derick R. Peterson, Ph.D., Biostatistics and Computational Biology, Wojciech Zareba, M.D., Ph.D., Arthur J. Moss, M.D., Medicine, University of Rochester, Rochester, NY

Growing evidence indicates that life stress increases risk for fatal arrhythmias in susceptible individuals. However, resilience or protective factors have received less attention. We studied 38 patients (89% female; mean age 33 years) with Long QT Syndrome, a genetically based disorder that puts affected individuals at risk for sudden cardiac death. In a within-subjects paradigm, we administered a case-crossover interview by telephone to determine whether the circumstances preceding a prior cardiac event (syncpe, aborted cardiac arrest or implanted defibrillator discharge) during the previous 3 years differed from those preceding a prior control occasion (next to last birthday). Multivariable conditional logistic regression analysis showed that during the 24-hour period preceding the cardiac event compared to the day before the control occasion, peak happiness was decreased (p<.04), psychological stress was increased (p<.04), and other work on recovery expectations suggest that coping behaviors such as treatment adherence may operate as a mechanism. Another hypothesis is that positive expectations are associated with fewer stress responses with lower sympathetic reactivity as a result. It may be useful to more systematically assess patient perceptions of their prognosis as part of clinical evaluations.

### Abstract 1727

**HOSTILITY AND CYCINISM ARE ASSOCIATED WITH REDUCED CELL MEDIATED IMMUNE FUNCTION AND CIRCULATING CELLULAR ADHESION MOLECULES BUT NOT INFLAMMATORY CYTOKINES IN HEART FAILURE AND HEALTHY INDIVIDUALS**

Laura S. Redwine, Ph.D., Medicine, VMRF and University of California, San Diego, CA, Steve Carter, B.S., Medicine, Sarah Linke, B.S., Suzi Hong, Ph.D., Douglas Dejardin, B.S., Thomas Rutledge, Ph.D., Psychiatry, University of California, San Diego, CA, Barry Greenberg, M.D., Medicine, Paul J. Mills, Ph.D., Psychiatry, University of California, San Diego, CA

Hostility and cynicism are associated with coronary heart disease and alterations in some components of cell mediated immunity. Immune cell chemotaxis and cellular adhesion molecule (CAM) expression are important for lymphocyte trafficking and host immune surveillance. CAMs such as selectin are linked with activation of chemokinesis to chemokines and migration of immune cells into tissue intima. Optimal cellular immunity is important in HF since there is increased risk for pneumonia/influenza hospitalizations or death. This study examined associations of hostility and cynicism with lymphocyte chemotaxis, and p-selectin, IL-6, CRP and TNF-alpha levels in HF patients and controls. HF patients (N=47; NYHA Class II-IV) and healthy controls (N=50; Healthy Medley Scale average 19) were studied. Lymphocytes were examined in vitro for chemotaxis to the chemokines FMLP (a bacterial peptide) and SDF-1 (stromal cell-derived factor-1) and the catecholamine isoproteronol (ISO). P-selectin, IL-6, TNF alpha, and C-reactive protein were measured in plasma (ELISA). Regression analyses revealed hostility was significantly negatively associated with baseline chemotaxis to SDF-1 (p = 0.035) and marginally with FMLP (p = 0.056) and ISO (p = 0.07) and with p-selectin (p = 0.038) levels, after controlling for age and HF status. Cynicism was significantly negatively associated with chemotaxis to FMLP (p = 0.03), SDF-1 (p = 0.033), and marginally with ISO (p = 0.06) and with p-selectin (p = .047). There were no significant associations between hostility or cynicism and IL-6, TNF-alpha or CRP. The findings indicate that individuals with higher hostility or cynicism may have reduced cellular immune responsiveness to immune stimuli as shown by the reduced response to chemokines and lower circulating p-selectin levels. This profile may indicate increased vulnerability to infectious diseases and reduced ability to repair cardiac tissue.

