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

Wednesday, March 1
8:00-5:00 Neuroscience Preconference Workshop
2:00-5:00 Career Development, Advanced Statistics, and Best Practices Preconference Workshops
5:30-6:15 Welcome and Announcements; Data Blitz; Awards
6:15-7:15 Cocktail Reception and Citation Poster Session (p. A31 – A44)
7:15-8:15 Just Desserts Fundraising Event (by invitation)

Thursday, March 2
7:00-8:00 Statistics Breakfast Roundtable
8:15-9:00 President’s Award Lecture: Hugo D. Critchley
9:00-9:45 Herbert Weiner Early Career Award: Mary A. Whooley
9:45-10:00 Break
10:00-11:30 Symposium: Mindfulness-Based Interventions In Psychosomatic Medicine: A Generic Approach to Help Patients Cope with Chronic Disorder? (p. A2 – A3)
Symposium: Salivary Alpha Amylase: Novel Biomarker of Stress or a Marker in Search of Meaning? (p. A4 – A5)
11:30-12:45 Lunch on your own / Roundtable Lunches / Psychosomatic Medicine Editorial Board Meeting
12:45-2:45 Invited Symposium: The Role of the Brain in Mediating the Established Link Between Depression and Cardiovascular Mortality
Symposium: It's Not The Genes or The Environment, Stupid; It's The Genes and the Environment, Stupid: Gene By Environment Interactions, Psychosocial Risk Factors and Biobehavioral Mechanisms (p. A5 – A6)
Paper Session: Cancer & HIV: Biological, Psychological and Social Correlates (p. A20 – A21)
2:45-3:00 Break
3:00-4:00 Symposium: Recent Clinical Trials for Depression in Patients with Coronary Heart Disease (p. A6 – A7)
Symposium: Breathing Training as a Psychobiological Intervention for Anxiety Disorder and Organic Disease (p. A7 – A8)
Paper Session: Hormonal and Hemotologic Responding: Dynamics and Predictors (p. A21 – A22)
4:00-4:15 Break
4:15-5:15 Symposium: Racism: Risk Factors, Psychosocial Mechanisms, and Cardiovascular Correlates (p. A8 – A9)
Symposium: The Use of Non-Invasive Electrogastrography (Egg) in Studies of Brain-Gut Interactions: Physiological Basis, Psychophysiological Relationships, and Clinical Applications (p. A9 – A10)
5:15-6:30 Poster Session I (p. A44 – A67)
6:30-7:30 Mentor / Mentee Reception
7:30 Past Leaders Dinner Meeting (by invitation)

Friday, March 3
7:00-8:00 Statistics Breakfast Roundtable
8:00-8:50 President’s Address: Richard D. Lane, President, APS
9:00-11:00 Invited Presentation: Brain, Mind, Body and Soul: At the Frontiers of Psychosomatic Medicine
11:00-11:15 Break
11:15-12:15 Invited Presentation: Functional Neuroanatomy and Psychophysiology of Emotion Regulation
12:15-1:30 Lunch on your own / Roundtable Lunches
1:30-3:30 Invited Symposium: Brain Mechanisms of Pain from a Psychosomatic Medicine Perspective
Symposium: Sleep in Psychosomatic Research (p. A11 – A12)
Paper Session: Clinical CVD: Biological, Psychological and Social Correlates (p. A22 – A24)
3:30-3:45 Break
3:45-5:15 Symposium: The Psychoneuroimmunology of Pregnancy (p. A12 – A13)
Symposium: John Henryism and Health Outcomes Among African-Americans (p. A13 – A14)
Paper Session: CVD: Risk Factors (p. A24 – A26)
5:15-6:30 Poster Session II (p. A68 – A92)
6:30-9:00 Council Dinner Meeting

Saturday, March 4
7:30-9:00 2007 Program Committee Meeting
9:00-9:45 Business Meeting
10:00-10:50 Patricia R. Barchas Award Lecture: Sheldon Cohen
11:00-11:50 Alvin P. Shapiro Award Lecture: C. Noel Bairey Merz
12:00-1:15 Lunch on your own / Roundtable Lunches
1:15-3:15 Paper Session: Depression and Disease (p. A26 – A28)
Symposium: Neuroimaging of Autonomic-Cardiac Reactivity in Health and Disease (p. A14 – A16)
Symposium (one hour): Theory to Practice in Expressive Writing Interventions (p. A17)
3:15-3:30 Break
3:30-5:00 Symposium: Prolonged Stress-related Activation and Health (p. A18 – A19)
Paper Session: Biological and Genetic Pathways in Disease (p. A28 – A29)
Paper Session: Biological, Social and Psychological Correlates of Disease Outcomes in Infancy Through Adolescence (p. A29 – A31)
5:00-6:15 Poster Session III (p. A92 – A113)
7:00-12:00 Dinner and Entertainment
SYMPOSIUM SESSIONS

SYMPOSIUM 1220

MINDFULNESS-BASED INTERVENTIONS IN PSYCHOSOMATIC MEDICINE: A GENERIC APPROACH TO HELP PATIENTS COPE WITH CHRONIC DISORDER?
Paul Grossman, Psychosomatic & Internal Medicine, University of Basel Hospital, Basel, Switzerland, Christopher Coe, Department of Psychology, University of Wisconsin-Madison, Paul Grossman, Psychophysiology Research Laboratory, Dept. of Psych, University of Basel Hospital, G. Alan Marlatt, Psychology, University of Washington, Linda E. Carlson, Oncology/Psychology, University of Calgary

Mindfulness-based interventions potentially offer a radically novel but ancient paradigm for helping those affected by a range of psychosomatic, psychiatric or primarily physical disorders. Emphasis is upon the development of nonjudgemental awareness of sensory, perceptual, emotional and cognitive events and processes. This inherently empirical but introspective practice may be likened to the scientific method of naturalistic observation. Current assumptions underlying mindfulness approaches are that enhanced, nonjudgmental awareness of perceptible phenomena may increase accuracy of perception of internal and external circumstances, improve sense of control and efficacy, and engender more vital experience of life, despite impairment or disability. The purposes of the symposium are to discuss mindfulness, present evidence of the usefulness of mindfulness-based approaches for 3 disparate disorders, and consider a rationale for mindfulness-based interventions as generic and cost-effective strategies to aid individuals in coping with diverse chronic physical and mental problems. Linda Carlson compares psychological benefits and spirituality among cancer patients who underwent mindfulness-based stress reduction (MBSR) vs. an established arts-based intervention. G. Alan Marlatt reports a case-control study of incarcerated prisoners, which indicated that a prison mindfulness program could reduce alcohol and drug use 3 months after inmate release. Christopher Coe presents 6- and 18-month effects of MBSR upon pain, disability, sleep and affect among women suffering from fibromyalgia. In another fibromyalgia study, Paul Grossman examines MBSR benefits upon pain, quality of life and psychological adjustment, extending findings to a 3-year follow-up. Results of investigations are critically discussed in terms of their support for recent claims about the value of mindfulness as a psychosomatic intervention.

Individual Abstract Number:1495
MINDFULNESS-BASED STRESS REDUCTION (MBSR) COMPARED TO CREATIVE ARTS IN CANCER OUTPATIENTS
Linda E. Carlson, Oncology/Psychology, University of Calgary & Tom Baker Cancer Centre, Sarah Cook, Laura Lansdell, Psychology, Michael Speca, Oncology, University of Calgary, Eileen Goody, Psychosocial Resources, Tom Baker Cancer Centre, Sheila Garland, Psychology, University of Calgary

The MBSR program at the Tom Baker Cancer Centre has been in operation since 1996, with over 700 program participants since that time. Evaluation of the program compared to wait-list control groups has shown benefit, and pre-post data has been routinely collected on program participants. However, no published studies have yet compared MBSR to an active control group in cancer patients. Here we do so with an arts-based program known at Healing through the Creative Arts (HA). We have also begun to explore the potential for these programs to enhance positive psychological growth and spirituality. Cancer outpatients with a variety of diagnoses participated in either a MBSR (n=28) or HA (n=34) program, and were assessed pre- and post-intervention, with both quantitative and qualitative methods. The majority of participants were female, married and had breast cancer. Participants in both groups reported significantly over time on overall symptoms of stress (p<.001) and mood disturbance (p<.01), and trended towards improvements in post-traumatic growth (p=.05). Participants in the MBSR group showed more improvement than those in HA on measures of spirituality (p<.001), depression (p<.05) and anger (p<.05). Personal interviews with participants from each program helped to elucidate the effects of each program on spirituality and benefit finding in the cancer experience. Values are compared to those of past program participants. These programs may help to enhance post-traumatic growth and benefit finding, as well as decrease psychological symptomatology in cancer patients. MBSR may be more effective than HA for enhancing spirituality. Participants in each program were able to describe the process by which program participation promoted personal growth and spirituality.

Individual Abstract Number:1422
MINDFULNESS MEDITATION IN THE TREATMENT OF ADDICTIVE BEHAVIORS WITHIN A PRISON POPULATION
G. Alan Marlatt, Psychology, University of Washington

This presentation will describe the results of a study conducted in a prison setting (North Rehabilitation Facility in Seattle) indicating that inmates who volunteered to participate in a 10-day meditation retreat showed significant improvements 3-months after release, compared to inmates who did not take the course. The retreat consisted of a course in Vipassana meditation originally developed by S.N. Goenka. Mindfulness meditation is a meta-cognitive coping skill that can help people with addiction problems cope more effectively with urges and cravings, and become more tolerant of negative emotions that may trigger relapse. Results revealed significant reductions in alcohol and other drug use, as well as lower levels of depression and anxiety, for inmates who participated in the retreat, compared to inmates who did not take part in the retreat in this case-matched control design. Significant treatment-by-time interactions were obtained (p<.05 and above) at the 3-month follow-up for the following dependent measures (all assessed on a 90-day post-release assessment period): weekly and peak use of cocaine, alcohol, and marijuana. Significant reductions in measures of anxiety and depression were also found for the same time period. New methods to counter addictive craving and urges will also be described, including 'urge surfing'(imagine the urge as an ocean wave that one can learn to 'surf' it in balance without being 'wiped out by it).

Individual Abstract Number:1295
BENEFITS OF MEDITATION AND STRESS REDUCTION IN FIBROMYALGIA
Christopher Coe, Psychology, University of Wisconsin-Madison

The benefits of Mindfulness Based Stress Reduction (MBSR, Kabat-Zinn, 1990), which incorporates training in both meditation and outlook, were evaluated in fibromyalgia (FM) patients. 69 women (21-49 years of age) were recruited, including those assigned to training (N=42) and matched FM women who received only prevailing care (N=27). Diagnosis was confirmed by tender point (TP) exam. Pain symptoms, disability, sleep, and cognitive and emotional status were measured prior to the 2-month MBSR course and then at 6-month intervals for 1.5 years. Results. All women met clinical criteria of >11 TPs on the initial pain screening. Thirty-four of 42 women continued the required practice of meditation (8 stopped and were excluded from these analyses). Self-reported pain and disability were significantly reduced at the 6-month exam (p<.05), despite a continuation of high TP scores. Less pain suffering was associated with improved sleep and lower negative affect, including both dysphoria and anxiety (p<.05). Therapeutic improvement waned at 12- and 18-months. Some benefit from study participation was also seen in the control FM women over time. Across both groups, statistical modeling of change in self-reported pain (visual analog scale, VAS), revealed it could be predicted by lower negative affect (BDI), enhanced positive affect (Positive and Negative Affect Schedule, PANAS), and less negative attribution (Dysfunctional Attitudes Scale, DAS). Frequency of meditation practice and quality of meditative state did not determine degree of improvement on the VAS, but both were associated with reduced disability at the final 1.5-year assessment. Conclusion. MBSR was helpful for women with FM, reducing the experience of suffering in spite of continued pain. The largest gain was seen at the first assessment and waned some over time, which may indicate the importance of subsequent reinforcement. While efficacious, reduction in practice over time and attrition of some practitioners (19%), also highlights a need for alternative approaches in some FM patients.

Individual Abstract Number:1303
IMMEDIATE AND 3-YEAR LONG TERM EFFECTS OF A MINDFULNESS INTERVENTION FOR FIBROMYALGIA
Paul Grossman, Psychosomatic & Internal Medicine, University of Basel Hospital, Ulrike Tienhaller-Glimer, Psychology, University of Vienna, Annette Raysz, Psychology, University of Freiburg

Mindfulness-based stress reduction (MBSR) proposes a systematic program of moment-to-moment awareness of experience for the reduction of suffering associated with a wide range of chronic medical conditions. It is currently hypothesized that development of nonevaluative awareness of ongoing mental processes improves general aspects of well-being, including enhancement of quality of Life (QoL), coping and positive affect, as well as decreasing anxiety and depression. Our partially controlled study examined effects of an 8-week MBSR intervention among 58 female patients with fibromyalgia (mean, 52

A-2
years) who underwent either the MBSR program or an active social-support control group that controlled for nonspecific effects of MBSR. Participants were assigned to groups by alternation, and five subjects dropped out during the study. Self-report measures were from validated German inventories and included the following: visual analog pain (VAP), pain perception, coping with pain, QoL including 6 subscales, anxiety, depression and somatic complaints. Pre- and post-intervention measurements were performed for all participants. Additionally 3-year follow-up measurements were made on a subgroup of 26 of the women. Pre-to-post intervention ANOVAs indicated that the MBSR group benefited more than the control group on most dimensions, including VAP, all 6 QoL subscales, coping with pain, anxiety, depression and somatic complaints (Cohen d effect size [es], 0.40-1.10), although improvement in pain perception did not differ between groups. Three-year follow-up analyses of MBSR participants suggested sustained benefits for these same measures (es, 0.50-0.65), in contrast to several long-term studies showing a more pessimistic natural course of the disorder. Although based upon nonrandomized and partially observational findings, our findings support the possibility that mindfulness training may confer long-term benefits for fibromyalgia patients.

SYMPOSIUM 1101

PSYCHOBIOLOGY OF SOCIAL RELATIONSHIPS, STRESS PROTECTION AND DISEASE PROCESSES: ROLE OF OXYTOCIN

Neil Schneiderman, Psychology, University of Miami, Coral Gables, Florida, S. Carter, Psychiatry, University of Illinois at Chicago, Kathleen C. Light, Psychiatry, University of North Carolina, Courtney DeVries, Psychology, Ohio State University, Philip M. McCabe, Psychology, University of Miami, Neil Schneiderman, Psychology, University of Miami, Coral Gables, Florida

Social support is associated with improved health and protection against some diseases This symposium will describe the putative role of oxytocin (OT) in the psychobiology of social relationships, stress protection, facilitation of wound healing, and amelioration of atherosclerotic disease. Positive social experiences or even a single exposure to OT during early life in voles can permanently reprogram neuroendocrine systems, decrease stress reactivity and facilitate wound healing. In humans, social support is associated with lower blood pressure and norepinephrine (NE) level before and after warm contact in couples and mother-infant dyads. Conversely, mothers with prenatal cocaine exposure have decreased OT level and response to stress, but higher blood pressure and NE level, and hold their babies less often at home. Whereas cutaneous wound healing in pair-housed hamsters is not delayed by restraint stress, healing is delayed in socially isolated animals. However, socially-isolated hamsters pretreated with OT prior to wounding and stress, show smaller hypothalamic-pituitary-adrenal axis response to restraint and heal faster than animals pretreated with vehicle. Watanabe rabbits, having a genetic defect in lipoprotein clearance, who are allowed to maintain stable social relationships, exhibit 50% less aortic atherosclerosis than animals housed alone or maintained in unstable social groups, with plasma OT highest in the stable social group. Incubation of vascular cells with OT inhibits NAD(P)H oxidase activity, which is an important enzyme in the vascular oxidative stress pathway, and suppresses expression of adhesion molecules that are part of the proinflammatory response. Thus plasma OT, which is released preferentially in stable social conditions, appears to influence vascular cells involved in the progression of atherosclerosis.

Individual Abstract Number:1116

NEUROPEPTIDES AND THE BENEFICIAL EFFECTS OF SOCIAL INTERACTIONS: LESSONS FROM PRAIRIE VOLES

Sue Carter, Psychiatry, University of Illinois at Chicago

Perceived social support and social bonds are associated with improved health and healing, although the mechanisms through which social interactions are beneficial are only now being recognized. Research with a socially monogamous rodent, the prairie vole, has revealed that the causes and consequences of social bonds are expressions of neuroendocrine processes involving the uniquely mammalian neuropeptides, oxytocin and vasopressin. These peptides can facilitate social behaviors and also have the capacity to modulate stress and coping, often with effects that are sexually dimorphic. New data from voles reveals that social isolation significantly influences these neuropeptides, and is associated with increases in CRF and corticosterone, and parallel declines in neurogenesis. Isolation in voles is also associated with a decline in levels of these neuropeptides and with a decline in cardiac vagal tone. In contrast, positive social interactions between adults or a brief exposure to an infant, can produce an increase in oxytocin, reductions in corticosterone, and is followed by increased neurogenesis. The effects of social interactions or these peptides may be especially powerful during development. For example, differential social experiences or even a single exposure to oxytocin or an oxytocin antagonist during early life can permanently reprogram neuroendocrine systems, alter stress reactivity and influence the same social behaviors that collectively define social monogamy.

Individual Abstract Number:1118

OXYTOCIN IS LINKED TO LOWER BLOOD PRESSURE AND SYMPATHETIC ACTIVITY BEFORE AND AFTER WARM CONTACT IN COUPLES AND MOTHER-INFANT DYADS

Kathleen C. Light, Karen M. Grewen, Psychiatry, University of North Carolina

Oxytocin (OT) has been termed the ‘bonding hormone’, and hypothesized to mediate some health benefits of social support. In rats, blood pressure (BP) reduction has followed exogenous and endogenous OT increases, including increases associated with physical stroking, but related human studies are few. Previously, we reported that mothers of infants whose plasma OT increased during stress immediately after baby holding had lower BP before, during and after stress than mothers whose OT decreased. Mothers with prenatal cocaine exposure have decreased OT in rats or decreased OT activity had decreased OT levels and OT response to stress but higher BP and norepinephrine (NE) levels, and tended to hold their babies less often at home. We then studied OT in married couples/partners. In 38 couples, both men and women reporting greater partner support had higher OT levels during solitary rest that preceded and followed 10 min of warm partner contact. Higher OT was associated with lower plasma NE before and after warm contact and to lower resting BP after couple contact, in women only. In 59 premenopausal women exposed to a speech stressor immediately after warm partner contact, higher frequency of partner hugs over the past month was associated with higher OT and lower BP during solitary rest before partner contact. During stress after partner contact, women with high OT at baseline maintained their lower BP levels compared to those with low OT. In contrast, OT response during stress was not related to any cardiovascular benefit or to hugs frequency. These findings suggest that greater OT in women may be associated with healthier BP responses to social stressors from the partner and warm contact with loved ones, through lower resting BP and decreased sympathetic activity, and through lower peak BP levels during stress (but not lower BP reactivity).

Individual Abstract Number:1124

SOCIAL FACILITATION OF CUTANEOUS WOUND HEALING

Courtney DeVries, Erica R. Glaesper, Psychology, Ohio State University

Stress and social isolation are important factors in the etiology of several diseases. Using animal models of wound healing, we have demonstrated that exposure to both positive and negative social interactions can alter hypothalamic-pituitary-adrenal (HPA) axis activity and subsequently affect the rate of cutaneous wound healing. Restraint increases corticosteroid concentrations and delays wound healing in socially-isolated, but not pair-housed, female Siberian hamsters (Phodopus sungorus). However, socially-isolated hamsters that are treated with oxytocin, prior to initiation of the wounding and stress protocol, exhibit smaller HPA axis responses to restraint, and heal at a faster rate than those pretreated with vehicle. Treatment of paired hamsters with an oxytocin antagonist prevents social facilitation of the healing process. Also, physical contact is necessary to achieve social facilitation of wound healing; mice that are housed in the same cage as their partner, but are prevented from physically interacting by a wire barrier, heal at the same rate as socially isolated mice. Furthermore, social structure is an important determinant in social facilitation of wound healing; pair housing decreases corticosterone concentrations and facilitates wound healing in highly social mouse species (i.e., Peromyscus californicus and P. eremicus ) but has no effect on mice belonging to a solitary species (i.e., P. leucopus). Taken together, these data suggest that the HPA axis can be influenced by both positive and negative social interactions, and provides a neuroendocrine mechanism through which social interactions can alter the course and outcome of disease.

Individual Abstract Number:1109

THE ROLE OF CENTRAL AND PERIPHERAL OXYTOCIN IN THE PROGRESSION OF ATHEROSCLEROSIS IN THE WATANABE HERITABLE HYPERLIPIDEMIC RABBIT

Philip M. McCabe, James Paredes, Angela Szo, Neil Schneiderman, Psychology, University of Miami
Previous research from our laboratory has demonstrated that social environment influences the progression of atherosclerosis in the Watanabe Heritable Hypertensive Rabbit (WHHL), an animal model of disease characterized by a genetic defect in lipoprotein clearance. WHHLs allowed to maintain stable social relationships, as compared to WHHLs housed alone or subjected to unstable social relationships, exhibited 50% less aortic atherosclerosis. Based upon literature suggesting the importance of oxytocin (OT) in social relationships, we examined CNS and plasma OT responses to manipulations of social environment in WHHLs. Through the use of chronic microdialysis of the hypothalamic paraventricular nucleus (PVN), it was found that PVN OT responses vary as a function of social environment and develop over the course of weeks. Plasma OT responses, which occur rapidly, were greatest in the stable social group. These same animals exhibited significantly less atherosclerosis than WHHLs in the other social conditions. In response to these findings, we assessed the influence of OT on oxidative stress and inflammatory mechanisms in vascular cells cultured in vitro. It has been demonstrated that oxidative stress and inflammation play an important role in the progression of atherosclerosis. Preliminary evidence from our lab suggests that OT receptors are present on vascular endothelial cells, smooth muscle cells, and macrophages. Furthermore, incubation of these cells with OT inhibits NAD(P)H oxidase activity, which is an important enzyme in the vascular oxidative stress pathway. Incubation with OT also suppresses that expression of the cell adhesion molecules, ICAM and VCAM, which are part of the proinflammatory response. Taken together, these data suggest that the role of OT in modifying plasma OT, which is released preferentially in stable social conditions, may work directly on vascular cells to inhibit oxidative stress and inflammatory processes involved in the progression of atherosclerosis.

**SYMPOSIUM 1558**

**SALIVARY ALPHA AMYLASE: NOVEL BIOMARKER OF STRESS OR A MARKER IN SEARCH OF MEANING?**

Laura R. Stroud, Psychiatry and Human Behavior, Brown Medical School, Providence, RI, Urs M. Nater, Psychiatry, Emory Medical School, Laura C. Klein, Biobehavioral Health, Pennsylvania State University, Laura R. Stroud, Psychiatry and Human Behavior, Brown Medical School, Alison Shea, Institute of Medical Sciences, University of Toronto, Sheila West, Biobehavioral Health, Pennsylvania State University, Douglas A. Granger, Biobehavioral Health, Pennsylvania State University, University Park, PA

Multiple physiological systems measurement is considered the gold standard for assessing the stress response. Until recently, there was no widely available saliva biomarker for sympathetic activity. Alpha amylase (AA), a salivary enzyme, may be a surrogate marker of sympathetic nervous system activity. However, relatively little is known about the function of and mechanisms underlying this salivary biomarker. In this symposium, we present results from several studies that highlight the function of AA, its potential utility and limitations in stress reactivity research, and possible mechanisms of action. These studies cover AA regulation measures (e.g., circadian variation, response to a sympathomimetic) across several populations (healthy adults, adults with elevated LDL, children, depressed mothers, infants). Our goal is to stimulate discussion regarding the value of this new biomarker for psychosomatic studies. The first speaker will present two investigations of factors regulating circadian variation in AA. The second speaker will examine AA response to sympathomimetic (caffeine) and stress challenges in adults and links to cardiovascular reactivity. The third will present data on the relationship between AA and cardiac markers of sympathetic activation in adults with high cholesterol. The fourth speaker will examine AA responses in the context of child and adolescent stress reactivity, links to cortisol and behavior. The fifth speaker will present AA data from studies of stress reactivity in infants and in depressed and nondepressed mothers. As a discussant and expert in saliva AA assessment, the discussant will synthesize the data presented and will discuss methodological and clinical implications of this work.

**Individual Abstract Number:1560**

**DETERMINANTS OF DIURNAL COURSE OF SALIVARY ALPHA-AMYLASE ACTIVITY**

Urs M. Nater, Psychiatry & Behavioral Sciences, Emory University School of Medicine, Nicolas Rohleder, Psychology, Dresden University of Technology, Wolff Schlott, MRC Epidemiology Resource Centre and Developmental B, Can Nukas, Clinical Psychology & Psychotherapy, University of Zurich, Clemens Kirschbaum, Psychology, Dresden University of Technology, Urike Ehler, Clinical Psychology & Psychotherapy, University of Zurich

Previous data from our group and others have shown that salivary alpha-amylase activity increases in response to stress. It has been suggested that salivary alpha-amylase may be a marker for sympathetic activity. No study so far has described the determinants of the circadian pattern of salivary amylase activity. In two independent studies, saliva samples were collected directly after waking up, 30 and 60 minutes later, and each full hour until 9.00 pm by the subjects themselves. The compliance of the subjects was controlled by an electronic system (Aardex, Switzerland). In order to control factors which might influence the diurnal profile of alpha-amylase (such as acute stress, mood, food, or body activity), at each sampling time point the subjects filled out a diary examining the activities they had carried out during the previous hour. In study 1, results from 30 healthy male volunteers indicate that salivary alpha-amylase activity shows a distinct diurnal profile pattern with a trough in the morning and a steady increase of activity during the day. While multilevel-modelling failed to show a within-subject association of alpha-amylase with acute stress, significant associations with chronic stress, mood and alertness, as well as with calmness were observed. In study 2, we were able to corroborate our findings in a bigger sample of N = 76 subjects of mixed gender. Our results suggest a possible influence of day time, chronic stress levels, and momentary well-being on activity of salivary alpha-amylase. These findings bear implications on the time of collection and concomitant measurement of psychological states in studies using alpha-amylase as a dependent variable.