### Abstract 1648

**SUCCESSFUL HOSTILITY REDUCTION TREATMENT DOES NOT ALTER CARDIAC AUTONOMIC CONTROL**

Richard P. Sloan, Ph.D., Psychiatry, Columbia University Medical Center, New York, NY, Peter A. Shapiro, M.D., Psychiatry, Columbia University, New York, NY, Ethan E. Gorestein, Ph.D., Flice A. Tager, Ph.D., Psychiatry, J. Thomas Bigger, MD, Medicine, Emilia Bagiella, Ph.D., Biostatistics, Columbia University Medical Center, New York, NY, Paula S. McKinley, Ph.D., Psychiatry, Columbia University, New York, NY, Michael M. Myers Ph.D., Psychiatry, Columbia University Medical Center, New York, New York, 10032

In light of evidence that hostility and anger are risk factors for coronary artery disease (CAD), that hostility is associated with dysregulation of autonomic nervous system (ANS) control of the cardiovascular system, and that autonomic dysregulation is associated with coronary disease risk, it is plausible to hypothesize that a mechanism by which hostility promotes the development of CAD is through the stress-induced elevation in hostility and anger is effective in reducing these negative personality characteristics, it is possible that a CBT intervention to reduce hostility may enhance autonomic control of the heart. In a randomized controlled trial, we tested the hypothesis that CBT to reduce hostility and anger would enhance cardiac autonomic regulation, measured as RR interval variability (RRV). 158 participants high in hostility as measured by the Spielberger Trait Anger and Cook Medley Hostility inventories were randomized to a 12-week active treatment or wait list control conditions. RRV derived from 24-hour ECG recordings was measured at baseline and after 12 weeks. Data were analyzed according to intention to treat principles, using a random-effect model to determine the impact of treatment group on RRV after correcting for important covariates. A significant treatment group x time interaction indicated that hostility (F2,140)=4.47, p < .05 and anger
were lower after treatment compared to baseline only in the treatment group. However, no index of RRV was altered by CBT. Across all participants, Pearson correlations between changes in hostility and anger and changes in RRV ranged from .10 to -.14. As high dropout rates were limitations for these analyses, the results raise important questions about associations between hostility and cardiac autonomic regulation in the pathophysiology of CAD.

Abstract 1233
PERCEIVED STRESS, ANXIETY, DEPRESSION, AND ANGER RELATE TO GREATER INFLAMMATION IN HIV+ ADULTS TREATED WITH COMBINATION DRUG THERAPY
Jeffrey Greeno, PhD, Duke Integrative Medicine, Duke University Medical Center, Durham, NC, Maria Llabre, PhD, Barry Harwitz, PhD, Behavioral Medicine Research Center, University of Miami, Miami, FL
This study examined cross-sectional relationships between psychological attributes and inflammatory biomarkers in a sample of 200 HIV+ adults on combination antiretroviral therapy (mean age = 41±7 yrs; 66% men; 89% ethnic minority). Multivariate regression models adjusted for demographic and HIV-disease related covariates revealed that individual measures of perceived stress, depressive symptoms, and anxiety were significantly associated with greater circulating interleukin [IL]-6 level (Perceived Stress Scale [PSS]: beta=.16; Beck Depression Inventory [BDI]: beta=.15; Profile of Mood States [POMS]-Depression Subscale: beta=.19; POMS-Anxiety Subscale: beta=.15; Impact of Event Scale [IES]: beta=.17; all p-values<.05). A trend toward increased IL-6 was associated with greater anger (POMS-Anger Subscale: beta=.15; p=.08). Two composite scales of general psychological distress were also associated with greater IL-6: (1) a linear combination of z-scores for the PSS, BDI and IES (beta=.19, p<.05), and (2) the POMS Total Mood Disturbance summary score (beta=.16, p<.06). Associations between psychological variables and IL-6 remained significant when controlling for HIV viral load detectability, a benchmark of current disease management. No psychological variables related directly to C-reactive protein (CRP). Mediation analysis revealed that greater psychological distress did, however, relate to higher CRP indirectly, as a function of increased IL-6 (beta for indirect effect=.08, p<.05). Findings suggest that multiple psychological attributes are independently related to greater systemic inflammation in HIV-infected adults treated with combination drug therapy. Clinical implications include potentially increased susceptibility to faster HIV disease progression and cardiovascular pathology for HIV/AIDS patients with higher levels of psychological distress.