**Individual Abstract Number:1561**

**EFFECTS OF CAFFEINE AND STRESS ON SALIVARY ALPHA-AMYLASE IN YOUNG MEN: A SALIVARY BIOMARKER OF SYMPATHETIC ACTIVITY**

Laura C. Klein, Courtney A. Whetzel, Biobehavioral Health, Frank E. Ritter, Information Sciences & Technology, Douglas A. Granger, Biobehavioral Health, The Pennsylvania State University

Alpha-amylase (AA), an enzyme secreted by the salivary glands, may be a marker for sympathetic nervous system (SNS) reactivity to stress. New assay methods allow reliable detection of salivary AA, which provides an opportunity to measure SNS activation in the laboratory without the difficulty of invasive blood drawing procedures or complex psychophysiological recording methods. To our knowledge, the current study is the first report of stress in stressful situations. In this study, the present study examined whether AA levels respond to stress and caffeine (a known sympathomimetic) in 45 healthy men aged 18-30 years (21.2 +/- 0.4 yrs). Participants were daily caffeine consumers, did not use tobacco or nicotine products, were not taking over-the-counter or prescription medications, and did not have health conditions that would affect the dependent measures. Participants arrived at the laboratory at 1 PM where they were administered one of three doses of caffeine: none (placebo), 200 mg caffeine (equivalent to 1-2, 8oz cups of coffee), or 400 mg caffeine (equivalent to 3-4, 8oz cups of coffee). Participants then were asked to complete the mental arithmetic portion of the Trier Social Stress Task for 20 minutes. Saliva samples were collected during baseline (before caffeine and stress) and 15 minutes after the stressor to determine AA responses to the challenge. Blood pressure and heart rate also were measured throughout the study. As expected, blood pressure and heart rate increased in response to stress (Ps<0.05) and to caffeine (Ps<0.05). AA levels also increased in response to stress and to caffeine administration (Ps<0.05). These stress- and caffeine-induced increases in AA were associated with increased heart rate levels (Ps<0.05). This effect of caffeine and stress on salivary AA, linked with changes in HR, supports the hypothesis that AA is a surrogate biomarker of SNS activation.

**Individual Abstract Number:1600**

**SALIVARY ALPHA-AMYLASE RESPONSE TO THE COLD PRESSOR IS CORRELATED WITH CARDIAC MARKERS OF SYMPATHETIC ACTIVATION**

Sheila G. West, Douglas A. Granger, Katte T. Kivlighan, Katrina L. Hurston, Biobehavioral Health, Pennsylvania State University

There is growing interest in whether the salivary enzyme alpha-amylase (AA) is a marker of sympathetic tone. We examined salivary AA, blood pressure (BP), heart rate, pre-ejection period (PEP), total peripheral resistance and cardiac output at rest and during two stressors in 30 adults with high LDL. Cardiovascular measures were collected via impedance cardiography during a rest period (20 min), speech preparation (2 min), videotaped speech task (3 min), recovery period (10 min), foot cold pressor (2.5 min), and final recovery period (20 min). Saliva was collected at the end of baseline and 8-10 min after each task. Although both stressors significantly increased systolic BP (by 20-25
MATERNAL DEPRESSION AND SALIVARY ALPHA AMYLASE

Individual Abstract Number:1565

AA/cortisol reactivity and behavior reveal possible links to clinical outcomes. 

$p's<.05$) and lower scores on problem behavior subscales (total, externalizing, behavior subscales of the CBCL (Activities, Social, and School scales; \(t's>2.1\), with high AA/low cortisol reactivity showed higher scores on adaptive an indirect pathway of novel information about autonomic nervous system stress conditions. It has been suggested that sAA measurement may provide emerged between AA and SBP stress reactivity (\(r's>.37\), \(p's<.05\)). Participants conducted in infants. The objective of the current study is to confirm and examine the time course of this response and our work suggests that simultaneous measurement of AA and autonomic variables is of great importance.

Individual Abstract Number:1564

SALIVA ALPHA-AMYLASE STRESS REACTIVITY IN CHILDREN AND ADOLESCENTS: VALIDITY, ASSOCIATIONS WITH CORTISOL, AND LINKS TO BEHAVIOR

Laura R. Strong, Psychiatry, Brown Medical School, Kathryn Handwerger, Psychology, Tufts University, Douglas Granger, Katie Kivlighan, Biobehavioral Health, Pennsylvania State University, Catherine Solomon, Psychiatry, Brown Medical School

We present preliminary validation of saliva alpha-amylase (AA) levels as a new marker for physiological stress reactivity in children and adolescents. We examined a) time course and magnitude of AA stress reactivity, b) associations with cortisol and cardiovascular responses, and c) associations between patterns of AA/cortisol reactivity and behavior. Participants were 53 healthy children and adolescents (28 girls) ages 7-17 (M=12). Participants completed an achievement (speech, arithmetic, tracing) or interpersonal (social rejection) stress session. Parents completed the Child Behavior Checklist (CBCL). Stress sessions lasted 2 hours and included 7-9 saliva AA and cortisol samples and continuous measures of SBP, DBP, and HR. We found significant changes in AA over time across both session types (\(F=3.2\), \(p's<.05\), with 50-60% increases from baseline. AA levels peaked approximately 10 minutes following onset of the stressors, and 10 minutes prior to peak cortisol levels. Little association emerged between AA and cortisol reactivity to the stressors (\(r=0.07\), \(p=ns\)), but significant associations emerged between AA and SBP stress reactivity (\(r's=.37\), \(p's<.05\)). Participants with high AA/low cortisol reactivity showed higher scores on adaptive behavior subscales of the CBCL (Activities, Social, and School scales; \(r's=2.1\), \(p's<.05\)) and lower scores on problem behavior subscales (total, externalizing, and social problems; \(r's=2.1\), \(p's<.05\)) compared to participants with high cortisol/low AA reactivity. Results provide preliminary validation of saliva AA as a marker of stress reactivity in children and adolescents. Independence of AA and cortisol responses suggests that each measure taps unique components of the stress response. Associations between patterns of AA/cortisol reactivity and behavior reveal possible links to clinical outcomes.

Individual Abstract Number:1565

MATERNAL DEPRESSION AND SALIVARY ALPHA AMYLASE RESPONSE TO STRESS IN THEIR INFANTS

Alison K. Shea, Institute of Medical Sciences, University of Toronto, Meir Steiner, Women's Health Concerns Clinic, McMaster University, Patricia Breuer, McMaster University, Canadian Center for Addiction Research, Jeffrey Newport, Zachary N. Stowe, Emory Women's Mental Health Program, Emory University School of Medicine

The concentrations of salivary alpha amylase (AA), a digestive enzyme, are related to sympathetic nervous system activation over the course of various stress conditions. It has been suggested that AA measurement may provide an indirect pathway of novel information about autonomic nervous system activity. Previous studies have reported increased AA activity following psychological stress in healthy adults. Such investigations have not been conducted in infants. The objective of the current study is to confirm and extend the adult data by investigating AA concentrations in infants in response to an acute stressor, and to further examine the impact of the mothers' depression/anxiety on this response. One hundred and nineteen infants of women enrolled in a prospective study conducted throughout pregnancy and the postpartum period participated in a laboratory stress paradigm at 6 months of age. Saliva samples were collected from the mother and her infant during the course of a laboratory stressor (noise burst and infant arm restraint). All samples were coded and run blind to maternal diagnosis, and were analyzed for AA and cortisol. Maternal and infant AA levels were significantly correlated (\(r = 0.4; p<0.01\)). AA levels were significantly different when comparing depressed versus non-depressed mothers at the time of testing for both mothers and their infants (regression modelling with multivariate analyses; \(p<0.05, p<0.10\), respectively). AA levels may provide an additional measure of stress vulnerability in psychiatric populations.

SYMPOSIUM 1266

IT'S NOT THE GENES OR THE ENVIRONMENT, STUPID; IT'S THE GENES AND THE ENVIRONMENT, STUPID: GENES BY ENVIRONMENT INTERACTIONS, PSYCHOSOCIAL RISK FACTORS AND BIOBEHAVIORAL MECHANISMS

Stephen B. Manuck, Psychology, University of Pittsburgh, Pittsburgh, PA, Eco J. De Geus, Biological Psychology, Vrije Universiteit, Redford B. Williams, Richard S. Surwit, Psychiatry and Behavioral Sciences, Duke University Medical Center, Harold Snieder, Georgia Prevention Institute, Department of Pediatrics, Medical College of Georgia, Peter G. Kaufmann, Behavioral Medicine Research Group, NHLBI, Bethesda, MD

Psychosomatic research has always aimed to identify stressors in the environment that impinge on the mind and the body in ways that increase risk of developing major illnesses. More recently, the tools of molecular genetics have been used to identify genetic variants that might make some individuals more sensitive than others to the health-damaging effects of environmental stressors. However, association studies reporting main effects of candidate genes are notorious for producing inconsistent results: associations and key environment interactions have been hypothesized to fail to replicate. As Moffitt, Caspi & Rutter point out in a recent Perspectives paper (Arch Gen Psychiatry 2005;62:473), replication failures might arise when participants in one study have had different exposures to environmental factors affecting the endophenotype of interest than subjects in other studies. We cannot be confident, therefore, that we have adequately evaluated a given gene's effect on a particular endophenotype without stratifying on pre-existing conditions. Conversely, adequate evaluation of environmental factors must include stratification for key genetic variants. In this symposium we use new findings to illustrate how a gene x environment perspective can inform psychosomatic research. These findings include: a) the amplification of genetic influences on cardiovascular function by exposure to acute stress; moderating effects of promoter variation in the MAO-A gene on b) stress-related alterations in SNS and HPA axis activity and c) brain serotonergic influences on glucose metabolism and hostility; and d) a gene-environment model relating reactivity to stress-induced hypertension.

Individual Abstract Number:1301

A BIVARIATE APPROACH TO THE GENETICS OF CAROTID-VASCULAR STRESS REACTIVITY: STRESS UNCOVERS GENETIC VARIANCE

Eco J. De Geus, Nina Kupper, Dorret I. Boomsma, Biological Psychology, Vrije Universiteit, Harold Snieder, Georgia Prevention Institute, Medical College of Georgia

Behavior and molecular genetic research on autonomic and cardiovascular risk factors has focussed largely on resting levels. This approach may fail to identify genetic variance that is expressed exclusively during exposure to particular stressors. We performed a bivariate approach on pre-existing cardiovascular phenotypes in 162 adolescents (mean age: 44.2 ± 6.7) monozygotic and dizygotic twin pairs. Systolic (SBP) and diastolic (DBP) blood pressure, heart rate (HR), pre-ejection period (PEP) and respiratory sinus arrhythmia (RSA) were measured at rest and during a mental arithmetic and choice reaction time task. We computed univariate heritability of averaged reactivity and used bivariate analyses on rest and stress levels to discriminate between two different types of gene-by-stress interaction. The first type is caused by the emergence of new genetic variance specific to stress; the second type is caused by stress-induced modification (amplification or de-amplification) of the existing genetic variance at rest. HR, PEP and SBP reactivity showed significant heritability, which was comparable across both age cohorts (range: 0.25-0.53). RSA and DBP reactivity were not heritable. In the bivariate analyses, substantial heritability was found for both PEP and SBP, HR, PEP and RSA levels at rest (range: 0.31-0.70) and during stress (range 0.43-0.74).
Amplification of genetic effects during stress compared to rest was found in both cohorts (young/middle-aged) for DBP (rest: 0.58/0.49; stress 0.66/0.58) and RSA (rest 0.31/0.33; stress 0.54/0.43). New genetic variance emerged during stress for SBP (0.17) in the young cohort and for HR (0.07/0.10) and PEP (0.03/0.14) in both cohorts. Summary & conclusion: Stress increased the genetic contribution to the total variance in the autonomic and cardiovascular measures. This underscores the usefulness of psychosomatic endophenotypes for gene finding.

**Individual Abstract Number:1281**

**MONOAMINE OXIDASE A (MAOA) PROMOTER POLYMORPHISM MODERATES EFFECTS OF CHRONIC STRESS ON URINARY CORTISOL AND CATECHOLAMINE EXCRETION IN MALE CAREGIVERS**

Redford B. Williams, Psychiatry & Behavioral Sciences, Stephan Zuchner, Richard S. Surwit, Ilene C. Siegler, Beverly Brummett, Psychiatry and Behavioral Sciences, Duke University Medical Center; Cynthia M. Kuhn, Pharmacology, Duke University Medical Center, Allison E. Ashley-Koch, Melanie E. Kail, Medicine, Duke University Medical Center

Persons who are caregivers for a close relative with Alzheimer's Disease are at increased risk for a wide range of mental and physical health problems. As part of our research program to identify the psychosocial and biobehavioral mediators of these adverse health effects of caregiving, we measured cortisol, epinephrine (Epi) and norepinephrine (NE) levels in 24 hour urine samples (overnight, daytime, evening aliquots) in a sample of 155 caregivers and 127 controls (24% Af. American, 76% white; 24% male, 76% female). Because CNS serotonergic function regulates both HPA axis and SNS function, we evaluated a functional polymorphism in the monoamine oxidase A gene promoter (MAO-uVNTR) that results in more (3.5/4 repeats) and less (2 or 5 repeats) active transcription as a moderator of the effects of caregiving on urine cortisol and catecholamine excretion. Because the MAOA gene is on the X chromosome, men and women were considered separately. There were no effects of MAO-uVNTR genotypes on cortisol or catecholamine excretion in the women subjects. In men, there were MAOA x group x time interactions for cortisol (P=0.057), Epi (P=0.007) and NE (P=0.059). In contrast to all controls and caregivers with 3.5/4 repeats alleles, who showed increased daytime cortisol secretion in male caregivers with 2/3/5 repeats showed a decrease in daytime cortisol levels. In comparison to the other 3 groups, the male caregivers carrying 2/3/5 repeats alleles showed a smaller daytime increase and a larger evening decrease in Epi and NE excretion. These findings suggest that men with reduced MAOA degradation of monoamines are more likely to develop exhaustion of HPA axis and SNS function under the chronic stress of caregiving.

**Individual Abstract Number:1304**

**MAO-uVNTR IS RELATED TO CNS SEROTONERGIC FUNCTION, GLUCOSE METABOLISM, BMI AND HOSTILITY**

Richard S. Surwit, Ilene C. Siegler, Psychiatry and Behavioral Sciences, Cynthia M. Kuhn, Pharmacology, Michael J. Helms, Redford B. Williams, Psychiatry and Behavioral Sciences, Duke University Medical Center

The biologic amine serotonin (5-HT) has been linked to obesity and metabolic function in animals, but has only been indirectly linked to satiety and glucose metabolism in humans. The identification of specific serotonin-related gene polymorphisms that impact metabolic function has been hampered by the difficulty in obtaining direct measures of CNS serotonergic function in humans. We investigated the relationship between direct and indirect measures of the 5-HT function (CSF 5HIAA; cerebral hemoglobin saturation; 5-hydroxyindoleacetic acid (5HIAA) and prolactin response to tryptophan infusion) and BMI and glucose metabolism, as moderated by a functional polymorphism in the monoamine oxidase A gene promoter (MAO-uVNTR) that results in more (3.5/4 repeat) and less (2 or 5 repeat) active transcription. Large, significant correlations between CSF 5HIAA and fasting glucose (r=−0.37, P<0.01), insulin (r=−0.38, p=0.009), insulin sensitivity as measured by the homeostatic model assessment (HOMA) (r=−0.41, p=0.003), BMI (r=−0.45, p=0.001) as well as hostility (r=−0.35, p=0.01) and neuroticism (r=−0.31, p=0.03) were observed in subjects with the 3.5/4 repeat but not in subjects with 2/3/5 allele. Subjects with the 3.5/4 repeat allele and high CSF 5HIAA had lower serotonergic activity as measured by the prolactin response to tryptophan infusion than subjects with 2/3/5 repeat alleles and high CSF 5HIAA (p<0.04). This is consistent with the hypothesis that subjects with the 3.5/4 uVNTR are deaminating serotonin more rapidly than subjects with other alleles of this polymorphism, leading to less active synaptic serotonin. Our data suggest that variations in serotonergic function related to this polymorphism may explain variations in BMI and glucose metabolism and be a common mediating factor. Further work is needed to establish the relationship between the behavioral measure of hostility and these measures of metabolic function.

**Individual Abstract Number:1316**

**A GENE ENVIRONMENT INTERACTION MODEL OF STRESS-INDUCED HYPERTENSION**

Harold Snieder, Yanbin Dong, Gregory A. Harshfield, Frank A. Treiber, Georgia Prevention Institute, Medical College of Georgia

Cardiovascular reactivity to stress may play a role in the pathogenesis of essential hypertension but evidence has been mixed. We recently proposed a gene-environment model of stress-induced hypertension that explains how repeated exposure to stress in combination with genetic susceptibility might lead to the development of hypertension. This model includes both short- and long-term blood pressure regulatory pathways and focuses on underlying physiological systems that mediate the stress response of the heart, vasculature and kidney: the hypothalamus-pituitary-adrenal axis, the sympathetic and parasympathetic nervous system, the renin-angiotensin-aldosterone system and sodium homeostasis, and the endothelial system. Evidence from animal models, twin and family studies and a limited number of human studies suggest a genetic influence on cardiovascular reactivity to behavioral stress and stress-induced pressure natriuresis. The genetic basis of the cardiovascular and renal stress response provides a compelling argument for the exploration of gene effects and gene-environment interactions in any future studies of the reactivity hypothesis. The presentation will provide a number of examples of gene-environment based contributions to the development and progression of essential hypertension within the framework of our model.

**SYMPOSIUM 1346**

**RECENT CLINICAL TRIALS FOR DEPRESSION IN PATIENTS WITH CORONARY HEART DISEASE**

Nanci Frankel, Medicine, McGill University, Montreal, Quebec, Canada, Matthew M. Burg, Medicine, Yale University, for the ENRICHD Investigators, Peter de Jonge, Psychiatry, University of Groningen, Kenneth E. Freedland, Psychiatry, Washington University, Peter G. Kaufmann, Behavioral Medicine & Prevention Research Group, National Heart, Lung, and Blood Institute, Bethesda, Maryland

While secondary analyses of the landmark ENRICHD and SADHART studies continue to yield new insights into the treatment of depression in patients with coronary heart disease, the first generation of post-ENRICHD / post-SADHART trials is coming to fruition. This symposium encompasses both a major secondary analysis of ENRICHD data and the principal outcomes of two new randomized clinical trials. The first paper identifies predictors of the ENRICHD depression and social support outcomes. The models include key baseline characteristics such as demographic factors and the severity of heart disease, but the primary focus is on treatment-related predictors including specific components of the cognitive-behavioral intervention. The second paper presents the primary outcomes of the Myocardial Infarction and Depression Intervention Trial (MIND-IT). This new European study is the largest randomized trial of antidepressant treatment for post-MI depression other than SADHART. The primary outcomes of the trial, including depression, cardiac events, and quality of life, will be presented. The final paper presents the main outcomes of a new, randomized, controlled clinical trial of short-term, non-pharmacological treatments for depression after coronary artery bypass graft surgery. It is one of the first trials for post-CABG depression ever completed. The presentation will include both the primary (depression) and secondary outcomes of the trial, including anxiety, neuropsychological functioning, and quality of life. Together, these three papers provide an early preview of clinical trials for depression in patients with heart disease, in the emerging post-ENRICHD / post-SADHART era.

**Individual Abstract Number:1347**

**PREDICTORS OF DEPRESSION AND SOCIAL SUPPORT OUTCOMES IN THE ENRICHD STUDY**

Matthew M. Burg, Medicine, Yale University, for the ENRICHD Investigators

ENRICHD was a multicenter, randomized clinical trial of treatment for depression and low perceived social support (LPSS) after acute MI. We
examined data from the 884 (90%) of the patients who were randomized to the intervention arm and who provided complete psychosocial outcome data at the 6-month post-treatment assessment, including 641 patients with depression (alone or with LPSS) and 523 enrolled with LPSS (alone or with depression); 280 (32%) had both problems at enrollment. Our aim was to determine whether the “dose” of treatment exposure, delivery of specific components of cognitive behavior therapy (CBT), patient adherence, and/or use of antidepressants predicted favorable depression and social support outcomes. Outcome measures the Beck Depression Inventory (BDI), the Hamilton Rating Scale for Depression (HAM-D), the ENRICH Social Support Instrument (ESSI), and the Perceived Social Support Scale (PSSS). Better depression outcomes were predicted by the delivery of the depression and communication components of, and patient adherence to, the cognitive-behavioral intervention. Better social support outcomes were also predicted by patient adherence to the intervention, while delivery of communication and assertiveness components predicted worse outcomes. We conclude that standard components of CBT are useful in treating depression in post-MI patients. Enhancing communication skills may help to improve depression but not necessarily social support in this patient population; adherence to cognitive-behavioral homework assignments is important for both outcomes. Other components of the ENRICH intervention designed to improve social support had no discernible effects on outcomes. Intervention refinements are needed in order to achieve better results in future post-MI clinical trials. A greater emphasis on CBT homework adherence could improve both depression and social support outcomes.

Individual Abstract Number:1348

EFFECTS OF ANTIDEPRESSIVE THERAPY FOR THE TREATMENT OF DEPRESSION FOLLOWING MYOCARDIAL INFARCTION: RESULTS FROM THE MYOCARDIAL INFARCTION AND DEPRESSION INTERVENTION TRIAL (MIND-IT)

Peter de Jonge, Joost p. van Melle, Adriaan Honig, Aart Schene, Harry Crijns, Johan Ormel, Psychiatry, University of Groningen

Background: Depression following myocardial infarction (MI) is associated with a poor cardiac prognosis, increased cardiac health care consumption, and impaired quality of life. Whether these negative effects are reversible by antidepressive medication is unknown. In a randomized, controlled trial conducted in The Netherlands, we evaluated 2177 MI patients from 10 hospitals for depression during the first year following an acute MI. Patients who met the ICD-10 criteria for post-MI depression were randomised to Intervention (i.e. antidepressive therapy, n=209) or Care as Usual (n=122). Outcomes were (a) the combined endpoint of cardiac mortality or major cardiac events within 18 months post-MI, (b) the incidence of cardiac-related hospital admissions within 18 months post-MI, and (c) quality of life at 18 months post-MI, as measured by the SF-36. Results: The 18-month cumulative event rate was 13% among patients in the Intervention arm, as compared with 13% among patients randomised to CAU (p=0.80). The rates of cardiac-related hospital admissions did not differ significantly between groups (39% in the Intervention and 38% in the CAU group, p=0.39). Also, no differences in quality of life were observed. The outcome of depression did not differ between treatment arms in terms of mean duration of the depressive episode and prevalence of ICD-10 depression at 18 months post-MI. Additional analyses will be presented that may further elucidate the relation between post-MI depression and cardiovascular prognosis.

Individual Abstract Number:1349

A RANDOMIZED CLINICAL TRIAL OF NONPHARMACOLOGICAL TREATMENTS FOR DEPRESSION AFTER CORONARY ARTERY BYPASS GRAFT (CABG) SURGERY


Persistent depression is common after coronary artery bypass graft (CABG) surgery and is associated with delayed recovery and an increased risk of mortality. However, there has been almost no research on the treatment of post-CABG depression. The purpose of this randomized, controlled clinical trial was to determine whether post-CABG depression responds to short-term, nonpharmacological interventions that have been used to treat depression in clinical trials for other patient populations. Cognitive behavior therapy (CBT) was compared to usual care (UC) for post-MI depression in the ENRICH clinical trial, but it has not been systematically evaluated for post-CABG depression. Stress management (SM) is often provided as part of cardiac rehabilitation programs and it deserves promise to treat depression among psychiatric patients in a previous clinical trial. We randomized 123 depressed patients (50% female, 20% minority, age 60+10 years) who had CABG surgery within the past year to either 12 weeks of CBT (n=43), SM (n=40), or usual care (UC: n=40). Sixty-six had major and 34% had minor depression according to DSM-IV criteria. Baseline scores were: Hamilton Rating Scale for Depression (HAM-D-17), 19.6±5.5; Beck Depression Inventory (BDI), 22.3±8.4; Beck Hopelessness Scale (HS), 8.4±5.8; Beck Anxiety Inventory (BAI), 16.1±11.0. Depression, anxiety, and quality of life outcomes were assessed at 3, 6, and 9 months after randomization, and a brief neuropsychological assessment battery was administered at baseline and 3 months. Data on rehospitalizations were obtained throughout the follow-up period. All follow-up assessments were completed by December 31, 2005. Mixed-model analyses of the primary (depression) and secondary outcomes of the trial will be presented. An additional model designed to identify predictors of these outcomes will also be discussed.