Abstract 1376
IS INFLAMMATION AN ACCEDENT OR A CONSEQUENCE OF DEPRESSIVE SYMPTOMS?: STUDY OF WOMEN'S HEALTH ACROSS THE NATION
Karen A. Matthews, PhD, Psychology and Psychiatry, Laura L. Schott, PhD, Public Health, Joyce Bromberger, PhD, Epidemiology, Jill M. Cyranowski, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Susan Everson-Rose, PhD, Medicine, University of Minnesota, Minneapolis, MN, MaryFran Sowers, PhD, Epidemiology, University of Minnesota, Minneapolis, MN
Depressive symptoms may contribute to coronary heart disease via chronic inflammation; alternatively, hyperactivity of innate immune responses may lead to depressive symptoms. We examined this bidirectional relationship in a 7 year longitudinal study of 1814 middle-aged women initially 42-51 years and free of cardiovascular disease (CVD) or diabetes. Annually women completed the CES-Depression (CES-D) scale and reports of health behaviors, mental health, and medical history; blood was assayed for C-reactive protein (CRP). Basic mixed models adjusted for baseline age, site, race, education, time between exams, menopausal status, and hormone therapy use; fully adjusted models also included smoking, body mass index, waist circumference, physical activity, and new CVD and medications. Models predicting CRP from CES-D scores included prior CRP, and predicting CES-D from CRP included prior CRP. Time-varying covariates were from the same exam as the predictor variable. Basic models showed that CES-D scores predicted subsequent CRP levels, beta = .012, p = .03, and that CRP predicted subsequent CES-D scores, beta = .041, p = .009. Fully adjusted models showed similar patterns: CES-D predicting CRP, beta = .012, p = .10, and CRP predicting CES-D, beta = .046, p = .01. These analyses provide evidence that the relationship between depressive symptoms and inflammation may be bidirectional in women at mid-life. Supported by National Institute on Aging, the National Institute of Nursing Research and the NIH Office of Research on Women's Health (Grants NR004061, AG012505, AG012535, AG012531, AG012559, AG012546, AG012553, AG012554, AG012495).

Abstract 1362
ASSOCIATION BETWEEN DEPRESSION AND INFLAMMATION IN A LARGE SAMPLE OF KIDNEY TRANSPLANTED PATIENTS
Ulla Seefeldt, MD, Maria E. Czira, MD, Aneet Lindner, MD, Nora Pinter, Andrea Kelemen, Institute of Behavioral Sciences, Semmelweis University, Budapest, Hungary, Dora M. Zalai, MD, Sidney H. Kennedy, Professor, Department of Psychiatry, University Health Network, University of Toronto, Toronto, Ontario, Canada, Istvan Macsi, MD, PhD, Marta Novak, MD, PhD, Miklos Z. Molnar, MD, PhD, Institute of Behavioral Sciences, Semmelweis University, Budapest, Hungary
Malnutrition and chronic inflammation are highly prevalent in patients with chronic kidney disease. The combination of these conditions is called Malnutrition Inflammation Complex Syndrome (MICS). The purpose of our study was to assess the association between markers of MICS and depression in a large sample of kidney transplanted patients. 986 kidney transplanted patients followed at the outpatient transplant clinic of the Semmelweis University Budapest were asked to participate. Depression was measured with the Center for Epidemiological Studies- Depression (CESD) scale. Malnutrition and inflammation was assessed by measuring C-reactive protein (CRP), ferritin, interleukin-6 (IL-6) and by a standardized scoring system (MICS- score). Mean age was 51±13 years, 57% was male, median time since transplantation was 72 months. The median CESD score was 11, the sample scored 18 points or higher on the CESD. The CESD score was weakly but significantly correlated with renal function (r = -0.144), serum hemoglobin (r = -0.120), age (r = 0.106), CRP (r = 0.077) and IL-6 (r = 0.161), p<.05 for all. There was a moderately strong correlation between the MICS score and the CESD score (r = 0.302, p<0.001). In a multivariate linear regression model, the MICS score was an independent predictor of the CESD score (ß = 0.306, p<0.001) after statistical adjustment for age, gender, renal function and social status. Qualitatively similar independent association was found in a logistic regression model with depression as the dependent variable. Our study reflects an association between depression and inflammation in a large sample of patients after kidney transplantation.