SYMPOSIUM 1687

BREATHING TRAINING AS A PSYCHOBIOLOGICAL INTERVENTION FOR ANXIETY DISORDER AND ORGANIC DISEASE

Thomas Ritz, Psychology, Southern Methodist University, Dallas, TX, Alicia E. Meuret, Psychology, Southern Methodist University, Nicholas D. Giardino, Psychiatry, University of Michigan, Ann Arbor, MI, Benjamin Gavish, InterCure Ltd., Lod, Israel, Paul Grossman, Psychosomatic Medicine, University Hospital Basel, Basel, Switzerland

Strategies to alter breathing patterns such as slow abdominal breathing have traditionally been imbedded in relaxation and meditation interventions. While substantial efforts have been made to study the overall effects of these interventions, little attention has been directed to the effects of behavioral techniques focused on improving respiratory function. The present symposium will introduce a variety of methods that target respiratory function through breathing training, either as a treatment or waitlist control condition. Treatment included 5 weekly sessions of training that included heart rate variability (HRV) biofeedback and walking with pulse oximetry feedback, with instructions for daily home practice. Primary outcomes measures were the distance walked in 6 min (6MWD) and overall quality of life, as assessed by the St. George's Respiratory Questionnaire (SGRQ). Secondary outcomes included measures of self-efficacy, self-reported disability, anxiety, depression, dyspnea before and after the 6MWD, oxygen saturation (SpO2) and end-tidal CO2 (etCO2) during the 6MWD, and HRV at the frequency of respiration during spontaneous and paced breathing. After 10 weeks of training, participants showed statistically and clinically significant improvements in 6MWD and quality of life. Significant changes were also seen in self-efficacy, disability, dyspnea before and after the 6MWD, SpO2 and etCO2 during the 6MWD, and HRV amplitude during spontaneous breathing. We conclude that our intervention is effective in reducing disability in patients with COPD. However additional research using a larger randomized controlled design is warranted.

Individual Abstract Number:1694

COMBINED HEART RATE VARIABILITY AND PULSE OXIMETRY BIOFEEDBACK FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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

The purpose of this research was to test an intervention that included heart rate variability (HRV) biofeedback and walking with pulse oximetry feedback to improve functioning and quality of life for patients with chronic obstructive pulmonary disease (COPD). Twenty patients with COPD were randomized to a treatment or waitlist control condition. Treatment included 5 weekly sessions of HRV biofeedback and 4 weekly sessions of walking practice with oximetry feedback, with instructions for daily home practice. Primary outcomes measures were the distance walked in 6 min (6MWD) and overall quality of life, as assessed by the St. George's Respiratory Questionnaire (SGRQ). Secondary outcomes included measures of self-efficacy, self-reported disability, anxiety, depression, dyspnea before and after the 6MWD, oxygen saturation (SpO2) and end-tidal CO2 (etCO2) during the 6MWD, and HRV at the frequency of respiration during spontaneous and paced breathing. After 10 weeks of training, participants showed statistically and clinically significant improvements in 6MWD and quality of life. Significant changes were also seen in self-efficacy, disability, dyspnea before and after the 6MWD, SpO2 and etCO2 during the 6MWD, and HRV amplitude during spontaneous breathing. We conclude that our intervention is effective in reducing disability in patients with COPD. However additional research using a larger randomized controlled design is warranted.
In conclusion, device-guided paced breathing is an evidenced-based self-care device for 15-minute daily sessions. Compliance data are stored synchronizing inhale/exhale with musical tones generated by sensor-controlled breaths/min) with prolonged expiration (RESPeRATE, InterCure, Israel): user synchronizes inhale/exhale with musical tones generated by sensor-controlled breaths/min) with prolonged expiration (RESPeRATE, InterCure, Israel): user guides the user interactively and effortlessly to slow breathing (<10 and congestive heart failure (CHF) patients to routine use of a device that cardiovascular (CV) systems that counteract pathological changes associated with some CV diseases. This report summarizes the response of hypertensives and congestive heart failure (CHF) patients to routine use of a device that guides the user interactively and effortlessly to slow breathing (<10 breaths/min) with prolonged expiration (RESPeRATE, InterCure, Israel): user synchronizes inhale/exhale with musical tones generated by sensor-controlled device for 15-minutes daily sessions. Compliance data are stored automatically. The anti-hypertensive effect of the device in response to 8-week, 1 session/day was tested in 7 independent studies (in US, Italy and Israel): 4 studies were double-blinded, randomized controlled and 5 applied devices as control. Of the 286 patients studied 78% were on anti-hypertensive medication. Systolic/diastolic blood pressure (BP), if initially uncontrolled, was reduced by 13.7/8.9 mmHg, respectively, significantly more than control. No side effects were observed. Outcomes were independent of gender and medication status. Studies assessed compliance and dose-response relationship between benefit and exercise measures. Mechanism seems to involve reduction of sympathetic activity in response to activated pulmonary stretch receptors. Benefits of the device in CHF included significant increase in quality of life, ejection fraction and reductions in pulmonary arterial pressure, periodic breathing and sympathetic activity (2 studies in Italy and in Japan). In conclusion, device-guided paced breathing is an evidenced-based self-care tool in reducing high BP without side effects with the potential of treating additional clinical states with enhanced sympathetic activity.

Individual Abstract Number:1690

PCO2 BIOFEEDBACK-ASSISTED BREATHING TRAINING FOR PANIC DISORDER AND ASTHMA: RATIONAL AND EMPIRICAL FINDINGS
Alicia E. Curtin, Psychology, Thomas Ritz, Psychology, Southern Methodist University, Frank H. Wilhelm, Psychology, University of Basel, James L. Abelson, Psychiatry, University of Michigan, Ann Arbor, MI, Walton T. Roth, Psychiatry, Stanford University and VA Palo Alto HCS

Hypocapnia, defined as low levels of carbon dioxide partial pressure (pCO2), has been linked to experimental organ injury, organic disease, and psychological disorders. Specifically, hypocapnia resulting from hyperventilation can induce states of anxiety and panic attacks in panic patients. Hyperventilation is also frequent in asthma patients, who have a higher prevalence of panic. In addition, lower levels of pCO2 are linked to airway hyperreactivity and bronchoconstriction in these patients. We therefore developed a breathing training to help them achieve sustained increases in pCO2 levels. The training provides feedback of their end-tidal pCO2 with a hand-held capnometer. Data from twice-daily home-exercises are stored in the electronic memory of the capnometer and reviewed during weekly treatment sessions. Using auditory pacing signals during home exercises, patients learn to successfully breathe slower, shallower, and more regularly across a period of weeks, thereby increasing their pCO2 levels. Results from a randomized controlled trial demonstrated stable increases in pCO2 and lasting reductions in panic symptomatology associated with those increases. Stable pCO2 increases across an 8-week follow-up period were achieved in a pilot trial. The current study is a small scale of asthma/panic case series of 10 patients in reducing asthma symptoms and increasing perceived asthma control, but resting lung function was unchanged. Currently, trials are underway comparing the pCO2 biofeedback training with a placebo breathing therapy or cognitive therapy in panic patients, and exploring further possible cognitive, autonomic, behavioral, and endocrine mechanisms mediating the training effects.

SYMPOSIUM 1647

RACISM: RISK FACTORS, PSYCHOSOCIAL MECHANISMS, AND CARDIOVASCULAR CORRELATES
Elizabeth Brondolo, Psychology, St. John's University, Jamaica, NY, Robin L. Wellington, Nisha Brady, Elizabeth Brondolo, Psychology, St. John's University, Julian F. Thayer, Emotions and Quantitative Psychophysiology Section, National Institute on Aging, Baltimore, MD

Racial disparities in cardiovascular morbidity and mortality are a matter of serious national concern. Racism has been identified as a psychosocial stressor that may account for some observed health disparities. However, the mechanisms linking racism to increased risk for cardiovascular disease are not yet well understood. This symposium presents three papers examining issues related to the study of racism and health. Each paper presents data from a large community study of Black and Latino adults. The papers focus on the effects of interpersonal racism, which includes directly perceived experiences of stigmatization, social exclusion, harassment, and workplace discrimination. The first paper examines characteristics that place individuals at risk for race-related stress. The paper examines socioeconomic variations in exposure, evaluating the association of individual, family, and neighborhood measures of education, income and occupation to different types of interpersonal racism. The second paper examines psychosocial mechanisms potentially linking racism to health. Specifically, the authors examine the relationship of different facets of interpersonal racism to both trait and daily experiences of negative mood. The final paper examines the relationship of interpersonal racism to ambulatory blood pressure. Together these papers outline and begin to evaluate a testable model of the mechanisms through which racism, a salient social stressor, may affect cardiovascular health.

Individual Abstract Number:1654

RACISM AND AMBULATORY BLOOD PRESSURE IN A COMMUNITY SAMPLE
Elizabeth Brondolo, Daniel Libby, Psychology, St. John's University, Danielle Beaty, Psychology, City University New York, Andrea Cassells, Jonathan Tobin, Clinical Directors Network

Racism has been hypothesized to contribute to increased risk for cardiovascular disease. The aim of this study was to examine the relationship of perceived ethnic discrimination to 24-hour ambulatory blood pressure (ABP) monitoring. Participants included 375 adults of whom 228 were Black (132 women) and 147 Latino (79 women). Of these, 265 supplied adequate BP during sleep. Interpersonal racism was assessed with the Perceived Ethnic Discrimination Questionnaire - Community Version (PEDQ-CV). The PEDQ-CV generates a lifetime scale comprised of four subscales assessing social exclusion, threat and harassment, workplace discrimination and stigmatization and an additional item measuring unfair treatment from the police. The SunTech Accutracker II collected ABP readings every 20 minutes when awake and once every hour during sleep. On average, participants provided 28 post-baseline readings when awake and 3 during sleep. Mixed models analyses were performed with Perceived racism, Time period (awake vs. sleep) and their interaction serving as the predictors, and observation levels measures of systolic (SBP) and diastolic (DBP) blood pressure serving as outcome measures. Covariates included age, gender, race, body mass, and posture. The interaction of Time period X Perceived racism was significant (F(1,7844)= 11.04, p < .001). Perceived racism was positively associated with sleep SBP (B = 4.83, SE = 1.92, t = 2.52, p < .03), but not waking SBP. These effects remained significant with education, poverty level, and occupational status included to control for institutional barriers to economic access, and with hostility included to control for individual differences in social perception. These data add to a growing body of knowledge linking chronic social stressors to night-time BP. The findings support models suggesting that social stress may influence health through effects on cardiovascular recovery.

Individual Abstract Number:1653

RACISM AND NEGATIVE MOOD: ANALYSES OF TRAIT AND DIARY MEASURES OF MOOD
Nisha Brady, Shola Thompson, Melissa Weinstein, Elizabeth Brondolo, Psychology, St. John's University, Andrea Cassells, Jonathan Tobin, Clinical Directors Network

Race/ethnic discrimination has been hypothesized to contribute to racial disparities in health. However, the psychosocial mechanisms through which race discrimination affects health are unknown. One possibility is that the effects are mediated through negative emotion. This study examined the relationship of interpersonal racism to trait negative mood and daily experiences of negative mood in a community sample. Participants included 381 adults, including 220 Black (135 women) and 161 Latino (93 women). Interpersonal racism was assessed with the Perceived Ethnic Discrimination Questionnaire - Community Version (PEDQ-CV). The PEDQ-CV has four subscales assessing social exclusion, threat and harassment, workplace discrimination,
and stigmatization and an additional item measuring unfair treatment from the police. Trait negative mood was assessed with the Positive and Negative Affect Scale (PANAS). Daily mood was assessed with items inquiring about feelings of anger, nervousness and sadness presented on an automated diary completed every 20 minutes. Hierarchical multiple regression analyses were performed with the five PEDQ-CV subscales entered as a cluster. Findings confirmed that exposure to racism is associated with 13% of the variance in feelings of anger, nervousness and sadness.

**Individual Abstract Number:1651**

SOCIODEMOGRAPHIC VARIATIONS IN EXPOSURE TO RACISM

Robin L. Wellington, Yasaira Bautista, Psychology, St. John's University, Catherine Cubbin, Daniel Rivera, Clinical Directors Network

Recently investigators have suggested that racism or ethnicity-related maltreatment (ERM) contributes to racial disparities in health. The effects of racism may combine with other psychosocial factors to influence health. To understand the relationships among ethnicity, poverty and racism, these analyses examine demographic differences in exposure to ethnicity related maltreatment. Findings from previous studies of gender, age and socioeconomic status (SES) differences in exposure to ERM are mixed. However, some of the variations may be a function of the dimensions of maltreatment assessed. Participants included 418 adults between the ages of 25-65 of whom 237 were Black (147 women) and 181 were Latino (106 women). Interpersonal racism was assessed with the Perceived Ethnic Discrimination Questionnaire - Community Version (PEDQ-CV). The PEDQ-CV has four subscales assessing social exclusion, threat and harassment, workplace discrimination and stigmatization. Men reported more overall discrimination than women (p<.05) and specifically more stigmatization (p<.01). Blacks reported more overall discrimination than Latinos, and specifically more social exclusion (p<.05). Age was not related to any measure of racism. There were significant education level differences in exposure to discrimination, such that those with less than a high school education reported more ethnicity-related threats and harassment and more stigmatization than those with either a high school or college degree (ps<.05). Higher levels of job status were positively associated with higher levels of work place discrimination (p<.02) but lower levels of ethnicity-related threat and harassment and stigmatization (ps<.05).

These data indicate that individuals at all levels of SES experience exposure to racism, but the type of maltreatment varies by SES. Low SES individuals may be at increased risk for adverse health outcomes because of their greater exposure to some forms of maltreatment.

**SYMPOSIUM 1153**

THE USE OF NON-INVASIVE ELECTROGASTROGRAPHY (EGG) IN STUDIES OF BRAIN-GUT INTERACTIONS: PHYSIOLOGICAL BASIS, PSYCHOPSYCHOLOGICAL RELATIONSHIPS, AND CLINICAL APPLICATIONS

Max E. Levine, Internal Medicine and Psychology, Wake Forest University, Winston-Salem, NC, Kenneth L. Koch, Internal Medicine, Wake Forest University School of Medicine, Eric R. Muth, Psychology, Clemson University, Max E. Levine, Internal Medicine, Wake Forest University, Karin Meissner, Medical Psychology, Ludwig-Maximilians-University Munich

The electrogastrogram (EGG) is a non-invasive measure of gastric myoelectrical pacemaker activity. Talks in this symposium will address the physiological basis of the measure, its relationship with gastrointestinal symptoms such as nausea, and with visceral perceptions such as appetite, and its sensitivity to manipulations of stress, mechanisms of central control of the gastric rhythm during various cognitive and behavioral tasks, and potential clinical applications of EGG. The emphasis of the symposium will be to encourage the use of EGG by others in the field in order to gain new insight into the issues they are investigating, and to excite members of the audience about the great potential of EGG to answer intriguing psychophysiological questions. The first speaker will introduce the physiological basis of the EGG, address some of the important history of its use as a non-invasive index of gastric function, and suggest potential clinical applications of the EGG. The next speaker will address the effects of psychological stress on the EGG, functioning of the gastrointestinal system, and corresponding symptoms. The third speaker will discuss the protective effect of stress-reducing perceptions of control and predictability on the development of gastric dysrhythmia and nausea in response to motion sickness simulation. The fourth speaker will describe differences in central control mechanisms of the gastric rhythm during various cognitive and behavioral tasks. The last speaker of the symposium will share intriguing data from EGG studies of the cephalic phase of digestion, and make suggestions for the potential application of the EGG to the study of eating disorders.

**Individual Abstract Number:1154**

ELECTROGASTROGRAPHY: PHYSIOLOGICAL BASIS AND CLINICAL APPLICATIONS

Kenneth L. Koch, Internal Medicine, Wake Forest University School of Medicine

Electrogastrography methods are used to record electrogastrograms or EGGs. The EGG signal reflects the electrical rhythmicity of the stomach which is generated by interstitial cells of Cajal (ICC's). The ICCs are the pacemaker cells of the gastrointestinal tract. In the stomach, the normal pacemaker frequency is 3 cycles per min (cpm) and ranges from 2.5 to 3.7 cpm. The ICCs coordinate the stomach's smooth muscle activity by changing the electrical rhythmicity of the enteric nerves of the gut, the vagal and sympathetic nervous inputs, and hormonal milieu (e.g. estrogen, vasopressin). Thus, the EGG reflects the sum of electrical activity occurring within the neuromuscular wall of the stomach at any given time. The regular 3 cpm EGG waves after meals reflect regular 3 per min gastric peristaltic contractions. Gastric dysrhythmias are abnormal gastric electrical waves: bradygastria (0 - 2.5 cpm), tachygastria (3.7 - 10.0 cpm), and mixed or nonspecific dysrhythmias. Gastric dysrhythmias have been detected in many clinical conditions where nausea is a key symptom: nausea of pregnancy, Type 1 and Type 2 diabetes mellitus with or without gastroparesis, heartburn with dyspepsia symptoms, unexplained nausea and dyspepsia, and motion sickness. Provocative meals such as the water load test or satiety tests using nutrient loads are used to challenge the neuromuscular activity of the stomach and elicit symptoms and gastric dysrhythmias. Characterizing the gastric electrogastrogram may have diagnostic implications as well. For example, studies have shown that psychological stress in the absence of nausea can evoke at least one pattern (Koch, Leibowitz, Lindblad, Shupert & Stewart, 1985). At least one study has shown that psychological stress in the absence of nausea can evoke a similar pattern (Muth, Koch, Stern & Thayer, 1999). In that study tachygastria was evoked by a time-reaction, shock avoidance task. We currently record electrogastrogram, gastric emptying and small bowel transit time during various stress paradigms. We have found that illusory self motion increases tachygastria and reduces gastric emptying. Performing math (e.g., metoclopramide, cisapride, domperidone) correlates with reduction in symptoms of nausea. Thus, the presence of gastric dysrhythmias is a biomarker for gastric neuromuscular dysfunction in patients with unexplained upper gastrointestinal symptoms such as nausea. Implantable gastric pacemakers or gastric electrical stimulation devices are being used to try to reduce nausea and improve gastric neuromuscular activity on the one hand, while in other trials the pacemakers are being used to stimulate nausea and dyspepsia in obese patients for the purpose of weight reduction.

**Individual Abstract Number:1156**

EFFECTS OF STRESS ON THE GASTROINTESTINAL SYSTEM

Eric R. Muth, Psychology, Clemson University

Numerous studies have associated reduced normal, 3 cpm activity and increased 4-9 cpm tachygastria in the electrogastrogram with nausea (e.g., Stern, Koch, Leibowitz, Lindblad, Shupert & Stewart, 1985). At least one study has shown that psychological stress in the absence of nausea can evoke a similar pattern (Muth, Koch, Leibowitz, Lindblad, Shupert & Stewart, 1985). At least one study has shown that psychological stress in the absence of nausea can evoke a similar pattern (Muth, Koch, Leibowitz, Lindblad, Shupert & Stewart, 1985). At least one study has shown that psychological stress in the absence of nausea can evoke a similar pattern (Muth, Koch, Leibowitz, Lindblad, Shupert & Stewart, 1985).

**Individual Abstract Number:1157**

PERCEIVED CONTROL AND PREDICTABILITY: PSYCHOSOCIAL INFLUENCES ON THE DEVELOPMENT OF GASTRIC TACHYARRHYTHMIA AND VECTON-INDUCED NAUSEA

Max E. Levine, Internal Medicine and Psychology, Wake Forest University School of Medicine

Enhancement of perceived control and predictability is effective for attenuating the physiological stress response. This study was an exploration of the influence of two psychosocial variables on the development of gastric tachyarrhythmia and nausea provoked by a rotating optokinetic drum.
Perceived control and predictability were provided at high or low levels to 80 participants. Those with high control were given a hand-held device that could stop the drum's rotation at any time; those with low control passively viewed the rotation of the drum being operated by an experimenter from another room. Those with high predictability were told for exactly how long the drum would rotate, and were given updates every 2 min of the amount of time remaining; those with low predictability were not given this information. Nausea ratings and electrodermograms (EGGs) were obtained throughout a 6 min baseline and subsequent 16 min drum rotation period. Nausea ratings were significantly lower among participants with high control than low control (p<.001), and were significantly lower among participants with high predictability than low predictability (p=.01). Estimates of gastric tachyarrhythmia obtained from the EGG were significantly lower among participants with high predictability than low predictability, (p=.05). Although gastric tachyarrhythmia was lower among participants with high control than low control, the difference was not statistically significant. Stronger perceptions of control and predictability may temper the development of nausea and dysrhythmic gastric activity during exposure to provocative motion. Participants who knew they were able to stop the drum's rotation as soon as they deemed necessary, and those who knew how long they needed to endure the drum's stressful stimulation tended to develop less severe symptoms of nausea and gastric dysrhythmia. These results may have implications for the effective, nonpharmacological treatment of nausea in various evocative contexts.

Individual Abstract Number:1159
GASTRIC SLOW WAVE FREQUENCY AS A TOOL TO INVESTIGATE CENTRAL CONTROL DURING DIFFERENT COGNITIVE AND BEHAVIORAL TASKS
Karin Meissner, Institute of Medical Psychology, University of Munich

Under normal conditions the frequency of gastric slow waves varies between 2.5 and 3.7 cycles per minute, and this variation is supposedly, among other factors, due to changes in autonomic control. Therefore, an investigation of gastric slow wave frequency together with other autonomic measures may help to elucidate autonomic control mechanisms. Information on instantaneous gastric slow wave frequency can be easily derived from the electronic high-pass filtered raw signal. In a recent study on the effect of placebo on gastric motility (Meissner et al., 2005), a slight but significant decrease of gastric slow wave frequency could be demonstrated in response to an intervention intended to enhance stomach activity. This change was independent of changes in other measures, including heart rate, respiratory sinus arrhythmia, respiration rate, and skin conductance, suggesting the cognitive intervention to have influenced the gastric rhythm selectively. Presently, we are continuing our line of research by employing paradigms with different cognitive or behavioral demand characteristics. An experiment on heart-rate-variability feedback, for example, showed a strong coupling between gastric frequency and cardiac interbeat intervals to occur in baseline and feedback conditions, which can be interpreted as support for the existence of a common mechanism controlling both cardiac and gastric function. Furthermore, with increasing skin conductance levels mean gastric frequency converged to a rhythm at 3 cycles per minute. This suggests that sympathetic activation enhances the central control on the gastric rhythm, at least when subjects are moderately activated by a cognitive task. Possible implications for health and disease will be discussed.

SYMPOSIUM 1236
IMMUNE-TO-BRAIN COMMUNICATION: THE INFLUENCE OF CYTOKINES ON BRAIN ACTIVITY AND COGNITIVE FUNCTION
Anna L. Marsland, Psychology, University of Pittsburgh, Pittsburgh, PA, Steven F. Maier, Psychology, University of Colorado, Raz Yirmiya, Psychology, The Hebrew University, Lucile Capuron, Universite Bordeaux 2, Anna L. Marsland, Psychology, University of Pittsburgh, PA

A growing body of evidence supports immune-to-brain communication, with peripheral immune activation resulting in behavioral, affective and cognitive disturbances. This symposium will examine converging evidence from 4 complementary research approaches linking proinflammatory cytokine levels to brain activity and impaired neurocognitive functioning. The symposium will begin with a review of recent animal data demonstrating that peripheral pro-inflammatory cytokines induce the production of pro-inflammatory cytokines in the brain, which, in turn, interfere with the consolidation of long-term memories. In the second talk, complementary human data will be presented showing that under different conditions of acute immune activation, the proinflammatory cytokine interleukin-6 is associated with either detrimental or protective effects on memory function. The third presentation will take a more direct look at the impact of peripheral cytokines on brain activity using fMRI. Here, data suggest that the therapeutic administration of IFN alpha is associated with an increase in anterior cingulate cortex activity, which may reflect changes in information processing and contribute to a concomitant increase in visual-spatial errors and other cognitive changes that accompany cytokine therapy. Finally, data will be presented suggesting that chronic inflammation, as measured by higher circulating levels of IL-6, is associated with poorer cognitive function among relatively healthy, middle aged community volunteers. In sum, findings from studies examining the impact of cytokine-mediated inflammatory processes on the CNS and neurocognitive function are remarkably consistent. Peripheral proinflammatory cytokines, whether released in response to immune activation, or administered experimentally in animal models or as a therapeutic treatment in humans, are linked to brain activity and to related impairment of memory, learning and cognition. These findings provide further support for immune-to-brain communication and may have implications for age-related cognitive decline.

Individual Abstract Number:1249
IMMUNE-TO-BRAIN COMMUNICATION: IMPLICATIONS FOR UNDERSTANDING COGNITIVE DISORDERS
Steven F. Maier, Psychology, University of Colorado

Work will be reviewed which indicates that pro-inflammatory cytokines in the periphery induce the production of pro-inflammatory cytokines in the brain, largely by glial cells. These brain-derived cytokines play a variety of physiological roles and can induce pathophysiological outcomes when produced in excess. The cognitive/memory consequences of excessive levels of cytokines will be highlighted, with work presented that indicates that high levels of cytokines, such as interleukin-1, can interfere with the consolidation of long-term memories. These high levels are likely to be produced under certain circumstances in which peripheral immune activation occurs and glial cells are already in a 'primed' state. A variety of conditions can lead to such glial priming, but infection early in life and aging will be highlighted.

Individual Abstract Number:1593
THE ROLE OF PRO-INFLAMMATORY CYTOKINES IN MEMORY PROCESSES
Raz Yirmiya, Psychology, The Hebrew University

It has become evident that inflammatory cytokines regulate not only the immune responses to various challenges, but also various neurobehavioral responses. To examine relationships between cytokines and cognitive functioning we examined the effects of endotoxin (0.2-0.8 ng/kg) in healthy male volunteers, using within-subjects, double blind, crossover design. Although these low doses of endotoxin did not induce subjective flu-like symptoms, they did elevate serum levels of inflammatory cytokines and produced significant impairments in tests of declarative memory (e.g., delayed story and complex figure recall). Importantly, there were high positive correlations between cytokine levels (e.g., IL-6) and memory impairments. In another study, we administered a comprehensive neuropsychological battery to patients undergoing minor surgery, both before and 24 hr after surgery. Following surgery, patients displayed significant impairments in both verbal and visual declarative memory, but not in underlying cognitive parameters, compared with control subjects and with their own baseline performance levels. Surprisingly, the memory impairments were inversely correlated with the elevation in IL-6 following the surgery, suggesting that in this model increases in IL-6 levels are associated with protection from surgery-induced memory disturbances. Recent studies in rodents demonstrated that inflammatory cytokines might be involved not only in memory modulation following immune challenges, but also in underlying memory formation in normal physiological conditions. For example, we reported that mice with genetic or pharmacological impairments in interleukin (IL)-1 signaling display marked disturbances in memory functioning and hippocampal neural plasticity, whereas intracerebral administration of low doses of IL-1 can improve memory functioning. Together, these findings demonstrate the complexity of the relationships between inflammatory cytokines and memory, emphasizing the need to examine in detail the role of specific cytokines and their specific levels, in modulation of memory functioning under specific conditions.
The topic of sleep is experiencing a renaissance in psychosomatic medicine. Recent papers in influential journals have linked disturbed sleep to risk factors for poor health outcomes (markers of inflammation, blunted response to vaccination, susceptibility to the common cold, and insulin resistance) as well as increases in medical and psychiatric morbidity and all-cause mortality. Importantly, factors that are common to research in psychosomatic medicine including psychological stress, intrusive thoughts, coping behaviors, substance use, and exercise are significant correlates of sleep. Accumulating evidence suggests that sleep may be an important path whereby psychosocial and behavioral factors affect health and functioning. This symposium will present 5 papers that address different aspects of the stress, sleep and health relationship. The first two presentations will evaluate risk factors for disturbed sleep in mid- and late-life adults. The second two presentations will focus on relationships among sleep and physiology, including markers of inflammation and blood pressure dipping. The final presentation will focus on the results of a meta-analysis of behavioral studies for the treatment of insomnia, which offers hope for treating disturbed sleep and, potentially, affecting health and functioning. It is our hope to stimulate lively and thoughtful discussions about the possible roles, and significance, of sleep in psychosomatic medicine research.

Individual Abstract Number:1258
NOCTURNAL REVERBERATIONS OF ADVERSITY: THE EFFECT OF SOCIAL CLASS, ETHNICITY, AND STRESS ON NOCTURNAL BLOOD PRESSURE AND SLEEP ARCHITECTURE
Joel E. Dimsdale, Sonia Ancoli-Israel, Wayne Bardwell, Jose Loredo, KaMala Thomas, Carl Stepnowsky, Psychiatry, University of California, San Diego

Psychosocial adversity profoundly affects health, but few studies have examined how adversity affects sleep. This study examined the effect of adversity on nocturnal BP & sleep architecture. 69 African-Americans (AA) & 84 Euro-Americans (EA) were studied. Subjects were either healthy normotensive or else hypertensive and off meds. Subjects with current Axis I disorders or those taking psychotropic meds or meds known to affect sleep were excluded. Sleep was monitored with inpatient polysomnography & ambulatory blood pressure was studied with 24hour ambulatory BP monitoring on a work day. Distress was assessed with the POMS, the CES-D, Cook-Medley Stress subscale, Hassles & uplifts inventory, Buss-Durkee inventory and the MFSI Fatigue scale. Discrimination was assessed with the Scale of Ethnic Experience. Data were analyzed with linear regression, ANOVA, & t-test. There was less Nocturnal BP dipping in subjects from lower SES backgrounds. In addition, AAs also showed less nocturnal dipping than EA. Sleep architecture itself differed across the ethnic groups with AAs showing less deep sleep and more wake after sleep onset. Subjects from lower SES backgrounds manifest lower oxygen saturation levels, lower sleep efficiency, and more arousals. Numerous measures of distress were related to interrupted sleep. Subjects reporting more perceived discrimination had less deep sleep & more complaints of fatigue. Psychoanalysts used to speak of "day remnants," events of the day which "leached" into the dream content at night. This study suggests that events of the day profoundly affect nocturnal BP regulation and sleep architecture. Consideration of the effects of adversity are important in epidemiological studies of sleep.

Individual Abstract Number:1259
FINANCIAL BURDEN AS A CORRELATE OF DISTURBED SLEEP IN THE ELDERLY
Martica Hall, Daniel Buysse, Eric Nofinger, Charles Reynolds, Timothy Monk, Psychiatry, University of Pittsburgh

Disturbed sleep is associated with adverse health outcomes including psychiatric and medical morbidity and all-cause mortality. Recent evidence supports the hypothesis that it is not biological aging, per se, that affects sleep but factors that travel with age, such as psychiatric and medical morbidity. Yet, disturbed sleep is observed even in healthy elders. In these analyses we examine financial burden as a potential correlate of disturbed sleep that could affect older adults regardless of health status. Participants were enrolled in a program project (AG020677), which includes a heterogeneous group of elders facing late life challenges such as bereavement, spousal caregiving, co-morbid insomnia or advancing into the final years of life. The present sample includes 72 participants (mean age = 75 yrs, 68% female, 86% white).

Individual Abstract Number:1382
INTERLEUKIN-6 COVARIATES INVERSELY WITH COGNITIVE PERFORMANCE AMONG MIDDLE-AGED COMMUNITY VOLUNTEERS
Anastasios Giannakopoulos, Karen L. Petersen, Psychology, University of Pittsburgh, Janine D. Flory, Psychiatry, Mount Sinai School of Medicine, Matthew F. Muldun, Clinical Pharmacology, University of Pittsburgh School of Medicine, Sorina A. Neumann, Psychology, University of Pittsburgh, Stephen B. Manuck, Psychology, University of Pittsburgh

Recent evidence suggests that higher peripheral levels of interleukin 6 (IL-6) are associated with poorer cognitive function and predict future cognitive decline among the elderly. The current investigation extends the study of relationships between plasma IL-6 and cognitive performance to healthy middle-aged adults and to an examination of more specific cognitive domains. Five hundred relatively healthy community volunteers aged 30-54 had blood drawn for the determination of plasma IL-6 levels and completed a battery of neuropsychological tests evaluating memory and executive function. After controlling for age, gender, race and education, hierarchical regression analyses revealed an inverse relationship between circulating levels of IL-6 and performance on clusters of tests assessing auditory and spatial memory and executive function. In contrast, there was no association between IL-6 and performance on tests of verbal or working memory. Secondary analyses demonstrated that relationships between IL-6 and auditory and spatial memory and executive function were independent of a number of health factors, including body mass index, smoking and exercise. These findings contribute to growing body of evidence linking chronic inflammation to poorer cognitive functioning and extend these findings to a mid-life community sample, raising the possibility that IL-6 may represent a biomarker for risk of future cognitive decline. The pattern of cognitive functioning associated with IL-6 seen in the present study is consistent with animal literature and suggests poorer functioning of the hippocampus and prefrontal cortex where brain IL-6 receptors are localized.

SYMPOSIUM 1151
SLEEP IN PSYCHOSOMATIC RESEARCH: RISK FACTORS, CONSEQUENCES TO HEALTH, AND BEHAVIORAL INTERVENTIONS
Martica Hall, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Karen A. Matthews, Psychology, University of Pittsburgh, Joel E. Dimsdale, Psychiatry, University of California, San Diego, Martica Hall, Psychiatry and Psychology, University of Pittsburgh School of Medicine, Michael R. Irwin, Psychiatry and Behavioral Sciences, Cousins Center for Psychoneuroimmunology, Semel Inst, Michele L. Okun, Psychiatry, University of Pittsburgh

There has been increasing interest in the role of immunological processes, notably cytokines, in the development of mood and cognitive alterations in medically ill patients. To further understand cytokine effects on the brain in humans, investigators have studied patients administered the cytokine, interferon (IFN)-alpha, for the treatment of infectious diseases and cancer. IFN-alpha is notorious for causing neuropsychiatric symptoms, including mood alterations and cognitive dysfunction, depending on the dose and duration of therapy. We conducted a recent investigation assessing the effects of IFN-alpha on brain activity using functional magnetic resonance imaging (fMRI) during a cognitive task of visuo-spatial attention. Despite endorsing increased neuropsychiatric symptoms, including impaired concentration and fatigue, IFN-alpha-treated patients exhibited reaction times and performance accuracy similar to controls. In addition, both groups exhibited similar activation in parietal and occipital brain regions. Interestingly, however, in contrast with controls, IFN-alpha-treated patients exhibited significantly higher activation in the dorsal part of the anterior cingulate cortex (ACC) (BA 24), which is typically correlated with task-related errors. No such correlation was found in the control group. ACC activation has been associated with cognitive effort and conflict monitoring in normal subjects and is increased in individuals at risk for mood and anxiety disorders. Thus, ACC activation during IFN-alpha treatment may reflect a greater deployment of effort and/or changes in information processing (i.e., increased sensitivity to processing conflicts and perceived negative events), thereby contributing to the vulnerability to cytokine-induced mood and cognitive symptoms.

Individual Abstract Number:1239
INTERFERON-ALPHA THERAPY IS ASSOCIATED WITH ALTERED INFORMATION PROCESSING IN PATIENTS WITH CHRONIC HEPATITIS C
Lucile Capuron, Universite Bordeaux 2

Importantly, factors that are common to research in psychosomatic medicine including psychological stress, intrusive thoughts, coping behaviors, substance use, and exercise are significant correlates of sleep. Accumulating evidence suggests that sleep may be an important path whereby psychosocial and behavioral factors affect health and functioning. This symposium will present 5 papers that address different aspects of the stress, sleep and health relationship. The first two presentations will evaluate risk factors for disturbed sleep in mid- and late-life adults. The second two presentations will focus on relationships among sleep and physiology, including markers of inflammation and blood pressure dipping. The final presentation will focus on the results of a meta-analysis of behavioral studies for the treatment of insomnia, which offers hope for treating disturbed sleep and, potentially, affecting health and functioning. It is our hope to stimulate lively and thoughtful discussions about the possible roles, and significance, of sleep in psychosomatic medicine research.

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Lucile Capuron, Universite Bordeaux 2

The topic of sleep is experiencing a renaissance in psychosomatic medicine. Recent papers in influential journals have linked disturbed sleep to risk factors for poor health outcomes (markers of inflammation, blunted response to vaccination, susceptibility to the common cold, and insulin resistance) as well as increases in medical and psychiatric morbidity and all-cause mortality. Importantly, factors that are common to research in psychosomatic medicine including psychological stress, intrusive thoughts, coping behaviors, substance use, and exercise are significant correlates of sleep. Accumulating evidence suggests that sleep may be an important path whereby psychosocial and behavioral factors affect health and functioning. This symposium will present 5 papers that address different aspects of the stress, sleep and health relationship. The first two presentations will evaluate risk factors for disturbed sleep in mid- and late-life adults. The second two presentations will focus on relationships among sleep and physiology, including markers of inflammation and blood pressure dipping. The final presentation will focus on the results of a meta-analysis of behavioral studies for the treatment of insomnia, which offers hope for treating disturbed sleep and, potentially, affecting health and functioning. It is our hope to stimulate lively and thoughtful discussions about the possible roles, and significance, of sleep in psychosomatic medicine research.
Financial burden was dichotomized (0 = no difficulties making ends meet or running out of money at the end of each month, 1 = some or constant difficulties). Sleep was measured by self-report (sleep quality and social rhythms) and polysomnography (PSG). PSG sleep measures included time spent asleep, sleep latency and efficiency, wakefulness after sleep onset and percent delta sleep, which have been linked to various indices of health and functioning. Predictors for regression models included age, apnea-hypopnea index (AHI), and financial burden. Financial burden was not correlated with mental or physical health in the present sample. After accounting for the effects of age and AHI, increased financial burden was associated with decreased social rhythms (Beta = -.26, p<.01), time spent asleep (Beta = -.27, p<.02), and sleep efficiency (Beta = -.31, p<.01) and increased sleep latency (Beta = .30, p<.01). Financial burden may be a significant, independent correlate of disturbed sleep in the elderly. The extent to which sleep disturbances associated with financial burden are amenable to intervention or impact mental and physical health outcomes remains to be evaluated.

Individual Abstract Number: 1246
BLOOD PRESSURE DIPPING STATUS AND SLEEP QUALITY
Karen Matthews, Martica Hall, Thomas Kamarck, Jane Owens, Daniel Buysse, Steven Reis, Patrick Strollo, University of Pittsburgh

Elevated nighttime blood pressure (BP) or “dipping hypertension” is an independent risk factor for a range of cardiovascular diseases, including stroke and heart failure. However, the mechanisms underlying dipping hypertension and stroke are not well understood. We hypothesized that dipping hypertension is not just a marker of worse cardiovascular health, but a marker of cardiovascular disease itself. To test this hypothesis, we examined dipping hypertension in a subset of patients with pre-existing cardiovascular disease. We found that patients with dipping hypertension had lower sleep efficiency and increased sleep latency compared to nondippers. These findings suggest that dipping hypertension is a marker of cardiovascular disease itself, and highlight the importance of understanding the mechanisms underlying dipping hypertension.

Individual Abstract Number: 1403
DISTURBED SLEEP DURING PREGNANCY IS ASSOCIATED WITH CHANGES IN IN VITRO CYTOKINE PRODUCTION
Michele L. Ohun, Psychiatry, University of Pittsburgh, Mary Coussons-Read, Psychology, University of Colorado Denver

Sleep loss has been shown to alter various immune parameters in men, particularly an increase in pro-inflammatory cytokines. Women who experience pregnancy-related sleep disturbances, i.e., sleep loss, may be at risk for the same pro-inflammatory cytokines. Although women commonly report their sleep to be disrupted during pregnancy, the effects of chronic sleep loss/disruption during pregnancy on maternal health or pregnancy outcomes have not been studied. Pregnant women (N = 84) were recruited to assess the relationship between sleep disruption and immune parameters as part of a larger study. Markers of inflammation and sleep were measured in a subsample of women (n = 24, mean age 31.1 yrs) during weeks 36-38 of gestation. The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep. White-Plex 16-Well Human Cytokine Array Kits (Novagen, USA) were used to detect and quantify 3 sleep associated cytokines (IL-1β, IL-6 and TNF-a) from cell culture supernatants of mitogen-stimulated lymphocytes. Spearman rank-order correlations were used to evaluate relationships between sleep parameters and cytokines. IL-1β and TNF-a were significantly correlated with sleep shorter sleep duration (rho = .40, p<.01 and rho = .44, p<.01, respectively) and poor sleep efficiency (rho = .50, p<.007 and rho = .48, p = .02, respectively). IL-6 was significantly correlated with daytime dysfunction (rho = .56, p <.004 and global subjective sleep quality complaints (rho = .45, p = .02). These data are the first to evaluate how in vitro cytokine secretion changes in association with sleep complaints experienced during pregnancy. These data are congruent with previous reports that elevated IL-1β, TNF-a and IL-6 during the day are related to subjective reports of sleepiness (Modolfsky et al, 1995, Vgontzas et al., 2002). There is a need to understand how the relationship between sleep disruption and cytokines during pregnancy can negatively affect pregnancy outcomes.

Individual Abstract Number: 1358
COMPARATIVE META-ANALYSIS OF BEHAVIORAL INTERVENTIONS FOR INSOMNIA: EFFICACY IN ADULTS AND IN ADULTS 55+ YEARS.
Michael R. Irwin, Jason C. Cole, Perry M. Nicassio, Psychiatry, Cousins Center, UCLA Semel Institute

Background: Poor sleep is one of the most common complaints in adults. Behavioral interventions are increasingly viewed as effective in the treatment of insomnia. However, less is known about differences in the efficacy of various behavioral strategies for the management of insomnia or the relation of old age to sleep outcomes. Methods: In this meta-analysis, 23 randomized controlled trials (45.1% of the original pool of 51 studies) met quality criteria and were selected for inclusion. Fixed and random effects models were used to evaluate efficacy; moderation effects of intervention type and age cohort (adult vs older adult) were tested. Results: Behavioral treatments had moderate to large effects on subjective sleep outcomes. Evaluation of the moderating effects of behavioral intervention type (i.e., cognitive behavioral treatment, relaxation, behavioral only) revealed similar effects for the three treatment modalities. Both middle-aged adults and persons older than 55 years of age showed improvements in sleep parameters in intervention groups compared to control groups. Conclusions: This meta-analysis confirms the efficacy of behavioral interventions for persons with chronic insomnia, and provides new information on the benefits of behavioral interventions for elderly persons. Future research would be enhanced by adoption of standardized procedures for arriving at the diagnosis of insomnia, greater use of polysomnographic evaluation of sleep outcomes, increased reliance on hypnotics, and more precise methods to reflect the impact of these interventions on disability and disease activity in affected groups, and a broader consideration of the range of populations in which poor sleep comprises quality of life and poses a risk for adverse health changes. Supported by MH55253, AG18367, T32-MH19925, M01-RR00865, General Clinical Research Centers Program, and the Cousins Center for Psychoneuroimmunology.

SYMPOSIUM 1083
THE PSYCHONEUROIMMUNOLOGY OF PREGNANCY: PSYCHOSOCIAL, NEUROENDOCRINE, AND IMMUNE INFLUENCES ON PREGNANCY OUTCOME AND EARLY DEVELOPMENT
Mary E. Coussons-Read, Psychology and Health and Behavioral Science, University of Colorado at Denver and Health Sciences, Denver, Colorado, Christopher Coe, Psychology, University of Wisconsin, Madison,, Cheryl Dunkel-Schetter, Psychology, University of California, Los Angeles, Jeanne Ruiz, Nursing, University of Texas Medical Branch, Mary Coussons-Read, Psychology and Health and Behavioral Science, University of Colorado at Denver and Health Sciences

Stress is detrimental for early human development, but few studies have documented the mechanisms and clinical relevance of these effects. This symposium presents research showing that social, physical, and psychological stress affect pregnancy and infant development via endocrine and immune mechanisms. The first speaker will introduce the topic and describe work documenting the mechanisms and clinical relevance of these effects. The second speaker will present work addressing the role of stress in ethnic disparities in pregnancy outcome. The data provide new information about the interactions between psychosocial factors, racism, and preexisting health status for pregnancy outcome in African American women. The third speaker will report on the effects of stress and cytokines on pregnancy in Hispanic women. This project examines relationships between acculturation, vaginal and serum cytokines, and birth outcomes to provide new data about the reality of the "hispanic paradox" in pregnancy. The fourth speaker will discuss the effects...
of in utero stress on development in non-human primates. Infection, administration of stress hormones, and psychological stress alter infant neural, endocrin e, and behavioral development, underscoring the importance of comparative approaches to this complex area. Together the symposium describes the pathways through which social, physiological, and psychological stressors imperil pregnancy and suggests potential routes for future investigations aimed at alleviating these effects.

Individual Abstract Number:1426
MODULATION OF INFLAMMATORY CYTOKINES BY PSYCHOSOCIAL FACTORS ACROSS PREGNANCY
Mary Cousons-Read, Psychology and Health and Behavioral Science, University of Colorado at Denver and Health Sciences

Prenatal stress is related to prematurity and low birthweight, although no prospective studies have identified how these effects occur. This study builds on our prior work to determine if stress alters inflammatory and immune parameters during pregnancy in a manner which contributes to poor outcome. Pregnant women completed the Denver Maternal Health Assessment and provided blood samples at 12-16, 22-26, and 36-40 weeks of pregnancy. Serum levels of TNF-a, IL-6 and IL-10 were determined via ELISA (Biosource Europe), and production of cytokines by stimulated lymphocytes late in pregnancy was assessed using protein microarrays (Novagen). Estriol was assessed across an ELISA (Linco). Stresser measures included serum IL-6 in the first and second trimesters, and of lower IL-10 during the first trimester. No reliable relationship between serum cytokines and those produced by stimulated lymphocytes was observed in the third trimester, although the psychosocial measures across pregnancy and during the third trimester were related to in stimulated cytokine production. Stress across pregnancy and in the third trimester was predictive of elevated production of IL-6 by stimulated lymphocytes, and low social support throughout pregnancy and in the third trimester were associated with higher production of TNF-a. Finally, elevated circulating estriol, a marker of fetal distress, was related to higher production of IL-6. These data suggest that psychosocial and lifestyle variables across pregnancy affect serum cytokines in a manner which may be predictive of poor pregnancy outcome. Furthermore, stress and social support late in pregnancy affect the production of cytokines by stimulated maternal lymphocytes, and an apparent direct effect of stress on maternal immune status that may influence the circulating cytokine milieu. Ongoing and future studies will focus on assessing other sources of maternal cytokines and determining the predictive value of these measures for untoward pregnancy outcome.

Individual Abstract Number:1380
PSYCHOSOCIAL STRESS, PHYSIOLOGY, AND RACIAL DISPARITIES IN AVERSE PREGNANCY OUTCOMES
Clayton J. Hilbert, Psychology, North Dakota State University, Christine Dunkel Schetter, Psychology, University of California, Los Angeles, Ryan Parker Dominguez, School of Social Work, University of Southern California, Laura Glynn, Psychiatry, University of California, Irvine

African American women are twice as likely as Nonhispanic White women to deliver preterm and have low birthweight babies. Racial differences in psychosocial stress and stress physiology may be closely related to this persistent health disparity. We have been examining relationships between stress, blood pressure, and neuroendocrine levels in African American and Nonhispanic White pregnant women in an effort to explain these severe birth outcome discrepancies. A prospective study of 499 pregnant women assessed blood pressure, CRH, ACTH, cortisol, and psychosocial stress at 18-20, 24-26, 30-32, and 34-36 weeks gestation. Psychosocial measures included standard stress measures (e.g., PSS, STAI), pregnancy-specific anxiety, and a measure of racism exposure. African Americans reported significantly higher perceived stress, lower pregnancy wantedness, and higher racism exposure than Whites. African Americans tended to be lower in CRH and cortisol, but higher in ACTH, especially late in pregnancy. Racism, particularly in childhood, significantly mediated race effects on birthweight and late term CRH levels mediated racism effects on birthweight. In addition, maternal stress and blood pressure were positively related in African Americans but not in Whites. Women with both higher blood pressure and higher stress gave birth to smaller babies than those with high levels of only one risk factor. Persistent disparities faced by African American women, requires we consider multiple psychosocial and physiological parameters. These findings fit within a growing recognition that endocrine, immune, and cardiovascular pathways are related to the role of stress as a risk factor in preterm delivery and other birth outcomes in complex ways.

Individual Abstract Number:1381
THE HISPANIC PARADOX: IMMIGRANT AND ACCULTURATED PREGNANT WOMEN
Jeane Ruiz, Nursing, University of Texas Medical Branch

Few studies address prematurity and LBW in Hispanics, and fewer address biological aspects of these outcomes. Data show a "Hispanic paradox"- that Hispanics have similar rates of LBW and preterm birth as Caucasian women, despite adverse socioeconomic conditions. The acculturation literature shows a dramatic increase in prematurity in Hispanic immigrant populations in the United which is associated with length of time in the U.S., and is not explained by socioeconomic or lifestyle variables. Stress is a major variable for investigation as a factor in such ethnic differences. Our subjects were 338 Hispanic pregnant women of low income, low medical risk, at 22-24 weeks gestation, ages 14-40, at two sites in south and central Texas. Numerous various psychological self report instruments were given to measure perceived stress, father's social support, anxiety, and depression. Serum levels of progesterone, cortisol, and estriol were determined by and ELISA. Birth outcome data was extrapolated from the medical records. Psychological profiles differed among English and Spanish speakers. English speakers had higher mastery scores, less paternal support, more anxiety, and more stress. Spanish speakers had a positive relationship with the baby’s father, less anxiety and depression, and less stress. Years in the U.S. predicted stress levels, lower prenatal transf of iron to the infant (p<.05), and increased hormone release by the HPA axis. Specifically, the infants were more likely to break through an overnight Dexamethasone Suppression Test, indicating altered negative feedback and greater drive. Mediation pathways for several long-term effects were identified, including lower prenatal transfer of iron to the infant (p<.05), and increased gastrointestinal illness due to lower levels of protective gut flora (Lactobacilli and Bifidobacter) (p<.05). Conclusion. Adverse events during fetal life can persistently influence physiology, impacting the developing brain and endocrine system and changing regulatory set points postpartum. In addition to increased placental transfer of maternal cortisol, which is the mediator most commonly postulated, disturbance of microbiota homeostasis and establishment of an abnormal profile of gut bacteria were identified as important factors.