Abstract 1500
A PROSPECTIVE EVALUATION OF THE DEPRESSION-INFLAMMATION RELATIONSHIP: IS DEPRESSION A CAUSE OR A CONSEQUENCE?
Jesse C. Stewart, PhD, Kevin L. Rand, PhD, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN, Matthew F. Muldoon, MD, Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, Thomas W. Kamarck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Jeffrey Greeson, PhD, Duke Integrative Medicine, Duke University Medical Center, Durham, NC
Cross-sectional studies have found that individuals with depressive disorders or symptoms have higher levels of inflammatory markers relevant to coronary artery disease (CAD), such as interleukin-6 (IL-6) and C-reactive protein (CRP). However, because the depression-inflammation link has not yet been examined in prospective studies, the directionality of this relationship is unclear. Therefore, we evaluated the longitudinal associations between depressive symptoms and both serum IL-6 and CRP among 263 initially healthy, older adults (48% male, 87% white, mean age=61 years) enrolled in the Pittsburgh Healthy Heart Project. At baseline and the 6-year follow-up, participants completed the Beck Depression Inventory-II (BDI-II) and underwent blood draws for the assessment of serum IL-6 (measured by enzyme-linked immunosorbent assay) and serum CRP (measured by a particle enhanced immunonephelometric assay). Separate path analyses were performed for IL-6 and CRP to simultaneously examine whether
baseline BDI-II score predicts 6-year inflammatory marker level (adjusted for baseline) and whether baseline inflammatory marker level predicts 6-year BDI-II score (adjusted for baseline). For both path models, the fit indices demonstrated good model fit. Results of the IL-6 path analysis revealed that baseline BDI-II (Beta=0.15, p=0.01) was a predictor of 6-year IL-6, even after adjustment for demographic factors and potential confounders (body mass, blood pressure, cholesterol, triglycerides, glucose, insulin, smoking, alcohol use, activity level, diabetes, rheumatologic condition). Conversely, baseline IL-6 (Beta=0.03, p=0.60) was not associated with 6-year BDI-II. In the CRP path analysis adjusted for demographic factors and potential confounders, baseline BDI-II (Beta=0.09, p=0.13) was not a predictor of 6-year CRP, and baseline CRP (Beta=0.08, p=0.19) was not a predictor of 6-year BDI-II. Altogether, our results suggest that depressive symptoms precede and may augment inflammatory processes relevant to CAD. Our findings are consistent with the notion that inflammation may be a mechanism that explains, in part, the influence of depression on CAD. This research was supported by NIH HL56346.

Abstract 1361
THE ASSOCIATION BETWEEN FATIGUE, VITAL EXHAUSTION AND INFLAMMATORY MARKERS IN CHRONIC HEART FAILURE
Otto R. Smith, MSc, Susanne S. Pedersen, PhD, Johan Denollet, PhD, Medical Psychology, Tilburg University, Tilburg, Noord Brabant, the Netherlands