SYMPOSIUM 1467
JOHN HENRYISM AND HEALTH OUTCOMES AMONG AFRICAN-AMERICANS: A RECONCEPTUALIZATION
Sherman A. James, Community and Family Medicine, Duke University, Durham, NC, Keith Whitfield, Biobehavioral Health, The Pennsylvania State University, Charles R. Jonassaint, Psychology, Duke University, Marcellus M. Merritt, Psychology, Cleveland State University, Christopher L. Edwards, Psychiatry and Medicine, Duke University Medical Center, Elwood L. Robinson, Psychology, North Carolina Central University, Durham, NC

Background. The in utero environment plays a critical role in initiating the normal ontogeny of many physiological systems, including the brain. Disturbances can thus affect maturational trajectories and affect functioning postpartum. In particular, the immature hippocampus is believed to be particularly sensitive to perturbations. Methods. Pregnancy conditions of over 150 rhesus monkeys were manipulated, including psychological disturbance of the gravid female, exposure to Dexamethasone, or by viral infection. Behavioral, immune, and brain development of the infants was assessed. Results. Maternal stress, or antenatal corticosteroid exposure, affected the infant's neurological responses. Disturbed infants evinced more immature neuromotor reflexes at birth, greater emotionality during the first year, and a smaller hippocampus as juveniles (p<.05). Smaller hippocampal size was associated with less neurogenesis, and increased hormone release by the HPA axis. Specifically, the infants were more likely to break through an overnight Dexamethasone Suppression Test, indicating altered negative feedback and greater drive. Mediational pathways for several long-term effects were identified, including lower prenatal transfer of iron to the infant (p<.05), and increased gastrointestinal illness due to lower levels of protective gut flora (Lactobacilli and Bifidobacter) (p<.05). Conclusion. Adverse events during fetal life can persistently influence physiology, impacting the developing brain and endocrine system and changing regulatory set points postpartum. In addition to increased placental transfer of maternal cortisol, which is the mediator most commonly postulated, disturbance of microbiota homeostasis and establishment of an abnormal profile of gut bacteria were identified as important factors.
John Henryism (JH) is scientifically known as a strong behavioral predisposition to cope actively with psychosocial and environmental stressors. The present symposium will explore how JH is conceptualized and its relationship to health outcomes such as affective reactions and chronic pain. The first speaker will challenge the social learning theory of the development of high effort coping (JH) with a discussion of combined genetic (30%) and environmental (70%) influences on coping as a phenotype. This work significantly extends the traditional conceptualization of the development of coping and adult coping styles like JH. The second speaker will present data which has examined the association between JH and personality. These findings demonstrate that JH is most associated with levels of Extraversion and Conscientiousness and least related to Neuroticism as had been previously postulated. The third speaker will discuss the interaction of JH and education towards the prediction of cardiovascular disease (CVD). The presentation suggests that among individuals with high levels of JH and low education, increased CVD risk may be the result of a tendency to ruminate or failure to endorse negative emotional states. The fourth speaker will address the influence of JH on pain and affective distress in African American patients with Sickle Cell Disease (SCD). The presentation presents data indicating that high effort (JH) coping in the context of deficient or altered resources is associated with increased reports of pain and pain-related affective morbidity in patients with SCD. The discussant will integrate these findings into a coherent understanding of the utility of the revised genetic/social learning conceptualization of JH in understanding future disease-related health outcomes.

Individual Abstract Number:1469
JOHN HENRYISM: ENVIRONMENT AND GENES
Keith Whitfield, Biobehavioral Health, The Pennsylvania State University, Dwayne T. Brandon, Health Policy and Management, Johns Hopkins, Bloomberg School of Public Health

John Henryism is a well studied measure of active coping that has been associated with education, age, gender, job strain, and elevated blood pressure among African Americans. Previous research has focused on environmental sources of variability in John Henryism to explain inter-individual variability. The purpose of the current presentation is to examine the relative contributions of environmental and genetic factors to individual variance in John Henryism among adult African Americans. The sample consisted of 180 same-sex twin pairs (85 MZ & 95 DZ) from the Carolina African American Twin Study of Aging. Using classic twin analyses, the results show environmental factors account for most of the variance (70%) in JH scores, with the remaining variance attributable to additive genetic factors (30%). The test of genetic effects suggested that the 30% represented a significant proportion of variance. The results indicate that social learning and the other environmental contributors to individual variability are not the only factors influencing John Henryism as a phenotype. The results are discussed in relation to the combined effect of genetic and environmental influences on variability in John Henryism.

Individual Abstract Number:1472
JOHN HENRYISM IN ASSOCIATION WITH NEO PI-R DOMAINS
Charles R. Jonassaint, Psychology, Duke University, Christopher L. Edwards, Psychiatry and Medicine, Duke University Medical Center, Ilene Siegler, Psychiatry, Duke University, Paul Costa, National Institute of Aging, Redford B. Williams, Psychiatry and Medicine, Duke University, John C. Barefoot, Psychiatry, Duke University Medical Center

To determine how JH is related to a global personality measure, we administered the NEO PI-R to 233, approximately 50% black and 50% white, community volunteers. We found that JH was negatively associated (r = -0.28, p<.001; E), and positively associated with Extraversion (r = 0.29, p<.001; C). These correlations did not differ by race. Costa and McCrae (1992) described the high N/ high C profile to be indicative of individuals who are over-controlled ; they are perfectionist striving and often have unrealistic and unattainable goals. We then evaluated how JH mapped onto the high N/high C profile. N and C were split into high and low groups and a four-group variable was created. The combination of N and C was associated with JH (p<.01). The high N/high C group mean (51.03) was not significantly different than the low N/high C group (50.38) but it was greater than both the high N/low C and the low N/low C group (both <.05). Similar to N and C, we examined combinations of both E and C. Individuals with High E/high had significantly greater JH scores (51.3) than all other groups (all <.02, p<.05). We also examined JH in association with facet levels at the population mean of 50 and a four-group variable was created. Difﬁcultness, Achievement striving, and Self-discipline, in addition to E facet Assertiveness (all r >.24, p<.001). JH is best captured by global personality domains E and C and less with N. Domains such as Extraversion and Conscientiousness may have more of a role in health than once thought. Furthermore, high JH may be indicative of positive health in this sample.

Individual Abstract Number:1473
AFFECTIVE RESPONSE TO MENTAL STRESS AND THE JOHN HENRYISM HYPOTHESIS
Marcellus M. Merritt, Psychology, Rachel Ryan, Cleveland State University, Gary G. Bennett, School of Public Health, Harvard University, Christopher L. Edwards, Psychiatry and Medicine, Duke University Medical Center

John Henryism, a measure of high-effort coping style, has been linked with adaptive psychological adjustment yet increased risk for cardiovascular disease among low educated persons. Little is known about how JH interacts with socioeconomic status (SES) to predict affective responses. The objectives of the current presentation are to determine if high JH and low SES (measured as education) are associated with increased negative and decreased positive affect in response to laboratory social stressors. Subjects included 58 healthy Black males, aged 23 to 47. The procedure included the completion of a number of psychosocial questionnaires and participation in a psychophysiological reactivity protocol. The reactivity protocol involved the following experimental tasks and associated recovery periods: neutral reading, an anxiety speech task and an anger recall task. Six measures of momentary mood (happy, content, angry, annoyed, tense, and depressed) were collected before the protocol and after each task and rest period. At high JH, low (compared to high) education levels were linked with higher scores for happy mood following active speech (p < 0.003). At low education, high (versus low) levels of JH were associated with higher happy scores following active speech. Among high-JH persons with low education, one potential mechanism for increased CVD risk may be rumination, or a lack of endorsement of negative emotion states.

Individual Abstract Number:1475
JOHN HENRYISM, CHRONIC PAIN AND MORBIDITY IN PATIENTS WITH SICKLE CELL DISEASE (SCD)
Christopher L. Edwards, Psychiatry and Medicine, Duke University Medical Center, Charles B. Hargrove, Hematology, North Carolina Central University, Gary G. Bennett, Harvard School of Public Health, Mary Wood, Psychiatry, Laura DeCastro, Hematology, Duke University Medical Center, Elwood Robinson, Psychology, North Carolina Central University, Miriam Feliu, Psychiatry, Jude C. Jonassaint, Hematology, Veeranand Goli, Psychiatry, Duke University Medical Center

African Americans and Caucasians often employ different coping strategies to manage medical crises. John Henryism (JH), an empirically validated coping strategy, is utilized by many African Americans. JH is characterized by high effort coping, and in deficient environments, is associated with negative health outcomes. The term symbolizes the coping strategy characterized by aggressive tenacity, determination, and hard work while unconsiously sacrificing health issues towards the goal of meeting an environmental demand. We evaluated the effects of the interaction of JH and self-efficacy (SE) as an index of psychological resources on pain and psychiatric morbidity in fifty adult patients, mean age 38.93 (13.51), with SCD. The JH x SE interaction was found to effect the summary index of pain and current level of physical functionality (p<.03), but not the sensory or affective components of pain as measured by the Short-Form McGill Pain Questionnaire. The JH x SE interaction was also found to effect morbidities such as Obsessive-Compulsitve thoughts and behaviors (p<.02), Interpersonal Sensitivity (p<.01), Depression (p<.001), Psychosis (p<.01), the General Severity Index (p<.01), the Positive Symptom Distress Index (p<.03), and the Positive Symptom Total (p<.01) as measured by the Symptoms Checklist, 90-item Revised. The authors conclude that high effort (JH) coping in the context of deficient or altered psychological resources is associated with increased reports of pain and pain-related morbidity in patients with SCD.

SYMPOSIUM 1145
NEUROIMAGING OF AUTONOMIC-CARDIAC REACTIVITY IN HEALTH AND DISEASE
Peter J. Gianaros, Department of Psychiatry, University of Pittsburgh, Pittsburgh, PA, Peter J. Gianaros, Psychiatry & Psychology, University of Pittsburgh, Scott C. Matthews, Psychiatry, University of California San Diego, Greg J. Siegle, Psychiatry, University of Pittsburgh School of
Emerging evidence indicates that individuals who show greater sympathetic and lesser parasympathetic cardiac control at rest and in response to behavioral stressors are at an increased risk for cardiovascular morbidity and mortality. Speakers of this symposium will illustrate how they have used neuroimaging in healthy and clinical populations to better understand the interactive relationships between the brain, the autonomic nervous system, and a set of biobehavioral risk factors for cardiovascular disease, including depression and chronic stress. Within the context of a conceptual model of neurovisceral control, an introductory discussion will emphasize the core brain systems that link such biobehavioral factors with autonomic-cardiac control mechanisms and cardiovascular health. Individual speakers will then summarize their magnetic resonance imaging and positron emission tomography studies of autonomic-cardiac reactivity to behavioral stressors in healthy and clinical populations. The first two speakers will focus on the regulation of heart rate and heart rate variability by the amygdala and circulate cortex among individuals with depression. The next speaker will focus on the cortical and subcortical mechanisms of mental stress induced arrhythmias among patients with regional cardiac ischaemia and impaired contractile function. The final two speakers will focus on the bidirectional relationships between autonomic and immune reactivity to stressful experiences and brain structure and function.

Individual Abstract Number:1572
A MODEL OF NEUROVISCERAL INTEGRATION: AN OVERVIEW WITH IMPLICATIONS FOR HEALTH AND DISEASE
Julian F. Thayer, GRC/LPC, National Institute on Aging

We describe a model of neurovisceral integration in which a set of neural structures involved in cognitive, affective, and autonomic regulation are related to heart rate variability (HRV) and health. We show that autonomic imbalance is associated with increased morbidity and mortality. We also provide evidence that this autonomic imbalance can be indexed by HRV. We then provide pharmacological and neuroimaging data in support of the neural structures linking the central nervous system to HRV. Next, in an experiment investigating emotional regulation we showed that resting levels of HRV were related to emotion modulated startle responses such that those with higher HRV produced context appropriate responses compared to those with low HRV. We then show that stimuli presented outside of conscious awareness lead to potentiated startle responses and undifferentiated phasic HR responses. These results suggest that the prefrontal cortex may modulate responses to threat via a top-down regulation of sympathectory circuits. We propose that these findings have important implications for the understanding of the two-way communication between the heart and the brain, and provide a connection among negative emotions and negative health consequences via the common mechanism of autonomic imbalance and low parasympathetic activity.

Individual Abstract Number:1290
NEURAL CORRELATES OF CARDIAC REACTIVITY DURING EMOTIONAL INFORMATION PROCESSING IN UNIPOLAR DEPRESSION
Greg J. Siegle, Psychiatry, University of Pittsburgh School of Medicine, Stuart R. Steinhauser, Psychiatry, University of Pittsburgh School of Medicine / VA Pitt, Cameron S. Carter, Psychology/Psychiatry, University of California, Davis, Michael E. Thase, Psychiatry, University of Pittsburgh School of Medicine

Sustained elaboration or rumination on emotional topics is a hallmark of unipolar depression. Both cardiac and neural correlates of this process have been observed, particularly involving sustained amygdala responses and decreased prefrontal control. This presentation will explore relationships between abnormal cardiac and cortico-limbic reactivity to emotional information using heart rate measured during event-related fMRI tasks in 35 unmedicated depressed adults, compared to 22 healthy controls.

Individual Abstract Number:1287
INCREASED AMYGDALA ACTIVATION IN SUBJECTS WITH MAJOR DEPRESSION IS RELATED TO SYMPATHOVAGAL BALANCE
Scott C. Matthews, Psychiatry, University of California San Diego

Major depressive disorder (MDD) is a major risk factor for cardiovascular (CV) disease, the leading worldwide cause of death and disability. MDD may increase risk of CV disease by causing autonomic nervous system (ANS) dysfunction. An enormous literature exists regarding the neural substrates involved in MDD. Interestingly, there is additional evidence that these same neural substrates are also critically involved in ANS modulation. For example, MDD is associated with increased functional activation in the amygdala, a structure that increases sympathetic nervous system activity. In the current study, heart rate variability (HRV) and blood oxygen level dependent (BOLD) percent signal change were simultaneously measured as subjects with (+MDD) and without (-MDD) a lifetime history of MDD performed the Hariri emotional face discrimination task during functional magnetic resonance imaging. Two important findings were observed. First, increased percent BOLD signal change in the amygdala related to performance of the Hariri task was observed in +MDD subjects (n=4) relative to age and gender matched -MDD subjects. Moreover, percent BOLD signal change in the amygdala during performance of the Hariri task was positively related to the ratio of low to high frequency HRV during performance of the Hariri task, particularly in +MDD subjects (R2= 0.40 for +MDD, R2=0.20 for MDD). This study provides preliminary evidence that increased amygdala activation in MDD is associated with altered peripheral ANS activity. If these findings are replicated in larger samples, they may: 1) contribute to the neurobiological understanding of ANS dysfunction in MDD; 2) identify a therapeutic target for antidepressant treatments that may normalize ANS dysfunction and potentially reduce the CV morbidity observed in patients with MDD, and; 3) provide a biomarker for depressed individuals most vulnerable to CV morbidity.

Individual Abstract Number:1418
ROLE OF BRAIN-HEART INTERACTIONS IN STABILISING AND DESTABILISING CARDIAC ELECTROPHYSIOLOGY
Peter Taggart, Department of Cardiology, University College London

We are studying the cortical and subcortical mechanisms underlying mental stress induced arrhythmia and sudden cardiac death. Symmetrical or homogeneous cardiac electrical activity tends to maintain stability, and asymmetrical or inhomogeneous electrical activity predisposes to instability and arrhythmia. We are looking for (a) evidence of stress induced asymmetry in cardiac repolarisation wavefronts and (b) reasons for this asymmetry in terms of asymmetrical (right/left) sympathetic nerve traffic; effect of different types of emotions on sympathetic/parasympathetic balance; evidence of afferent reflex activation from the heart in patients with regional cardiac ischaemia or impaired contractile function. The methodology includes multi-electrode endocardial mapping or activation and repolarisation wavefronts, bilateral skin conductance measurement, and EEG recording for evoked potentials. Aspects of this work will be presented and discussed.

Individual Abstract Number:1336
APPRAISAL ABOUT CONTROLLABILITY OF ACUTE STRESSOR AND BRAIN-CARDIAC-IMMUNE ASSOCIATION
Hideki Ohira, Psychology, Nagoya University, Michio Nomura, Psychology, Tokai Women's University, Naho Ichikawa, Tokiko Iwasa, Kenta Kimura, Psychology, Nagoya University

In acute stress situations, specific immune responses cause a facilitation of innate immunity and a suppression of acquired immunity. These differentiated immune responses might be adaptive and modulated by cardiac activity. Furthermore, they are not stereotyped, but flexibly tuned responses according to the appraisal of stressors. Controllability of stressors is thought to be a critical factor in such appraisal. To examine the neural correlates of appraisal of stressor controllability and top-down modulation over cardiac and immune responses based on appraisal of acute stress, we conducted two position emission tomography studies where regional cerebral blood flow and cardiac and immune parameters were recorded simultaneously during two types of acute stress: mental arithmetic and stochastic learning with time pressure. During each type of stress, controllability was manipulated in a yoked design. We found involvement of the anterior cingulate cortex (also the medial prefrontal cortex) and the orbitofrontal cortex in appraisal about controllability of stressors (p < .001, uncorrected). Furthermore activation of those brain areas significantly correlated with heart rate variability and immune parameters (ps < .001, uncorrected). Thus, it was suggested the medial-orbital neural network of the prefrontal cortex might modulate peripheral immune responses on the basis of appraisal of stressors.
DOES BENEFIT FINDING DIFFER BY TYPE OF CANCER?
Suzanne Lechner, Psychiatry, University of Miami School of Medicine

Individual Abstract Number:1146

CHRONIC STRESSFUL EXPERIENCES PREDICT BRAIN ATROPHY AND DYSREGULATED PARASYMPATHETIC-CARDIAC CONTROL DURING ACUTE STRESS
Peter J. Gianaros, Leslie A. Mitrik, Lena B. Gemmer, Karen A. Matthews, J. Richard Jennings, Department of Psychiatry, University of Pittsburgh

We tested whether reports of chronic stressful experiences correlate with indicators of brain atrophy or dysregulated parasympathetic-cardiac responses to an acute laboratory stressor. In 1984, and every 3 to 5 years thereafter, we administered the Perceived Stress Scale (PSS) to a healthy sample of 541 women from the Healthy Women Study (Matthews et al., 1989; N Engl J Med, 321, 641-6). In 1984, women were perimenopausal and aged 42-50 yrs. In 2005, we obtained structural magnetic resonance images of 47 of these women's brains, and we recorded their high-frequency heart rate variability (HF-HRV; an indicator of parasympathetic cardiac control) at rest and in response to a laboratory stressor (a Stroop color-word interference task). After statistical control for age and the use of hormone therapy (HT), higher average PSS scores over this 20-year interval predicted greater subcortical brain atrophy (partial r = .34, p < .05), as indicated by more enlarged ventricles determined by the scoring criteria of the Cardiovascular Health Study (Manolio et al., 1994; Stroke, 25, 318-27). After control for age, HT use, and resting HF-HRV, higher average PSS scores also predicted a greater decrease in HF-HRV in response to the laboratory stressor (partial r = -.58, p < .01), indicating a greater suppression of parasympathetic-cardiac control during acute stress. These results indicate that chronic stressful experiences are associated with brain atrophy and more dysregulated parasympathetic-cardiac responses to an acute stressor.

SYMPOSIUM 1442
FINDING BENEFITS IN ADVERSITY: PSYCHOLOGICAL AND PHYSIOLOGICAL PROCESSES
Annette L. Stanton, Psychology, University of California, Los Angeles, Los Angeles, CA, Michael H. Antoni, Psychology, University of Miami, Elissa Epel, Psychiatry, University of California, San Francisco, Suzanne Lechner, Psychiatry, University of Miami School of Medicine, Suzanne C. Segerstrom, Psychology, University of Kentucky, Lexington, KY

Even in the face of very serious life adversity, many individuals report benefiting from the struggle with stressful or traumatic experience. The most commonly reported benefits include enhanced interpersonal relationships, greater appreciation for life, increased personal strength, and amplified emotional expression and perceived relaxation skills. In addition, the finding (i.e., type of cancer) and particular psychological processes (e.g., increases in benefit finding and associated outcomes. Samples for these investigations include individuals who recently had received a cancer diagnosis and women providing care for a chronically ill child. Data from these studies reveal important correlates of finding benefit, including the nature of the stressor (i.e., type of cancer) and particular psychological processes (e.g., increases in emotional expression and perceived relaxation skills). In addition, the finding of greater cellular aging (i.e., telomere shortening) associated with finding benefit was an unexpected finding for the lab-stressor, (partial r = -.58, p < .01), indicating the relationship between chronic stress and finding and physiological regulation. The discussion will comment on implications of findings for theories and research in positive psychological and physiological processes and health outcomes.

Individual Abstract Number:1678

DOES BENEFIT FINDING DIFFER BY TYPE OF CANCER?
Suzanne Lechner, Psychiatry, University of Miami School of Medicine

Finding benefits in cancer has been linked to certain psychological, physical, social, immune and neuroendocrine outcomes. However, it is unclear whether cancer patients with all forms of cancer report equivalent levels of benefit finding (BF), and whether other variables explain group differences. Participants (n = 92) had breast, colorectal, lung, or head/neck cancer. Participants were racially/ethnically diverse (representing non-Hispanic White, Hispanic and African-American) cancer patients with all four stages of cancer (time since diagnosis within 6 months) who completed the Post- Traumatic Growth Inventory (to measure BF), the Life Orientation Test, the Functional Assessment of Cancer Therapy-General Form (FACT-G to measure aspects of well-being) and Beck Depression Inventory. Chart reviews gathered medical information. Participants with lung cancer showed lower BF than the other groups (F(3, 88) = 2.8, p < .05; M breast = 75.1, M colorectal = 78.0, M lung = 60.8, M head/neck = 85.3). Group differences on BF were not explained by stage of disease or other disease-related variables, age, income or other sociodemographic variables, optimism, social/family well-being, emotional well-being, functional well-being, or depressive symptoms (all ps > .1). Groups differed on physical well-being (p < .05). However, physical well- being was not associated with BF (r = .01, ns); thus, mediation analyses could not be conducted to determine whether levels of physical functioning could explain the group differences in BF. Findings underscore the need for caution in expecting similar levels of BF across patients with different types of cancer, and suggest that researchers should examine other variables for their predictive utility of BF in cancer patients.

Individual Abstract Number:1476

STRESS, POSTTRAUMATIC GROWTH, AND LEUKOCYTE AGING
Elissa Epel, Wendy Wolfson, Psychiatry, University of California, San Francisco

Posttraumatic growth (PTG), positive psychological change experienced as a result of the struggle with highly challenging life circumstances, appears to promote better physical health. We examined relationships between PTG and a marker of cellular aging, the length of telomeres. Telomeric DNA protects the ends of chromosomes and tends to shorten with each cell division, and shorter telomeres are associated with older age and with cardiovascular disease. We have already reported that perceived life stress predicts accelerated telomere shortening in both caregivers and controls, and here we tested whether PTG might attenuate telomere shortening. In the Maternal Caregiver Health and Hormone Study, PTG and telomere length were assessed in women who were currently providing care for a chronically ill child (n = 45) and a control group of women caring for a healthy child (n = 25). Contrary to our predictions, we found that for women with high stress, PTG was related to greater telomere shortening than patients with low life stress, PTG had no association with telomere length. In the caregiving women, a longer the duration of caregiving was positively related to both PTG and telomere shortening, and chronicity of caregiving partially mediated the relationship between PTG and telomere shortening. These seemingly paradoxical findings are discussed in terms of the price of chronic stress and stress-related growth. Precipitants of PTG, enduring longstanding stress that forces one to change attitudes and beliefs, may also be a proxy for greater extent of stress-induced physiological damage.

Individual Abstract Number:1453

STRESS MANAGEMENT INTERVENTION EFFECTS ON BENEFIT FINDING, POSITIVE OUTCOMES AND PHYSIOLOGICAL REGULATION FOR WOMEN TREATED FOR BREAST CANCER
Michael H. Antoni, Charles S. Carver, Psychology, University of Miami, Suzanne Lechner, Psychiatry and Behavioral Sciences, University of Miami Miller School of Medicine

The objective of this study was to test the effects of a 10-week Cognitive Behavioral Stress Management (CBSM) intervention on benefit finding, positive quality of life (QOL) indicators and physiological functioning in women diagnosed with early-stage breast cancer who were undergoing medical treatment for the disease. We have already reported that select CBSM techniques, cognitive restructuring, and interpersonal coping skills in a supportive group. Approximately 2 - 8 weeks after surgery, just before beginning adjuvant therapy for Stage I - III breast cancer, 230 women were randomized to 10-wk CBSM group or a 1-day educational seminar as a control condition. We administered questionnaires and collected blood samples before (T1) and at 3-mo (T2) and 9-mo (T3) post-intervention follow-ups. Latent growth curve modeling analyses revealed that women assigned to CBSM improved from T1-T3 in benefit finding (X2 (1) = .714, p = .40), positive states of mind (X2 (4) = 4.275, p = .37), positive affect (X2 (1) = 3.307, p = .07), emotional expression (EE) (X2 (1) = 0.99, p = .76) and perceived relaxation skills (PRS) (X2 (1) = .092, p = .76). Increases in benefit finding and other positive outcomes were correlated with increases in PRS and EE. In a subset of this sample for whom blood samples were available, we also assessed psychological improvements in physiological regulation reflected in reductions in evening serum cortisol levels and
increases in the capacity to produce the T-helper Lymphocyte Type 1 cytokine gamma interferon, both ps < .05. Analyses of psychosocial correlates of these physiological effects will be reported at the meeting. Improving stress management skills and increasing emotional processing during a group-based CBSM intervention may increase benefit finding, psychosocial adjustment and physiological regulation in women undergoing treatment for breast cancer.

SYMPOSIUM 1414
THEORY TO PRACTICE IN EXPRESSIVE WRITING INTERVENTIONS: EFFECTS OF EXPERIMENTAL CONTEXT AND PARTICIPANT ATTRIBUTES
Annette L. Stanton, Psychology, University of California, Los Angeles, Los Angeles, CA, Joshua M. Smyth, Psychology, Syracuse University, Jennifer L. Austenfeld, Psychology, University of Kansas, Qian Lu, Psychology, University of California, Los Angeles, Lorenzo Cohen, Palliative Care and Rehabilitation Medicine, MD Anderson Cancer Center, Houston, TX

The health benefits of expressive writing, tested via random assignment of participants to write over several sessions about deepest feelings and thoughts regarding a stressful experience versus a nonemotional topic, have been demonstrated in multiple laboratories. A meta-analysis of experiments with non-clinical samples revealed significant improvements in reported physical health, psychological well-being, physiological health, and general functioning in experimental participants compared to controls. However, the meta-analysis revealed significant heterogeneity in effect sizes, and recent studies with clinical samples have produced mixed effects, suggesting that effects vary as a function of the experimental context, participant attributes, and other variables. Such variability and post-hoc attempts to translate laboratory-based experiments into effectiveness studies or clinical treatments. Promising moderators of expressive disclosure include optimism, emotion regulation constructs (e.g., alexythymia, avoidance-oriented coping, ambivalence over emotional expression), participant gender, and other variables. The goal of the symposium is to examine context and moderating effects in four randomized, controlled experiments conducted in a variety of samples: medical students with and without a medical school clerkship, community adults (study 1), and undergraduates (study 2). The data from these studies reveal important moderators of the effects of written expressive disclosure, including the experimental context (i.e., legitimate authority of the investigator, writing based in the laboratory versus home), approaches to regulating emotion (i.e., ambivalence over emotional expression, coping through emotional processing and expression), and participant ethnicity (i.e., Asian versus non-Asian). The discussant will comment on implications of findings for theories of emotional expression, experimental methods in expressive disclosure research, and translation of experimental findings into practice.

Individual Abstract Number:1419
THE ROLE OF CONTEXT IN THE EFFECTIVENESS OF AN EXPRESSIVE WRITING INTERVENTION
Deborah Nazarian, Joshua M. Smyth, Psychology, Syracuse University

Expressive writing about stressful experiences can produce benefit in laboratory-based efficacy trials, but efforts to expand it into other settings have been less successful. Such studies often change locations, experimental contact, and other factors that may account for the inconsistent findings. We conducted two studies that experimentally examined effects of context on an expressive writing intervention by manipulating legitimate authority of the investigator (high vs. low) and location of writing (laboratory vs. home). Participants were randomly assigned to experimental groups (high/low authority crossed with home/laboratory location) or a control condition. Study 1 examined students (n=76) and study 2 examined community adults (n=64). Participants wrote for 20 minutes on 3 consecutive days; the 4 experimental groups wrote about stressful experiences, the control condition about time or experiences (EMO) regarding participation in a medical school clerkship, writing about goals as a best possible self (BPS; after King, 2001), and a fact-searching condition (FACT). Emotional processing (EP) and emotional approach coping (COG only, the combination of ED and COG, or a control condition. Self-reported physical symptoms, positive and negative affect, and depressive symptoms were assessed at baseline and three monthly follow-up. Linear mixed models revealed that CG writing led to fewer physical symptoms than the CG condition (p=0.01), and EP only led to a decrease in non-ED symptoms (p<.05). Moderators predicted who benefited from ED or CG. Asians benefited more from cognitive reappraisal in decreasing physical symptoms compared with Caucasians (p=0.04). Those who were ambivalent about expressing emotions showed the most improvement in physical health in COG compared with those low in ambivalence or those who were ambivalent and did not engage in COG (p=0.03). Those who were ambivalent showed the most improvement in negative affect and depressive symptoms after ED compared with those without ambivalence or those who were ambivalent and did not engage in ED (p=0.06). Findings carry implications for designing clinical trials and intervention studies, particularly among ethnic minorities.
SYMPOSIUM 1122
PROLONGED STRESS-RELATED ACTIVATION AND HEALTH
Jos F. Brosschot, Psychology, Leiden University, Leiden, Netherlands; Julian F. Thayer, Emotions & Quantitative Psychophysiology Unit, National Institute on Aging, Andrew Steptoe, Epidemiology and Public Health, University College London, Jos F. Brosschot, Psychology, Leiden University, Nicholas Christenfeld, Psychology, University of California, San Diego, Bill Gerin, Medicine, Columbia University, Kristen Salomon, Psychology, University of South Florida, Wolfgang Linden, Department of Psychology, University of British Columbia, Vancouver, B.C., Canada

It is hard to see how psychological stress can influence disease without prolonged physiological activation. The latter is crucial in causing the pathogenic state that is responsible for the development of organic disease. Although these insights are not new, they have only recently begun to be translated into research efforts. This international symposium brings together laboratory, field and epidemiological approaches to prolonged activation. Focussing on the cardiovascular (CV) system, evidence is presented from recovery from stress in heart rate variability (HRV) related to depression. The documented as a risk factor for CV disease. The first paper reports on slower predictor of ill health, including determinants, dynamics, clinical relevance, with issues covering the complete etiological trajectory of a psychological healthy persons as well as persons suffering from psychopathology, dealing.

Focussing on the cardiovascular (CV) system, evidence is presented from recovery from stress in heart rate variability (HRV) related to depression. The next presentation deals with physical exercise speeding up blood pressure (BP) recovery after stressors. An important approach to prolonged stress-activation has been recovery from anger provocation. The third lecture will present determinants of anger recovery after anger provocation, using real life measurements. Thereafter, in the fourth paper, data will be presented showing that heart rate variability (HRV) and HR responses to daily stress and worry can continue into nocturnal sleep and that prolonged worrying seems to mediate these effects. The fifth contribution examined how slow CV recovery, independent of reactivity, can predict CV disease risk, including greater carotid intima-media thickness, and prolonged inflammatory and hemostatic responses. The final presentation will summarize the five presentations and discuss their implications for the prolonged stress-related activation model and its future.

Individual Abstract Number:1238
BLUNTED RSA REACTIVITY AND RECOVERY IN MAJOR DEPRESSIVE DISORDER
Kristen Salomon, Jonathan Rottenberg, April Clift, Kate Rieger, Psychology, University of South Florida

Depression is associated with increased risk of cardiovascular disease (CVD). One proposed mechanism is autonomic dysregulation involving decreased vagal tone. As such, cardiac vagal activity, as measured by indices of respiratory sinus arrhythmia (RSA), has attracted considerable attention as a possible etiological marker for depression and CVD. Overwhelmingly, prior research has focused on resting vagal tone, and little work has examined depressed persons' vagal responses to and subsequent recovery from challenging tasks. The general aim of the present study is to investigate differences in RSA reactivity and recovery between depressed and healthy participants. Men and women were recruited from the greater Tampa, Florida area and either met DSM-IV criteria for current Major Depressive Disorder (depressed; N=10) or had no disorder (healthy; N=10). Eligible participants engaged in a reactivity protocol involving a resting baseline, two tasks, and recovery periods subsequent to each task. The reactivity tasks were mirror image tracing and a speech task including preparation and delivery phases. Preliminary data from 8 depressed and 10 healthy participants were analyzed using a MANOVA approach to repeated-measures data. Controlling for gender, a significant group by phase interaction was found for the speech task, F(3, 13) = 4.44, p = .024. The data indicate that non-depressed participants exhibited decreases in RSA from baseline during the stressor phase and a return to baseline levels during the recovery phase. Depressed participants, on the other hand, failed to exhibit significant changes in RSA during the stressor or recovery phases. The means for the mirror tracing task suggested a similar pattern, although the group by phase interaction did not reach significance, F(3, 13) = 1.94, p = .181. These results suggest that individuals suffering from depression have less flexible cardiac vagal control. Implications of these data for explaining the positive relationship between depression and CVD will be discussed.

Individual Abstract Number:1212
ENHANCING CARDIOVASCULAR RECOVERY FROM ACUTE STRESS WITH EXPERIMENTAL INTERVENTIONS
Nicholas Christenfeld, Sky Chafin, Psychology, University of California, San Diego

The speed with which people return, after acute stressors, to resting cardiovascular levels is a function of not only physiological but also psychological states. This may have important health consequences as does the magnitude of the stress response, with larger responses and slower recovery cumulating into cardiovascular damage. A popular means by which people cope with stress is exercise, and we investigate the impact of acute exercise, and its timing, on the stress response. Study one examined the impact of exercise following an emotional stressor. One-hundred-four participants sat through a baseline, some sequence of stressors, and a recovery period. Some performed a serial subtraction task, with harassment from the experimenter. Others did the same task, and immediately performed three min. of physical exercise. A final group performed only the exercise task. Blood pressure and heart rate were monitored throughout. The subjects who did only the math task failed to return to baseline levels even after 18 minutes. However, the subjects who had the added physical task, although their blood pressure went highest of all, showed rapid and complete recovery. Soon after the tasks were completed they had significantly (p < .01) lower systolic (M = 3.5 mmHg) and diastolic (M = 8.9 mmHg). The exercise-only group, like the math-then-exercise group, recovered quickly and completely. The second study examined the effect of exercise that precedes an emotional stressor, rather than follows it. Again, the participants were undergraduates, and some exercise before the mental arithmetic task, and some do not. However, unlike exercise after the task, here adding exercise does not speed recovery, but appears to slow it (p<.05). The results are consistent with a misattribution of arousal view. Emotional rumination can prolong stressor responses, but regarding one's arousal as due to exercise rather than the emotional math task may block that process and so enhance recovery.

Individual Abstract Number:1233
ANGER PROVOCATION CAUSES ANGER! (SOMETIMES)
Bill Gerin, Medicine, Columbia University

We have developed a hybrid approach to the study of anger in the natural environment. The Type A Interview (INT), which is effective at provoking anger, is given in the lab; Ss leave the lab carrying an electronic diary. Entries are made at 20-min intervals. Ss also participate in a neutral control: a non- provocative rendering of the SI (sessions are 4 weeks apart, counterbalanced). We report on anger ratings in the field (N=45), following each interview. The table shows the ratings (1-5 scale, 1=not at all) taken during the first 2 hours (6 entries). Collapsed across order, there is no difference in anger: Means=10.0 (Anger provocation) vs. 9.9 (Neutral interview). However, when examined by order, the picture changes. At Time 1, Ss are angrier after anger provocation, but at Time 2, the ratings are influenced by the Time 1 reports. Thus, when anger provocation came first, Ss tended to report less anger at Time 2, suggesting that the benign experience of neutral-first may serve as ‘protection’ against the effects of anger provocation.
Individual Abstract Number: 1139
WORRY DURATION MEDIATES EFFECTS OF DAILY STRESS ON HEART RATE VARIABILITY DURING WAKING AND SUBSEQUENT NOCTURNAL SLEEPING
Jos F. Brosschot, Psychology, Leiden University, Julian F. Thayer, Emotions & Quantitative Psychophysiology Section, National Institute on Aging

Psychopathology, stress, and anxiety are risk factors for cardiovascular (CV) disease. Worry might be a mediator of their risks by prolonging their cognitive representation and concomitant CV activity. We hypothesized that daily stressors and worry, and trait anxiety and trait worry would be associated with high heart rate (HR) and low heart rate variability (HRV) during waking and subsequent nocturnal sleeping, and that worry would mediate the effects of daily stressors. Low HRV and high HR are physiological risk factors for CV disease. Using an hourly diary, stressors, worry frequency and duration, and biobehavioral variables were measured during one day in 52 healthy subjects. During this time and the subsequent nocturnal sleeping period, ambulatory ECG was measured. Stressors, worry frequency and duration were related to higher HR and lower HRV during waking and these effects were extended into the sleeping period. In hierarchical regression analyses, in which biobehavioral variables including sleep quality were controlled, the effects of stressors were non-significant while those of worry duration remained significant on waking HR and HRV (F(1,46)=3.5, p<.05; F(1,45)=9.6, p<.01, respectively) and sleeping HR and HRV (F(1,47)=3.1; F(1,47)=4.6, respectively, p's<.05). Of the traits, only trait worry was significantly associated with waking HR (F(1,47)=2.9, p<.05) and marginally with waking HRV (F(1,46)=2.2, p<.10), after controlling for biobehavioral variables, but not during sleep. The results support the notion that worry, by prolonging CV activity, is a mediator of the prolonged CV effects of stressors, and therefore perhaps of their disease risk. The finding that these effects are prolonged into sleep seem to imply a role for unconscious cognitive representations of stress.

Individual Abstract Number: 1127
IMPAIRED POST-STRESS BLOOD PRESSURE RECOVERY AND CARDIOVASCULAR DISEASE RISK
Andrew Steptoe, Epidemiology and Public Health, University College London

Slow or impaired post-stress recovery may be an important feature of physiological dysregulation, and involved in stress-related pathology. However, the evidence for the clinical significance of variations in recovery following psychological stress remains sparse. We have recently reported that impaired post-stress systolic blood pressure (BP) recovery predicts 3 year increases in clinic BP (Steptoe & Marmot, 2005, J Hypertension) and increased waist/hip circumference in men (Steptoe & Wardle, 2005, Int J Obesity), independently of stress reactivity. In this study, we investigated whether impaired recovery is associated with carotid intima-media thickness (IMT), and with poor recovery of hemostatic and inflammatory variables implicated in cardiovascular disease. Systolic BP recovery was assessed 40-45 minutes after performance of color/word and mirror tracing tasks in 228 healthy men and women aged 47-59 years. Blood was drawn at baseline, immediately after tasks and 45 minutes later for analysis of von Willebrand factor (vWF), Factor VIII, fibrinogen and plasma viscosity. Carotid IMT was measured in 137 individuals 3 years after stress testing. Mean carotid IMT was significantly greater in individuals who showed impaired systolic BP recovery, independently of baseline BP, BP stress reactivity, age, gender, body mass and smoking (p < 0.03). The effect was more pronounced in men and women of lower socioeconomic status. Impaired systolic BP recovery was associated with delayed post-stress recovery of vWF (p = 0.033), Factor VIII (p = 0.032) and plasma viscosity (p = 0.041), but not fibrinogen (p = 0.064). These effects were independent of age, gender, body mass, and baseline and stress levels of each variable. We conclude that delayed post-stress BP recovery is directly related to cardiovascular disease risk, and may index impaired in post-stress adaptation of inflammatory and hemostatic processes.
PAPER SESSIONS

Cancer & HIV: Biological, Psychological and Social Correlates

Abstract 1404

SOCIAL SUPPORT AND CYTOKINE PRODUCING T-CELL POPULATIONS IN THE OVARIAN CANCER MICROENVIRONMENT

Susan Latendorf, Psychology, U. of Iowa, Iowa City, IA, Anil Sood, Gyn Oncology, MD Anderson, Houston, TX, Koen DeGeest, Barrie Anderson, OB/Gyn, Heena Maiseri, Stephanie McGinn, Psychology, David Lubaroff, Urology, U. of Iowa, Iowa City, IA

T cell downregulation has been observed in the ovarian tumor microenvironment, but the extent to which psychosocial factors are related to T-cell production of cytokines in tumor infiltrating lymphocytes (TIL) has not been studied. We examined relationships among social support and populations of CD4+ and CD8+ cells producing interferon g (TH1 and TC1 cells) and interleukin-4 (TH2 and TC2 cells) in lymphocytes isolated from 3 compartments (peripheral blood [PBL], ascites, and tumor) in ovarian cancer patients. Patients completed assessments (POMS, SPS) and gave peripheral blood pre-surgery. T cell data were available for 36 patients with ovarian carcinoma and 14 patients with benign ovarian tumors. Unstimulated, tumor-stimulated, and PMA/ionomycin stimulated T cells were assessed by intracellular stain. Benign patients had higher TH1/TH2 ratios (p=0.039) and marginally higher TC1/TC2 ratios (p=0.07) in unstimulated PBL, suggesting a greater cytotoxic response. Among cancer patients, no significant differences in TH1/TH2 ratios were seen between compartments. However, lower tumor-stimulated TC1/TC2 ratios were seen in both TIL and ascites, compared to PBL. Euthymic patients, however, showed a greater TH1/TH2 ratio in PBL than euthymic patients. Greater social support was related to higher TC1/TC2 ratios (r=0.64, p=0.02) and marginally higher TH1/TH2 ratios (r=0.54, p=0.058) in PMA/I stimulated TIL. In tumor stimulated TIL, greater social support was related to lower TH1/TH2 ratios(r=-0.86, p=0.001) and marginally lower TC1/TC2 ratios (r=-0.59, p=0.07). Thus, although social support is associated with greater potential for TH1 and TC1 cells in TIL with maximal stimulation (PMA/I), this benefit is not seen in tumorstimulated T cell compartments. These findings highlight complexities of PNI links with adaptive immunity under conditions of immune downregulation in the tumor microenvironment.

Abstract 1801

STRESS SENSITIVITY IN METASTATIC BREAST CANCER

David Spiegel, Psychiatry and Behavioral Sciences, Janine Giese-Davis, Psychiatry, Stanford University, Sandie Sephton, Psychological and Brain Sciences, University of Louisville, Maya Yutis, Helena Kraemer, Psychiatry, Stanford University

In women with metastatic breast cancer (N = 102), we found that loss of the diurnal cortisol rhythm was associated with DEX non-suppression, but not with activation of cortisol secretion by either CRF infusion or the Trier Social Stress Task. Escape from suppression caused by 1 mg of dexamethasone administered the night before at all time points throughout the next day was associated with flatter diurnal cortisol slopes (r=.74, p<.0006, N=98). Flatter (abnormal) diurnal cortisol slopes were modestly associated with the rise in cortisol from waking to 30 minutes after awakening (Spearman r=.32, p<.001, N=100).

Abstract 1701

INSULIN RESISTANCE AND HPA AXIS DYSREGULATION IN WOMEN WITH METASTATIC BREAST CANCER

Elissa S. Epel, Psychiatry, UCSF, San Francisco, CA, Janine Giese-Davis, Stanford University, Palo Alto, CA, Sandie Sephton, University of Louisville, Louisville, KY, David Spiegel, Stanford University, Palo Alto, CA

Hyperinsulinemia has been shown to be a predictor of breast cancer progression. This study examined whether insulin resistance (IR) was related to indices of psychological distress and HPA axis dysregulation, cross-sectionally, in a sample of 71 women with metastatic breast cancer who completed assessments of HPA axis function, insulin resistance, and other measurements of metabolic syndrome parameters. The sample appeared to have greater average insulin resistance than found in a non-diabetic sample, and the prevalence of insulin resistance was higher among normal weight women than expected. A proxy measure of IR (triglyceride/HDL cholesterol ratio) was related to three of four components of HPA axis regulation. Higher IR was not related to cortisol slope, but was related to enhanced negative feedback of ACTH and cortisol on a dexamethasone/CRH suppression test, and to lower cortisol response to a standardized lab stressor. Perceived stress was not related to IR, although it was related to enhanced ACTH suppression to DEX/CRH test. This study suggests a link between HPA axis dysregulation and insulin resistance in breast cancer. It is possible that stress-induced HPA axis dysregulation may contribute to IR, putting women at greater risk of earlier cancer progression. We discuss several possible explanations for their hypocortisolemia and links with IR.

Abstract 1738

PERSONALITY AND HIV: THE RELATIONSHIP BETWEEN NEO-PI-R PERSONALITY DOMAINS AND FACETS AND DISEASE PROGRESSION IN HIV OVER 4 YEARS

Gail H. Ironson, Psychology/Psychiatry/Behavioral Medicine, Conall M. O’Cleirigh, Psychology, University of Miami, Coral Gables, FL, Paul T. Costa, Jr., NIA, NIH, Bethesda, MD, Mary Ann Fletcher, Medicine, University of Miami, Miami, FL, Neil Schneiderman, Psychology/Medicine, University of Miami, Coral Gables, FL

The examination of psychosocial predictors of disease progression in HIV has focused primarily on depression, coping, and stress, with little attention paid to stable individual differences. The current study examines the role of the Big Five personality domains (Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness) and their respective facets on change in CD4 and log HIV-viral load (VL) over 4 years. As part of a larger longitudinal study personality assessments (NEO-PI-R) were completed by 104 HIV-seropositive patients (33.6%), who were diverse with respect to ethnicity, gender, age and SES. Patients underwent comprehensive psychological assessment and blood draws every 6 months for 4 years. Linear rates of change for CD4 cell number and VL were modeled using Hierarchical Linear Modeling. A priori, covariates controlled for included initial disease status, antiretrovirals as a time dependent covariate, and age, gender, ethnicity, marital status, and education. Openness (t (97) = -2.423, p < .05), Extraversion (t (97) = -3.065, p < .01), and Conscientiousness (t (97) = -1.946, p < .05) were associated with slower rates of increase in VL over 4 years. Openness (t (97) = 2.021, p < .05) and Extraversion (t (97) = 2.112, p < .05) were also associated with slower declines in CD4 cells. Facets of the above domains that were significantly related to disease progression were, assertiveness, positive emotions and gregariousness (Extraversion); ideas, aesthetics (Openness); achievement striving and order (Conscientiousness). These results provide good initial evidence of the usefulness of personality assessment in identifying people at risk for accelerated disease progression in HIV.

Abstract 1740

PRELIMINARY EVIDENCE FOR PARALLEL DYSREGULATION ACROSS COPING, IMMUNE, AND PHYSIOLOGICAL RESPONSE SYSTEMS IN PATIENTS FROM AN HIV PRIMARY CARE CLINIC

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Higher Type C coping (under-recognition and expression of stress, needs, and emotion; psychological/psychophysiological dysynchrony) has been associated with faster melanoma and HIV disease progression. We hypothesized and found in a recent pilot study that higher Type C coping was significantly associated with lower HIV-specific antigen-stimulated production of HIV CCR5 co-receptor ligands (beta-chemokines MIP-1 alpha/beta), which are potent HIV inhibitors. As part of a 5-year longitudinal NIH study, we sought to replicate this finding and extend it to the psychophysiological realm. Type C coping was assessed using the validated Vignette Similarity Rating Method. In-vitro production of MIP-1 alpha/beta in response to the HIV-specific antigen the antigen was measured by ELISA from supernatants collected on days 3 and 6. Heart rate and systolic/diastolic blood pressure were recorded.
every 90 seconds during two emotion-induction tasks, each preceded by a baseline resting period and followed by a resting recovery period. Preliminary results from the first 51 participants (90% African-American, 55% female) indicate a tentative replication of our previous finding that Type C coping is associated with decreased beta-chemokine production (t = 1.34, p = .15). Multiple regression analyses, adjusting for age and medication use, showed significant associations between elevated cardiovascular responses to stressors, combined with a decreased ability to return to a resting state, and decreased beta-chemokine production (R² range: 0.08-0.13, p range: 0.07 to <.001). These findings are consistent with our general hypothesis that dysregulated coping and physiological patterns are associated with dysregulated HIV immune responses that contribute to HIV progression.

Abstract 1178

PSYCHOLOGICAL DISTRESS AND HIV PATHOGENESIS: ROLE OF CYTOTOXIC T-CELL ACTIVATION AND INFLAMMATORY CYTOKINE PRODUCTION

Jeffrey Greeson, Maria Llabre, Nancy Klimas, Peter Lawrence, Alex Gonzalez, Pedro Martin, Neil Schneiderman, Barry Harwit, Behavioral Medicine Research Center, University of Miami, Miami, FL

This study examined cytotoxic T-cell activation and antiviral inflammatory cytokine production as potential mechanisms through which psychological distress may influence HIV pathogenesis. Structural equation modeling was used to analyze cross-sectional data from 167 HIV+ adults on combination antiretroviral therapy (mean age = 41±7 yrs; 66% men; 89% ethnic minority). Psychological distress was operationalized as a latent predictor variable, defined by the shared variance among 3 self-report instruments (Perceived Stress Scale, Beck Depression Inventory, and Impact of Events Scale). HIV disease progression status was specified as a latent dependent variable defined by 2 pathogenic indicators (HIV-1 plasma viral load and CD4+ helper T-cell count). Cytotoxic T-cell activation (% of CD8+ cells expressing CD38 or HLA-DR) and the capacity of white blood cells to produce antiviral cytokines (IL-6, IL-10, TNF-alpha) were hypothesized as latent mediator variables. An initial path model was consistent with the notion that cytotoxic T-cell activation but not cytokine production mediates the relationship between psychological distress and HIV progression status (beta = .43 and .48; p < .05). Modeling using instrumental variables revealed a bidirectional pathway (feedback loop) between T-cell activation and HIV progression factors (betas = .43 and .48; p < .05). Additionally, through mediational pathways involving cytotoxic T-cell activation and disease progression status, distress was related to decrements in both cytokine production and T-cell blastogenesis. Because models controlled for the effects of potentially confounding variables (e.g., age, time since HIV diagnosis, and adherence to antiretroviral medication), findings suggest that heightened subjective distress may increase susceptibility to HIV pathogenesis and immune deficiency through a novel psychoimmune pathway -- one involving cytotoxic T-cell overactivation.

Abstract 1383

A TEN-SESSION INTERDISCIPLINARY PSYCHOEDUCATIONAL INTERVENTION HELD BY ONCOLOGISTS IMPROVES SATISFACTION WITH CARE AND DECREASES ANXIETY IN CANCER PATIENTS

Verena Huemmeler, Harold O. Guendel, Psychooncology, Technical University, Munich, Germany

Satisfaction with care is an important feature of overall treatment quality and a particularly relevant outcome measure. We prospectively evaluated the effects of a ten-session psychoeducational intervention dealing with topics like chemotherapy, radiotherapy, complementary medicine, nutrition, relaxation training and individual coping in a german cancer center on satisfaction with care. Each session was held by medical doctors or psychologists who also treated the individual cancer patients personally within their oncologic specialty. A total of 296 patients (44.2% male; 55.8% female; mean age 58.5 yrs.; breast cancer 33.8%) over five years participated and were randomly assigned to either the intervention group (N=160), which received informations by a psychoeducational intervention, or an usual care control group (N=134). The extent of satisfaction with care, life quality, coping, knowledge, anxiety and depression were assessed with validated instruments at the beginning of the course(0) and after 2(1) and 4 months(2).

In comparison with the control group the intervention group demonstrated a significantly higher increase of satisfaction with care at t1 and t2 (p<.05). In addition high satisfaction with care is significantly associated with lower anxiety (t1:p=-.43;t2:p=.38), lower depression (t1:p=-.58;t2:p=.52), with an increase on subscales of quality of life, for example global health (t1:p=.38;t2:p=.26) and various functional scales (t1:p=.29-.38) after 2 and 4 months. Higher satisfaction with care also correlates with more effective coping strategies, particularly search for social integration (t1:p=.50;t2:p=.44) and defense of threat (t1:p=.27;t2:p=.36). Accordingly, the intervention group showed a decrease of anxiety and different symptom scales and an increase of global health and social functioning at t1 and t2. In conclusion, this study provides evidence that even short interdisciplinary psychoeducational interventions in cancer patients conducted by oncologic specialists themselves can result in improving the level of overall satisfaction with care, quality of life, coping and affective state while doing little to dent the budget of any healthcare system.