The aim of this prospective study was to examine whether fatigue and vital exhaustion predict levels of inflammation at 12-month follow-up in chronic heart failure (CHF). 127 patients completed the Fatigue Assessment Scale (general fatigue), the Dutch Exertion Fatigue Scale (exertion fatigue), and the Maastricht Questionnaire (MQ, vital exhaustion), at baseline. Serum levels of tumor necrosis factor (TNF)-alpha, soluble TNF-alpha receptors 1 (sTNF-R1) and 2 (sTNF-R2), interleukin 1 receptor antagonist (IL-1ra), and neopterin were measured by ELISA at 12 months. Exertion fatigue was associated with both sTNF-R1 (r=0.26, p<0.003) and sTNF-R2 (r=0.26, p<0.003), whereas vital exhaustion was only associated with sTNF-R1 (r=0.27, p<0.002). General fatigue was not associated with any of the biomarkers. After controlling for gender, age, etiology of CHF, and left ventricular ejection fraction, the associations found in univariable analysis remained significant (exertion fatigue: BetasTNF-R1=.25, p<.008; BetasTNF-R2=.23, p=.01 - vital exhaustion: BetasTNF-R1=.26, p=.003). Principal component analysis on the MQ resulted in three factors: general fatigue, depressive symptoms, and sleep difficulties. Depressive symptoms were significantly associated with sTNF-R1 (r=0.32; p<0.001) only. The other MQ subscales did not correlate with cytokine levels. Entering exertion fatigue and depressive symptoms simultaneously in a multivariable model revealed that depressive symptoms (Beta=.26, p=.006) were independently associated with sTNF-R1, and exertion fatigue (Beta=.21, p=.03) was independently associated with sTNF-R2. In conclusion, (1) exertion fatigue, but not general fatigue, was associated with increased inflammation in CHF, and (2) the effect of vital exhaustion on sTNF-R1 should primarily be attributed to depressive symptoms, whereas exertion fatigue was primarily associated with sTNF-R2. Future studies are warranted to investigate the complex interactions between fatigue, vital exhaustion, cytokines, and CHF prognosis.

Abstract 1626
THE PSYCHONEUROIMMUNOLOGY OF FATIGUE IN ADOLESCENT GIRLS
Make ter Wolbeek, PhD, Laboratory of Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, The Netherlands, Lorenz J. van Doornen, PhD, Health Psychology, Utrecht University, Utrecht, The Netherlands, Annemieke Kavelaars, PhD, Cobi J. Heijnen, PhD, Laboratory of Psychoneuroimmunology, University Medical Center Utrecht, Utrecht, The Netherlands

Severe fatigue is reported by 20.5% of adolescent girls in the normal population. These girls often complain of comorbid symptoms which are also observed in chronic fatigue syndrome (CFS) patients, such as unrefreshing sleep, pain and cognitive and emotional problems. In a multidisciplinary longitudinal study we investigated whether severe fatigue is related to neuro-endocrine and immunological dysfunctions as previously observed in adolescent CFS patients. Groups of 67 severely fatigued and 61 non-fatigued otherwise healthy girls (age resp. 15.2±1.4 and 14.7±1.6) were selected and blood was collected to determine plasma cortisol levels, mitogen-induced cytokines and glucocorticoid receptor (GR) sensitivity of leukocytes on three occasions using repeated measures analysis. The results showed that plasma cortisol was higher in fatigued than in non-fatigued participants (p<.05). The ratios interferon (IFN)-gamma/IL-4 and IFN-gamma/IL-10 and actual levels of CD2/CD28-induced interleukin (IL)-10 and were only deviant in those severely fatigued participants who also had high depression and/or anxiety scores (p<.01 and p<.05). The sensitivity of GR in T-lymphocytes of severely fatigued girls with symptoms for at least one year (persistently fatigued girls) showed similarities with GR sensitivity of cells of CFS patients (p<.05). An important result of our longitudinal study was that cytokine production and GR sensitivity fluctuated across seasons but individual stability was high. We conclude that cortisol production is affected in severely fatigued adolescents and that immunological and GR sensitivity deviations occur in distinct subgroups of severely fatigued adolescents. We hypothesize that these latter groups have an increased risk to develop fatigue-related illness, such as CFS.
The mission of the American Psychosomatic Society is to promote and advance the scientific understanding and multidisciplinary integration of biological, psychological, behavioral and social factors in human health and disease, and to foster the application of this understanding in education and improved health care.