Abstract 1700

SOCIAL INHIBITION MODERATES THE EFFECTS OF A COGNITIVE-BEHAVIORAL STRESS MANAGEMENT (CBSM) INTERVENTION ON RECOVERY FROM PROSTATE CARCINOMA: A LATENT GROWTH CURVE ANALYSIS

Scott Siegel, Frank Penedo, Maria Llabre, Neil Schneiderman, Michael Antoni, Psychology, University of Miami, Coral Gables, FL

Social inhibition, the tendency to inhibit behavioral and emotional expression in social situations, has been related to poor physical health outcomes in several medical populations. This study extends prior findings by examining social inhibition in men treated for prostate carcinoma (PC), the most common form of cancer in men. Men with PC have described treatment-related sexual dysfunction in distressing terms, reporting that it interferes with physical intimacy and challenges their sense of identity, self-esteem, and masculinity. Because of the social nature of sexual dysfunction, socially inhibited men treated for PC may have particular trouble recovering function. This study investigated whether social inhibition is related to sexual function in 257 men treated for PC with radiation or surgery. This study also investigated whether a ten-session CBM intervention could improve sexual functioning and whether social inhibition moderates this effect. Participants were assessed at four time points and sexual recovery was modeled with latent growth curve analysis. Social inhibition was assessed with the Inventory of Interpersonal Problems, sexual functioning with the University of California, Los Angeles Prostate Cancer Index, and control variables via interview. After adjusting for control variables, social inhibition was related to poorer baseline levels of sexual functioning in men treated with surgery (Beta = .22, p < .02) but not radiation (p > .10). Furthermore, men treated with surgery who were randomized to CBM demonstrated a larger (p < .05) slope of recovery in sexual function relative to control participants. This intervention effect was moderated by social inhibition (Beta = .50, p < .01) such that with increasing levels of social inhibition, the men treated with surgery reported greater effects from CBM. Clinical implications are discussed.

Hormonal and Hemotologic Responding: Dynamics and Predictors

Abstract 1219

INFLAMMATORY AND PLATELET RESPONSES TO REPEATED MENTAL STRESS: INDIVIDUAL STABILITY AND HABITUATION OVER TIME

Mark Hamer, Emily Williams, Raisa Vuononvirta, Andrew Steptoe, Psychobiology, University College London, London, United Kingdom, E L. Gibson, School of Human and Life Sciences, Roehampton University, London, United Kingdom

A lack of adaptation, prolonged or inadequate stress responses may lead to allostatic load that has been implicated as a factor in disease progression. One important aspect of the hypothesis relating stress reactivity with disease risk is that individuals are characterized by stable response profiles that can be reliably assessed using acute psychophysiological stress testing. Previous research has mainly focused on the stability of cardiovascular, neuroendocrine, and cellular immune responses to repeated stressors, and less attention has been given to other cardiovascular risk factors, such inflammatory and hemostatic responses. We therefore examined both average stability and individual test-retest stability of inflammatory and platelet
activation responses to mental stress over two test sessions, four weeks apart. Ninety-one healthy, non-smoking men (mean age 33.2 yrs) completed a 3-min task followed by a 5-min mirror tracing task on two separate occasions. Blood samples were drawn during baseline and immediately post task for the assessment of von Willebrand factor (vWF) and C-reactive protein (CRP), while platelet activation was assessed by measuring platelet-leukocyte aggregates using flow cytometry. There was significant stress-induced increases in CRP, vWF, platelet activation, and subjective ratings of stress during both sessions (p<0.002), and the magnitude of responses did not differ between sessions. Significant test-retest correlations between sessions were observed for all baseline and stress values (r = 0.47 to 0.74, p < .001). Our results demonstrate that the stress-induced responses did not habituate between sessions and were relatively stable within individuals. These findings suggest that acute stress-induced inflammatory and hemostatic responses are robust, so may contribute to psychosocial disease pathways.

Abstract 1540
STRESS, AWAKENING TIME, WEEKEND VERSUS WEEKDAY SAMPLING, AND ADHERENCE ISSUES IN THE STUDY OF THE CORTISOL AWAKENING RESPONSE (CAR)
Philip D. Evans, Angela Clow, Frank Hucklebridge, Lisa Thorn, Psychophysiology and Stress Research Group, University of Westminster, London, UK
The pronounced rise in cortisol following awakening holds promise as a biomarker of variables in the psychosocial domain, but its investigation also presents methodological challenges. We present evidence from normal healthy participants (N=48) which address some of these challenges. We undertook analyses which revealed interplay between levels of perceived stress, awakening time, whether sampling takes place on weekdays or weekend days, and, not least, issues of adherence to protocol in relation to exact timing of self-administered saliva collections. Univariate analyses over a 45 minute period following awakening showed: (1) greater reporting of perceived stress and later awakening times were both associated with lower cortisol (r=0.38; p<0.01; r=0.46; p<0.01 respectively; (2) late awakening times were also associated with less cortisol rise within the period (r=-0.04; p=0.05); and, this rise is also less at weekends (p<0.001). Multivariate analyses did not suggest that this weekend effect arose from later awakening times at the weekend. Despite some suggestions in the literature, awakening time effects were not mediated by stress or vice versa, since, though correlated, both were independent predictors of cortisol. Where sample timing is verified, it is rare to find instances on no CAR. Therefore we examined suspected non-adherence (SNA) by identifying instances of profiles showing no cortisol rise from awakening to awakening + 15 minutes. SNA proved to be important in respect of weekday versus weekend effects. Analysis controlling for SNA status abolished the otherwise highly significant fluctter profile at weekends. This is interesting; others have speculated that reduced stress may account for the reduced CAR at weekends. Results will be discussed in terms of what best-practice guide-lines may be gleaned for measurement of the CAR.

Abstract 1757
DAY-TO-DAY DYNAMICS OF NATURALISTIC MOOD-CORTISOL ASSOCIATIONS IN A POPULATION-BASED SAMPLE OF OLDER ADULTS
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In a population-based, representative sample of 156 adults (aged 50 to 67), day-to-day variations in cortisol diurnal rhythms were predicted from prior-day and same-day mood variables, in an attempt to examine the causal ordering of associations between mood and cortisol in naturalistic environments. Diary reports of mood across the day were completed at bedtime on each of 3 consecutive weekdays (Day 1, Day 2 and Day 3). Salivary cortisol levels were measured at wake up, 30 minutes post-waking and at bedtime each of these days. Hierarchical linear modeling techniques were used to estimate latent diurnal cortisol profiles for each individual on the 3 days of measurement. The parameters defining individuals diurnal cortisol profiles (wakeup cortisol, slope of diurnal change, and the size of cortisol awakening responses) were first predicted from average mood states across all 3 days of testing. Individuals with higher average levels of sadness and loneliness on the 3 testing days had larger cortisol awakening responses (t = 2.131, p = 0.034); there was a trend for individuals with greater average fatigue across the days of testing to have lower average wakeup cortisol levels (t = -1.632, p = 0.10). To get some insight into the causal ordering of effects of these mood-cortisol associations, we then examined whether our cortisol parameters for Days 2 and 3 were more strongly associated with mood on the same day as cortisol measurement, or with prior day mood variables. Greater prior-day sadness/loneliness (but not same-day sadness/loneliness) predicted a larger cortisol awakening response (prior-day sadness/loneliness t = 2.099, p = 0.037; same-day n.s.). Morning cortisol levels were not predicted by prior-day fatigue, but low morning cortisol levels were predictive of levels of fatigue levels experienced that same day (prior-day n.s.; same-day t = -2.492; p = 0.013). Results suggest that the cortisol awakening response is sensitive to day-to-day mood variations, and are consistent with the dual function of cortisol as both reflective of emotional experience, and as a contributor to the energetic state of the individual.

Clinical CVD: Biological, Psychological and Social Correlates
Abstract 1695
PRO-INFLAMMATORY RESPONSES TO MENTAL STRESS AND EXERCISE IN CARDIAC PATIENTS FOLLOWING SUCCESSFUL CORONARY ANGIOPLASTY
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Inflammatory processes play an important role in coronary artery disease progression. Inflammation markers increase in response to physical and mental stress in populations free of cardiovascular disease. However, the role of inflammatory responsiveness to mental stress and exercise has not been established in patients with coronary artery disease (CAD). Inflammatory responses (CRP, IL6, TNFa, sfCAM1) to two mental stress tasks (MS1: anger recall, MS2: mental arithmetic) and treadmill exercise (EX) were evaluated in CAD patients following successful elective percutaneous coronary intervention (N=36; age 59±8.1 yrs, 33% women) and controls without a history of CAD (N=28; age 53±9.7 yrs, 36% women).
Catecholamines were assessed using HPLC and stress echocardiography was used to rule out stress-induced ischemia as a possible confounding factor. CRP increased significantly to both mental stress tasks and EX ($p's<0.01$), and CRP responses were higher in CAD patients than controls (MS2-arithmetic response $= 0.19±0.11$ vs $0.01±0.03$ mg/L, $p=0.003$; EX response $= 0.57±0.11$ vs $0.08±0.03$ mg/L, $p=0.001$). Elevated norepinephrine responses to MS were related to larger CRP and IL6 increases ($p's<0.05$). Exercise elicited increased CRP, IL6, TNFα, and sCAM1 levels ($p's<0.01$), and these responses were larger than with mental stress ($p's<0.05$).

Conclusions: Mental stress and exercise induce increased CRP levels among patients with coronary artery disease. These stress-induced elevations in pro-inflammatory markers are larger than in healthy individuals and occur in the absence of myocardial ischemia. Stress-induced inflammatory responses may therefore play an important role in CAD pathophysiology, particularly among individuals at high risk for adverse cardiovascular health outcomes.

Abstract 1384

HEART RATE TURBULENCE, DEPRESSION, AND SURVIVAL AFTER ACUTE MYOCARDIAL INFARCTION

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Depression is a risk factor for mortality following acute myocardial infarction (MI), possibly due to altered autonomic nervous system (ANS) modulation of heart rate (HR) and rhythm. The purpose of this study was to determine whether depressed patients are more likely to have an abnormal HR response (HR turbulence) no change or a decrease in HR &/or a diminished or absent oscillatory response) to premature ventricular contractions (PVCs), and whether this accounts for the higher rate of mortality. Ambulatory ECG data were available for 666 (316 depressed, 350 nondepressed) patients with a recent acute MI; 498 had PVCs with measurable HR turbulence. Of these, 260 had normal, 152 had somewhat abnormal, and 86 had abnormal HR turbulence. Depressed patients had reduced survival (risk factor-adjusted hazard ratio $= 2.2$ [95% CI: 1.1 to 4.1; $p=0.02$]) and were more likely to have abnormal HR turbulence (risk-factor adjusted odds ratio $= 1.7$ [95% CI: 1.0 to 2.8]; $p=0.04$) than nondepressed patients. When HR turbulence was added to the model, the risk factor adjusted hazard ratio for depression decreased to 1.75 (95% CI: 0.9 to 3.4; $p=0.11$). When a measure of heart rate variability (LiVLF) was added to the model, the hazard ratio for depression further dropped to 1.5 (95% CI: 0.7 to 3.0; $p=0.30$). The results suggest that abnormal HR response to PVCs accounts for a substantial proportion of the mortality risk of depression in post-MI patients. Combining HR turbulence with a second measure of cardiac ANS modulation accounts for even more of this effect, suggesting that abnormal ANS functioning has a major role in the increased risk for mortality in depressed patients following an acute MI.

Abstract 1232

PHYSICAL AND PSYCHOSOCIAL PREDICTORS OF MALIGNANT VENTRICULAR TACHYARRHYTHMIAS IN PATIENTS WITH IMPLANTED DEFIBRILLATORS

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Background: Malignant ventricular tachyarrhythmias (MVT) have been suspected to mediate the association between psychosocial distress and cardiac mortality. Objective: To identify predictors of objectively recorded MVT in cardiac patients (pts) with implanted defibrillators (ICD).

Method: Validated self-report scales were completed by ICD pts during regular clinic visits. Cardiac variables were taken from patient records. A subgroup underwent mental stress testing (mental arithmetic, anger recall) with measurements of hemodynamic and autonomic activation. MVT were recorded from internal ICD memory after a mean follow-up of 19±8 months. Results: Of 137 pts included, 35% had at least one MVT during follow-up. MVT before baseline and reduced ejection fraction increased the risk of MVT. After controlling for these variables as well as for age, sex, and duration of follow-up, several psychosocial variables were significantly associated with MVT incidence. Maximum $R^2=0.71$ vs $R^2=0.49$ without psychosocial predictors. In summary, active coping and social support were most consistently and independently related to lower and life change stress as well as controlled anger expression to higher incidence of MVT. In the stress-test subsample, subjective stress reactions (available in n=99) were additional predictors of MVT, whereas reduced blood pressure reactivity (documented in n=47) had a marginal effect.

Conclusion: Active coping and social support independently predict low and life change stress predicts high incidence of MVT in ICD pts. It is, however, unclear if mental stress testing adds to the predictive value of self-rated variables. If so, our results suggest that autonomic dysfunction reflected by reduced rather than excessive reactivity may be associated with higher event rates in these severely ill pts.

Abstract 1533

PSYCHOSOCIAL AND BIOLOGICAL DETERMINANTS OF DEPRESSIVE SYMPTOMS IN PATIENTS WITH RISK FACTORS FOR CONGESTIVE HEART FAILURE (CHF)-THE MVDIP STUDY GROUP

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Background: Depression is associated with inflammatory activation and adverse outcomes in patients with cardiovascular disease.

Objective: To determine associations of personality and biological markers with depressive symptoms in pts with risk factors for CHF.

Method: Pts received a diagnostic workup consisting of psychometric tests, cardiac status, 6min-walk-test, assessment of natriuretic peptides (NT-proANP, NT-proBNP) and cytokines (interleukins [IL] 1B, 6, and 10) and tumor necrosis factor alpha [TNFα]) at baseline and 1 year after inclusion. Results: Of the 246 pts (61% men, aged 61±12 y) 44% had hypertension, 32% diabetes and 28% coronary disease. The 59 depressed pts identified by HADS were more likely to be female, insecurely attached and to show the Type D personality. They had higher levels of IL6 and TNFα and lower IL10 than non-depressed pts. In logistic regression 79% (R²=0.3) were classified correctly by secure attachment (OR=0.3), Type D (6.4) and IL6 (13.7). Age, sex, ejection fraction, 6min-walk-test and natriuretic peptides did not predict depression. At follow-up, the 246 pts (61% men, aged 61±12 y) 44% had hypertension, 32% diabetes and 28% coronary disease. The 59 depressed pts identified by HADS were more likely to be female, insecurely attached and to show the Type D personality. Combining HR turbulence with a second measure of cardiac ANS modulation accounts for even more of this effect, suggesting that abnormal ANS functioning has a major role in the increased risk for mortality in depressed patients following an acute MI.

Abstract 1338

SODIODEMOGRAPHIC AND PSYCHOSOCIAL CORRELATES OF AHERENCE IN HEART FAILURE

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Background. Heart failure (HF) is a chronic illness contributing significantly to morbidity and mortality of millions of Americans. Achedted patients must adhere to complex medical regimens to control the multiple symptoms associated with HF.

Purpose. To test the hypothesis that depression and low social support adversely affect adherence to heart failure recommendations. Methods. Patients with either systolic or diastolic dysfunction met predetermined criteria for HF. At baseline, participants completed the heart failure management scale, the CALS salt intake questionnaire to estimate a total sodium intake (in milligrams per day), electronic pill caps to track adherence to a single medication, the Geriatric Depression Scale (GDS) and several other psychosocial variables. Results. A total of 902 patients participated in the study. The mean age at baseline was 63±9 (53% women, 47% with high school education or less, 35% were African-American, 32% were NYHA class III,
and mean number of co-morbidities was 3.2 (±1.7). Higher GDS scores were associated with worse self-reported adherence (p<0.0001) and higher sodium intake (p=0.015). Higher social support scores were associated with better self-reported adherence (p=0.0004), and worse medication adherence (p<0.0001). Younger age was associated with worse self-reported adherence (p<0.0001), while men reported higher sodium intake than women (p<0.0001). Conclusions. Depression and social support are important independent correlates of adherence to prescribed heart failure self-management tasks. Treating depression and improving social support in addition to improving self-management skills may improve targeted heart failure related clinical outcomes. African-Americans have worse adherence overall suggesting an even greater need for improved self-management in this population.

Abstract 1315

PHOBIC ANXIETY PREDICTS MORTALITY AND VENTRICULAR ARRHYTHMIAS IN CORONARY ARTERY DISEASE PATIENTS

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The leading candidate mechanism proposed to explain the adverse effects of phobic anxiety on mortality is an increased vulnerability to arrhythmias. This mechanism is supported by findings that phobic anxiety increases the risk of sudden cardiac death (SCD) in population-based studies of healthy men and women. The relationship between phobic anxiety and SCD has not been evaluated in patients with coronary artery disease (CAD). The present study evaluated whether phobic anxiety is associated with SCD or ventricular arrhythmias during a 3-year median follow-up period in 940 CAD patients enrolled during hospitalization for diagnostic cardiac catheterization. Symptoms of phobic anxiety were measured using the Crown-Crisp index phobic anxiety subscale, which rates fear of eight common phobias, including fear of heights, crowds, and enclosed spaces. During follow-up, 134 (14%) patients died; 46 of these deaths met criteria for SCD. After adjusting for conventional risk factors, late-life phobic anxiety significantly predicted increased risk of all-cause mortality (Hazard Ratio = 1.066, p=0.032). Phobic anxiety was also significantly related to ventricular arrhythmias after adjusting for the predictors of arrhythmias (left ventricular ejection fraction, age, gender, minority status, and history of arrhythmias) with an Odds Ratio of 1.32 (p = 0.029). However, there was no relationship between phobic anxiety and SCD. These findings suggest that phobic anxiety predicts increased risk of ventricular arrhythmias and mortality in CAD patients.

Abstract 1319

ANXIETY PREDICTS ONSET OF CORONARY ARTERY DISEASE (CAD) IN MEN: AN 18-YEAR FOLLOW-UP STUDY

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Individuals with anxiety-prone personality are likely to experience frequent aversive mood characterized by heightened physiological arousal. We hypothesized that such responses may lead to higher CAD incidence over time. The study examined the contribution of anxiety-related constructs to CAD onset over 18 years in the Normative Aging Study (NAS). Participants were 930 healthy men who completed the MMPI in 1986 (mean age = 60.4 [SD=7.7]) and were free of CAD and diabetes. Incidents of new myocardial infarction (MI), ischemic heart disease (IHD), and angina pectoris (AP) were recorded up to 2004. The average length of follow-up was 11.6 (SD=4.68) years. There were 164 (17.6%) new CAD incidents (86 non-fatal MIs, 47 APs, and 11 IHDs; some had multiple events). Four anxiety-related constructs from the MMPI were examined - psychasthenia (PT), social introversion (SI), phobia (Wiggins PHO), and Taylor Manifest Anxiety Scale (TMAS). Standardized z scores were used in analysis. Hierarchical logistic regression analyses were conducted to predict CAD with each anxiety construct, adjusting for demographic background (age, education, marital status), metabolic risk factors (fasting glucose, BMI, HDL-C, LDL-C, SBP), and lifestyle factors (dietary habits, smoking, caloric intake). Results showed that after adjustments each anxiety construct independently and significantly predicted CAD onset with odds ratio (OR) being 1.36 for PT (p<.002; 95% CI=1.21-1.66), 1.28 for SI (p=.020; 1.04-1.58), 1.35 for PHO (p=.004; 1.10-1.66), and 1.38 for TMAS (p=.001; 1.13-1.69). Additionally, HDL-C, LDL-C, and SBP were significant predictors. Models that excluded fatal events or focused only on MI produced similar findings. Principal components analysis revealed that a common anxiety factor underlying the 4 scales explained 70.5% of the variance. A derived factor score achieved similar prediction of CAD with OR=1.42 (p=.001; 1.16-1.73). Finally, in analysis including perceived stress and MMPI depression (p=.05), the OR (1.41, p=.017; 1.06-1.88) of overall anxiety was slightly attenuated but remained significant. Anxiety-prone personality appears to be a robust independent risk factor of CAD.

Abstract 1552

SOCIAL SUPPORT AND STRESS AS INDEPENDENT PREDICTORS OF DIMINISHED HEART RATE VARIABILITY IN ARRHYTHMIA-VULNERABLE CORONARY ARTERY DISEASE PATIENTS

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Lack of social support is a predictor of poor prognosis in coronary artery disease (CAD). We assessed contributions of social support, perceived stress, and reported daily stress reactivity to diminished heart rate variability (HRV), an index of cardiac autonomic control in patients vulnerable to sudden cardiac death. 26 CADs with implantable cardioverter defibrillators completed ambulatory ECG monitoring and structured diaries for 24 hrs upon the completion of Interpersonal Support Evaluation List (ISEL) and Perceived Stress Scale (PSS). Daily stress reactivity was defined as the standard deviation of stress ratings throughout the day. Results showed that high frequency (HF) HRV was positively, though not significantly, correlated with ISEL scores (r=.30, p=.16), inversely with PSS scores (r=-.46, p=.02), and not with stress reactivity (r=-.23, p=.27). Low frequency (LF) HRV was positively correlated with ISEL (r=.42, p<.05), inversely, though not significantly, with PSS (r=.34, p=.11), and not with stress reactivity (r=-.22, p=.29). A hierarchical regression including ISEL, PSS, and stress reactivity showed that after removing the effects of the correlation between PSS and ISEL (r=.64, p<.01), HF (R2adj=.25, p=.03) was uniquely predicted by ISEL (B=.41, p=.04) and PSS (B=.53, p=.01), and LF (R2adj=.32, p=.01) was uniquely predicted by ISEL (B=.52, p=.01) and PSS (B=.49, p=.01). Adding the interaction of PSS and ISEL (p=.52 for HF; p=.82 for LF) did not improve the model. Thus, social support and perceived stress each uniquely contributes to diminished HRV in arrhythmia-vulnerable CADs; overlooking either social support or perceived stress in assessing diminished HRV will underestimate the effect of each in predicting parasympathetic function.

CVD: Risk Factors

Abstract 1165

BLOOD LEAD (PB) LEVELS: A POTENTIAL ENVIRONMENTAL MECHANISM EXPLAINING THE RELATION BETWEEN SOCIOECONOMIC STATUS AND CARDIOVASCULAR REACTIVITY IN CHILDREN

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Some behavioral medicine studies have shown an association between lower socioeconomic status (SES) and heightened cardiovascular reactivity to acute stress. Within the field of environmental toxicology, it has also been shown that lower SES is associated with increasing exposure to environmental toxicants, including heavy metals such as lead (Pb). In our continuing attempt to bridge these two fields, we recently reported that higher early childhood blood lead levels are associated with significantly greater total peripheral resistance (TPR) responses to acute stress. Based on these prior findings, we hypothesized that blood lead levels might mediate the SES effect on TPR reactivity. The present study considered this hypothesis by measuring SES, early childhood blood lead, and cardiovascular reactivity to acute stress in 9.5 year old children (N = 122). In these children, lower family SES was
PHYSIOLOGICAL RESPONSES TO STRESS OVER THE ADOLESCENT TRANSITION: PERFORMANCE VERSUS SOCIAL REJECTION STRESS
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The adolescent transition is associated with dramatic increases in depression and other stress-related psychopathology; however, little is known about normative variation in physiological responses to stress over this period. We examined neuroendocrine and cardiovascular responses to performance and social rejection stress over the adolescent transition. Participants were 57 healthy children and adolescents (33 females) ages 7-17 (M=12, SD=3) recruited through community postings. Following a “rest” session where they habituated to the laboratory, participants completed a 2-hour performance or social rejection stress session. Performance tasks were an academic speech, mental arithmetic and mirror tracing; social rejection tasks were 3 exclusion interactions with gender/age-matched confederates. Saliva cortisol, alpha amylase (AA), SBP, DBP, and HR were measured throughout. Participants were divided into older (13+) and younger (<12) age groups. Both performance and social rejection sessions resulted in significant increases in all physiological measures (F’s=2.41, p’s<.05). Older participants showed significantly greater cortisol, AA, and SBP responses (F’s=2.31 for age X time interaction, p’s<.05) compared to younger participants. Participants in the social rejection session showed greater AA responses (F=4.60 for session type X time interaction, p<.05), but lower cortisol and SBP responses (F’s=2.19, p’s<.05) compared to those in the performance session. Effects of age group were most pronounced in the social rejection session for AA and SBP, but the performance session for cortisol (p’s<.05). Thus, in a normative sample, adolescents showed consistently greater physiological reactivity to stress compared to children. Stressor type is an important moderator of stress response and age effects. Greater stress response in older participants may be associated with increased vulnerability to psychopathology in high-risk adolescents.

Abstract 1450
BLUNTED CENTRAL SEROTONERGIC RESPONSIVITY IS ASSOCIATED WITH PRECLINICAL VASCULAR DISEASE
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Central nervous system serotonergic neurotransmission has been implicated in depression, aggressive predisposition, smoking and physical inactivity, and also modulates BP, eating behavior, and metabolism. However, no studies have tested the association between serotoninergic functioning and atherosclerosis. Here, we examined 244 adults 30-55 years of age and free of clinically-evident vascular disease (52% men, 84 % white) using carotid artery morphology as a surrogate marker of atherosclerosis. Central serotonergic responsivity was measured as the time-integrated change in serum prolactin concentration (AUC) over 2.5 hours, adjusted for baseline prolactin, following IV citalopram administered at 0.33 mg/kg lean body weight. Carotid artery intima-media thickness (IMT) and plaque occurrence were determined by B-mode ultrasonography. The sample mean and maximum IMT were 0.65 ± 0.09 mm and 0.81 ± 0.11 mm, respectively and carotid plaque was present in 31 subjects (13%). Linear regression models including age, gender and race showed lower prolactin response to be associated with greater mean (beta = -0.023, p=0.03) and maximum IMT (beta = -0.025, p=0.006). A 1 SD decrease in prolactin response was associated with increases in mean and maximum IMT of approximately 0.01 and 0.02 mm, respectively. The odds ratio for carotid plaque responding to a 1 SD decrease in prolactin response, adjusted for age, race and sex, was 1.47 (0.99, 2.19) p=0.058. In these young and relatively healthy adults, blunted prolactin response to citalopram was associated with carotid artery thickening, suggesting that individual differences in central serotoninergic function responsivity are inversely related to preclinical vascular disease.

Abstract 1371
PSYCHOSOCIAL STRESS AND ATHEROSCLEROSIS
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Psychosocial stress, experienced in family and work life, worsens prognosis and accelerates progression of coronary disease in women cardiac patients. The impact of naturally occurring positive psychosocial exposures however, have not been described in relation to clinical cardiological risk factors and management.

Method: Among patients enrolled in the Stockholm Female Coronary Angiography Study, 80 women, aged 30 to 65 years, were evaluated for coronary atherosclerosis progression/regression using serial quantitative coronary angiography (QCA). The mean luminal diameter change over three years was averaged over ten predefined coronary segments, representing the entire coronary tree. Stress in family life was measured using the Stockholm Marital Stress Scale (SMSS) and that of work life by the demand-control questionnaire (DCQ).

Summary of results: Multi-variable controlled mixed models ANOVA analyses revealed that women with high stress from either family or work had significant disease progression over three years, whereas those with low stress had only slight progression. In contrast, women who were satisfied with both life domains and remained free of stress from family and work life, showed even less progression of their coronary artery disease. Their mean coronary luminal diameter increased by 0.22 mm (95% CI=0.10; 0.35; p<0.0001) as compared to women who experienced severe stress from any source, whose luminal diameter decreased by 0.20 mm (95% CI=0.14; 0.25; p<0.0001). These associations were independent of baseline luminal diameter, of standard cardiovascular risk factors, including age smoking, hypertension, LDL, and of medications, including use of lipid lowering agents (statins) over the three year period.

Conclusion: Women with clinically managed coronary artery disease may obtain relative protection, and even restitution of coronary artery atherosclerosis, from a happy marriage and satisfactory job.

Abstract 1731
MARITAL CONFLICT BEHAVIOR AND CORONARY ARTERY CALCIFICATION
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Marital strain confers risk of cardiovascular disease (CVD), though perhaps differently for men and women. We tested the hypothesis that for women hostile marital interactions would be associated with more severe coronary artery calcification (CAC), whereas for men interactions high in dominance and low in warmth vs. hostility and dominance vs. submission were calculated for both partners. CT scans provided Agaston scores for CAC. In regression analyses of log-transformed CAC controlling age, women’s CAC was positively related to their own hostility during the discussion, R-square change = .033, F(1,148) = 5.8, p<.02. In an interaction between wives and husbands hostile behavior, R-square change = .023, F(1,146), p<.05, this effect of wives hostility was stronger for women whose husbands also displayed hostility. Wives’ and husbands’ dominance ratings were unrelated to wives’ CAC. For husbands, both their own dominant behavior, R-square change = .038, F(1,147) = 6.0, p<.02, and their wives’ dominance, R-square change = .029, F(1,146) = 4.7, p<.04, were associated with higher CAC, but hostile behavior was not. In a significant interaction between husbands’ and wives’
Depression and Disease

Abstract 1760

PHYSICAL FITNESS ATTENUATES LEUKOCYTE - ENDOTHELIAL ADHESION IN RESPONSE TO ACUTE PHYSICAL STRESS
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Background: Studies indicate that physical fitness promotes cardiovascular health, possibly through a mechanism of reduced endothelial inflammation. The purpose of this study was to examine the effects of fitness on leukocyte - endothelial adhesion responses to a acute exercise stressor.

Methods and Results: Adhesion was examined in 18 fit and 19 non-fit women and men (mean age 39 years, SD ± 11, range 23 to 55) before and after a 20-minute treadmill exercise at 65-70% peak oxygen consumption. The exercise was determined by peak oxygen consumption during a maximal treadmill test. Leukocytes were measured for adhesion response at rest and immediately following exercise by isolating peripheral blood mononuclear cells (PBMC) from whole blood (Ficoll-Paque) and incubating 1.5 million PBMC/well for 1 hour with human umbilical venous endothelial cells (HUVEC). HUVECs were pre-incubated with cytokines IL-1 & IL-8 for 4 hours to activate endothelial adhesion molecule expression. Half of the wells also contained soluble intercellular adhesion molecule (sICAM)-1 to examine its ability to inhibit PBMC - HUVEC binding. Unbound cells were counted, and numbers of bound cells were calculated. Data were analyzed by repeated measures ANCOVA, controlling for subjects' age and gender. Across all subjects, acute exercise led to a 35% reduction in PBMC - HUVEC adhesion (p<0.05). More fit subjects (median split) showed a more than 2-fold greater reduction in PBMC - HUVEC adhesion after exercise as compared to less fit subjects (48% versus 22% reduction, respectively, p<0.01). Regardless of fitness levels, both at rest and in response to exercise, sICAM-1 attenuated PBMC - HUVEC adhesion approximately 81% (p<0.001).

Conclusions: The findings indicate that immune cells that demarginate in response to exercise have reduced ability to adhere. More importantly, physical fitness supports a circulatory environment of further reduced leukocyte - endothelial adhesion independent of ICAM-1 binding. These findings provide mechanistic evidence of how physical fitness might protect against excessive inflammatory responses to acute stress.

Depression is a risk factor for cardiovascular disease (CVD). Hypothalamic-pituitary-adrenal (HPA) axis and vagal dysregulation are potential risk mechanisms. We investigated circadian mood variation and HPA axis and autonomic function in older (> 55 years) depressed and nondepressed participants at risk for CVD. Diurnal positive and negative affect (PA, NA), cortisol, and cardiopulmonary variables were assessed in 46 moderately depressed and 19 nondepressed. Subjects sat quietly for 5 min periods (10:00, 12:00, 14:00, 17:00, 19:00, 21:00), and then completed an electronic diary assessing cardiovascular and NA. Heart rate variability (HRV) measures were computed for these periods an index of vagal activity. Salivary cortisols were collected at wake, wake + 30 min, 12:00, 17:00, and 21:00. Cortisol peaked in the early morning following wake and then gradually declined over the course of the day. Depressed participants did not exhibit hypercortisolism. PA was lower whereas NA was higher in depressed participants throughout the day. HRV did not indicate group differences. Negative emotions were inversely related to HRV in the nondepressed but not in the depressed patients. Moderately depressed patients do not show abnormal HPA-axis function. Diurnal PA and NA distinguish depressed from nondepressed patients at risk for CVD, while measures of vagal regulation, even if controlled for physical activity and respiratory confounds, do not. Daily fluctuations of NA do not influence autonomic control of the heart in depressed subjects, but they do in non-depressed participants suggesting differences between the systems in depressed individuals. Diurnal mood variations of older individuals at risk for CVD differ from those reported in previous studies of other groups.

Abnormal depression has often been associated with hyperactivity of the HPA-axis, recent studies among depressed elderly have found decreased cortisol levels, which was hypothesized to be due to underlying physical frailty associated with HPA-axis hypocortisolism. The present study examined the relationship between urinary cortisol level and late-life depressed mood. Data are from 881 community-dwelling participants, mean age 74.2 years, of the InChianti Study. Depressive symptoms were assessed using the CES-D scale, and cortisol levels were determined in 24-hour urine samples. The mean urinary cortisol level was 98.9 microgram, and 31% of the sample had clinically relevant depressive symptoms (CES-D>15). There was no linear association between depressed mood and urinary cortisol level (b=0.046, p=.17), but there was a significant association with squared urinary cortisol level (b=0.171, P<0.001), indicating a non-linear association. When urinary cortisol level was subdivided in categories of 25 microgram, it appeared that especially those at the lower and higher ends had the highest risks of depression. When compared to persons with a 24-hour urinary cortisol level between 100 and 125 microgram, those with <50 microgram and those with >175 microgram were 1.9 times (95% CI=1.1-2.4) and 2.5 times (95% CI: 1.3-4.9) more likely to be depressed. Compared to depressed persons with high cortisol levels, depressed persons with low cortisol presented more physical frailty in terms of lower energy levels and poorer performance on some physical function tests. This study indicates that late-life depressed mood is associated with both hyperactivity and hypo-activity of the HPA-axis. Since hypocortisolism has been associated with later very-low-frequency heart-rate variability (p = .010) and did not increase aortic impedance reactivity, as much is did the non-depressed during the stressor (p = .006).

Abstract 1714

CIRCADIAN AFFECTIVE, CARDIOPULMONARY, AND CORTISOL VARIABILITY IN DEPRESSED AND NONDEPRESSED INDIVIDUALS AT RISK FOR CARDIOVASCULAR DISEASE
Angsar Conrad, Psychiatry, Stanford University, Frank H. Wilhelm, Psychology, University of Basel, David Spiegel, Psychiatry, Stanford University

Depression is a risk factor for cardiovascular disease (CVD). Hypothalamic-pituitary-adrenal (HPA) axis and vagal dysregulation are potential risk mechanisms. We investigated circadian mood variation and HPA axis and autonomic function in older (> 55 years) depressed and nondepressed participants at risk for CVD. Diurnal positive and negative affect (PA, NA), cortisol, and cardiopulmonary variables were assessed in 46 moderately depressed and 19 nondepressed. Subjects sat quietly for 5 min periods (10:00, 12:00, 14:00, 17:00, 19:00, 21:00), and then completed an electronic diary assessing cardiovascular and NA. Heart rate variability (HRV) measures were computed for these periods an index of vagal activity. Salivary cortisols were collected at wake, wake + 30 min, 12:00, 17:00, and 21:00. Cortisol peaked in the early morning following wake and then gradually declined over the course of the day. Depressed participants did not exhibit hypercortisolism. PA was lower whereas NA was higher in depressed participants throughout the day. HRV did not indicate group differences. Negative emotions were inversely related to HRV in the nondepressed but not in the depressed patients. Moderately depressed patients do not show abnormal HPA-axis function. Diurnal PA and NA distinguish depressed from nondepressed patients at risk for CVD, while measures of vagal regulation, even if controlled for physical activity and respiratory confounds, do not. Daily fluctuations of NA do not influence autonomic control of the heart in depressed subjects, but they do in non-depressed participants suggesting differences between the systems in depressed individuals. Diurnal mood variations of older individuals at risk for CVD differ from those reported in previous studies of other groups.

Abstract 1129

LATE-LIFE DEPRESSION IS ASSOCIATED WITH BOTH HYPER- AND HYPO-ACTIVITY OF THE HPA-AXIS
Brenda Penninx, Aartjan Beekman, Witte Hoogendijk, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands, Luigi Ferrucci, Longitudinal Studies Section, National Institute on Aging, Baltimore, MD, Jack Guralnik, Laboratory of Epidemiology, Demography and Biometry, National Institute on Aging, Bethesda, MD

Although depression has often been associated with hyperactivity of the HPA-axis, recent studies among depressed elderly have found decreased cortisol levels, which was hypothesized to be due to underlying physical frailty associated with HPA-axis hypocortisolism. The present study examined the relationship between urinary cortisol level and late-life depressed mood. Data are from 881 community-dwelling participants, mean age 74.2 years, of the InChianti Study. Depressive symptoms were assessed using the CES-D scale, and cortisol levels were determined in 24-hour urine samples. The mean urinary cortisol level was 98.9 microgram, and 31% of the sample had clinically relevant depressive symptoms (CES-D>15). There was no linear association between depressed mood and urinary cortisol level (b=0.046, p=.17), but there was a significant association with squared urinary cortisol level (b=0.171, P<.001), indicating a non-linear association. When urinary cortisol level was subdivided in categories of 25 microgram, it appeared that especially those at the lower and higher ends had the highest risks of depression. When compared to persons with a 24-hour urinary cortisol level between 100 and 125 microgram, those with <50 microgram and those with >175 microgram were 1.9 times (95% CI=1.1-2.4) and 2.5 times (95% CI: 1.3-4.9) more likely to be depressed. Compared to depressed persons with high cortisol levels, depressed persons with low cortisol presented more physical frailty in terms of lower energy levels and poorer performance on some physical function tests. This study indicates that late-life depressed mood is associated with both hyperactivity and hypo-activity of the HPA-axis. Since hypocortisolism has been associated with later very-low-frequency heart-rate variability (p = .010) and did not increase aortic impedance reactivity, as much is did the non-depressed during the stressor (p = .006).
DEPRESSIVE SYMPTOMS AND INTRA-ABDOMINAL FAT IN CAUSIAN AND AFRICAN-AMERICAN WOMEN AT MID-LIFE
Susan A. Everson-Rose, Kelly Karavolis, Tene T. Lewis, Deidre E. Wesley, Lynda H. Powell, Preventive Medicine, Rush University Medical Center, Chicago, IL

Depression has been associated with excess risk of cardiovascular disease (CVD) in women and men, but the mechanisms underlying this association are not fully understood. One potential pathway is via central adiposity. Visceral or intra-abdominal fat (IAF) is more metabolically active and confers greater CVD risk than subcutaneous fat. Several studies have documented an association between depression and central adiposity but few have examined abdominal fat distribution in relation to depressive symptoms. We investigated the association between depressive symptoms, assessed by the Center for Epidemiological Studies Depression Scale (CES-D), and IAF and subcutaneous fat, assessed by CT, in a sample of 316 middle-aged women (66.8% Caucasian, 33.2% African-American; mean age=50.4 years) participating in the Chicago site of the Study of Women's Health Across the Nation (SWAN). After adjusting for age, race, menopausal status, and total fat mass (assessed by DEXA), each 1-point higher score on the CES-D was associated with 0.76 cm\(^3\) greater IAF (p<0.018). With CES-D scores dichotomized we found that depressed women (CES-D score>16 or greater) had 18.4% greater IAF than non-depressed women (CES-D<16) (p=0.02). Further adjustment for smoking, parity, physical inactivity and education did not alter the findings. Associations did not vary by race or menopausal status. Depressive symptoms were unrelated to subcutaneous fat (p>0.55). Findings support the hypothesis that depressive symptoms are associated with visceral fat, and not with subcutaneous fat, in women at mid-life. Greater deposition of intra-abdominal fat may be one pathway by which depression contributes to increased risk for CVD.

Acknowledgments: SWAN is supported by NIH through NIA, NINR, and the Office of Research on Women's Health (NR004061, AG012505, AG012535, AG012531, AG012539, AG012546, AG012553, AG012554, AG012495). This ancillary study also is supported by HL/AG67128.

Abstract 1263

DEPRESSION AS A RISK FACTOR FOR THE ONSET OF TYPE 2 DIABETES MELLITUS. A META-ANALYSIS
Mirjam J. Knol, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands, Jos W. Twisk, Clinical Epidemiology and Biostatistics, Aartjan T. Beekman, Robert J. Heine, Frank J. Stolk, Fransjou Pauw, Institute for Research in Extramural Medicine, VU Medical Center, Amsterdam, The Netherlands

Evidence shows that depression and type 2 diabetes are associated, yet the direction of this relationship is still unclear. Depression may occur as a consequence of having diabetes, but may also be a risk factor for the onset of type 2 diabetes. This study examined the latter association by reviewing the literature and conducting a meta-analysis of longitudinal studies on this topic. Medline and PsyCINFO were searched for articles published up to January 2005. Included were all studies that examined the relationship between depression and the onset of type 2 diabetes. Pooled relative risks were calculated using fixed and random effects models. To explore sources of heterogeneity between studies, subgroup and sensitivity analyses were performed.

Nine studies met our inclusion criteria. The pooled relative risk was 1.26 (1.13-1.39) using the fixed effects model and 1.37 (1.14-1.63) using the random effects model. Heterogeneity between studies could not be explained by 1) whether studies controlled for undetected diabetes at baseline, 2) the method of diabetes assessment at follow-up, 3) the baseline overall risk of diabetes in the study population, and 4) follow-up duration. These findings suggest that depressed adults have a 37% increased risk of developing type 2 diabetes mellitus. Pathophysiological mechanisms underlying this relationship are still unclear and warrant further research. A randomised controlled study is needed to test whether effective prevention or treatment of depression can reduce the incidence of type 2 diabetes and its health consequences.

Abstract 1423

POST-ACS DEPRESSION IS ASSOCIATED WITH CEREBRAL DEEP WHITE MATTER CHANGES
Michael A. Rapp, Department of Psychiatry, David A. Lessman, Medical School, Cheuk Y. Tang, Department of Radiology, Robert Paulino, Steven Williams, Department of Internal Medicine, Nina Reckmann, Department of Psychiatry, Mount Sinai School of Medicine, New York, NY, Karina W. Davidson, Behavioral Cardiovascular Health, Columbia University, New York, NY

Depression is a common complication in post acute coronary syndrome (ACS) patients, and predicts increased morbidity and mortality in these patients. However, little is known about the neurophysiological correlates of this type of depression. We explored if the presence of cerebral deep white matter (DWM) was associated with the severity of post-ACS depression. We used magnetic resonance imaging (MRI) to detect white matter integrity in 19 ACS patients (7 women, 12 men; mean age 57.16 years, SD 9.8 years) 3 to 6 months post event. Using the Coffey rating scale to quantify the extent of DWM, we compared persistently depressed ACS patients, (classified by Beck Depression Inventory (BDI) scores 10 or over at baseline who did not improve more than 5 points after 3 months), to ACS patients with BDI scores lower than 4 at 3 months from the Coronary Patients Evaluation Study (COPES).

The extent of DWM lesions was larger in patients who were persistently depressed, as compared to remitter or never depressed patients post ACS (p<.005). Controlling for age, gender, ethnicity, and level of education, the extent of DWM lesions was positively associated with the severity of depression at 3 months post-ACS (Spearman's rho = .539, p < .05). Post-hoc analyses showed that the number of co-morbid cardiovascular diagnoses (history of preexisting coronary artery disease, dyslipidemia, hypertension, peripheral vascular disease, diabetes, and congestive heart failure) was higher in patients with DWM lesions (p < .05). Cerebral DWM lesions are associated with both the presence and severity of post-ACS depression. Result suggests that this type of depression is conveyed by vascular risk factors, consistent with a vascular depression model.

Abstract 1434

DEPRESSIVE SYMPTOMS INDEPENDENTLY PREDICT RECURRENTITY OF ATRIAL FIBRILLATION AFTER ELECTRICAL CARDIOVERSION
Christoph Herrmann-Lingen, Psychosomatic Medicine, Philipp's University, Marburg, Germany, Helmut W. Lange, Heart Center Bremen, Bremen, Germany

Background: Depressive symptoms are associated with adverse prognosis in coronary patients. Some reports also found higher rates of ventricular tachyarrhythmias in depressed patients, whereas potential effects of depression on atrial fibrillation (AFib) are unknown. Objective: To study effects of depressive symptoms and the Type D personality on recurrence of AFib after successful electrical cardioversion. Method: Fifty-four patients with AFib (68% men, mean age 66±9 ) completed the Hospital Anxiety and Depression Scale (HADS) and the Type D Scale (DS-14) before electrical cardioversion. Follow-up ECGs were recorded after a mean of eight weeks. Results: Twenty-seven patients (50%) were still in sinus rhythm at follow-up, whereas AFib had recurred in the remaining 27. Depressive mood (HADS depression scale >7) was the only significant predictor of early recurrence, which was found in 85% of depressed vs. 15% of non-depressed patients (0dds Ratio 8.6; 95% confidence interval [CI] 1.7-44.0; p=0.004). Age, sex, diagnosis of coronary disease, systolic left ventricular function and atrial diameter had no predictive effect. Similarly, HADS anxiety scores and the presence of the Type D personality pattern were unrelated to recurrences. In multivariate Cox regression analysis controlling for potential somatic confounders, HADS depression >7 remained the only significant predictor (Hazard Ratio 2.7; 95% CI 1.2-5.8; p=0.014). Conclusion: In patients with successful cardioversion of AFib, even mild depressive symptoms predict early recurrence of arrhythmia.
ASSOCIATION OF DEPRESSION WITH MORTALITY AT 7-YEAR FOLLOW-UP AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

Ingrid Connerney, Surgery, University of Maryland, Baltimore, Maryland, Richard P. Sloan, Psychiatry, Emilia Bagiella, Biostatistics, Peter A. Shapiro, Psychiatry, Columbia University, New York, NY

There is solid evidence that depression is associated with mortality after myocardial infarction. However, for coronary artery bypass graft surgery (CABG) reports are inconsistent. In this prospective study of 309 patients we examined the impact of depression on cardiac and all-cause mortality up to 7-year follow-up after CABG surgery. Prior to discharge, patients were assessed for major depression using the Diagnostic Interview Schedule and Beck Depression Inventory (BDI). Follow-up was conducted by phone and with data from National Center for Health Statistics. In this sample, 63 patients (20%) met modified DSM-IV criteria for major depression and 87 (28%) had BDI score ≥10 indicating depressive symptomatology. Time-to-event or last follow-up phone contact ranged from 9 days to 7.5 years (median 6.6 years). Overall mortality rate was 24%(74 of 309), with 13.3%(41 of 309) due to cardiac causes. Cox proportional-hazard models showed that ejection fraction (EF) <0.35 (RR 4.5;p<0.001), insulin dependent diabetes mellitus (IDDM; RR 2.2;p<0.005), and modified BDI score >10 were independent predictors of cardiac mortality in the 7 years after CABG surgery. BDI was also independently associated with cardiac mortality in the model (RR 2.0;p<0.05). EF <0.35 (RR 2.8;p<0.01) and IDDM (RR 2.4;p<0.01) predicted all-cause mortality, but major depression did not. In addition, age (RR 1.03;p<0.05) and education (RR 1.7;p<0.05) were significant predictors of all-cause mortality. Patients who met modified DSM-IV criteria for major depression in the hospital had a twofold risk for cardiac mortality in the 7 years following CABG surgery independent of standard risk factors. Depression was not associated with all-cause mortality, except when using only the cognitive/affective symptoms of the BDI (RR 1.1;p<0.01). This study clearly establishes a link between psychological and biomedical variables in the CABG population. Depression, assessed both in a structured interview and with a questionnaire, was significantly associated with elevated cardiac mortality.

Biological and Genetic Pathways in Disease

Abstract 1197

ABDOMINAL ADIPOSE AND RISK OF HOT FLASHES AMONG A BIRACIAL SAMPLE OF MIDLIFE WOMEN

Rebecca C. Thurston, Psychiatry, Karen A. Matthews, Psychiatry, Psychology, Epidemiology, Daniel Edmundowicz, Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, Kim Sutton-Tyrrell, Epidemiology, University of Pittsburgh Graduate School of Public, Pittsburgh, PA

Hot flashes, reported by most menopausal women, are associated with impaired mood, sleep, and quality of life. However, their etiology and risk factors are not well understood. While it has been assumed that adiposity is negatively associated with hot flashes due to endocrine action of adipose tissue, thermoregulatory models suggest positive associations with hot flashes due to insulating properties of fat. The study purpose is to examine associations between abdominal adiposity and risk of hot flashes among women transitioning through menopause. The sample was comprised of 246 Caucasian and 134 African American participants of Study of Women’s Health Across the Nation Heart Study who were premenopausal at study entry and not using hormones. Participants underwent annual interviews for hot flashes and demographic/medical characteristics and a computed tomography scan once during study years 4-6. Associations between total, visceral, and subcutaneous (total-visceral) adiposity and hot flashes were examined in logistic regression. Adjusted for age and site, one standard deviation increases in total (OR=1.34, 95%CI 1.08-1.69, p=0.008) and subcutaneous abdominal adiposity (OR=1.38, 95%CI 1.11-1.60, p=0.004) were associated with significantly increased risk of hot flashes. Adjusted for age, site, education, race, smoking, parity, and menopausal status, associations remained significant for total (OR=1.27, 95%CI 1.01-1.59, p=0.04) and subcutaneous abdominal adiposity (OR=1.28, 95%CI 1.02-1.61, p=0.04). Visceral abdominal adiposity findings were not significant. Results indicate that increased adiposity, particularly subcutaneous adiposity, is associated with increased risk of hot flashes, supporting thermoregulatory models of hot flashes. Obesity does not protect women from hot flashes as once thought.

ALLOPREGNANOLONE, ETHNICITY, AND PAIN SENSITIVITY: THE TWINS HEART STUDY

Viola Vaccarino, James D. Brenner, Jerome Abramson, James Ritchie, Carisa Maisano, Olga Novik, Medicine, Linda Jones, Emory University, Atlanta, GA, Jack Goldberg, Vietnam Era Twin Registry, Seattle, WA

Homocysteine (Hcy), a risk factor for coronary disease (CHD), is involved in the synthesis of monoamine neurotransmitters which play a role in the pathogenesis of depression. While higher levels of Hcy have been described in patients with major depression (MD), few controlled studies on apparently healthy individuals are available and little is known about genetic influences in this association. We examined 155 male twins (75 pairs and 5 singletons) aged 47-57 yrs, free of symptomatic CHD and of history of MD, randomly sampled from a national twin registry. Current depressive symptoms were measured with the Beck Depression Inventory (BDI), and elevated BDI was defined as ≥10. Mixed-effects regression was used to account for intra-pair correlations. Mean Hcy was 7.6 (SD 2.1, range 2.0-15.3) and approximated a normal distribution. There was a strong graded association between levels of depressive symptoms and Hcy, which persisted after adjusting for education, CHD risk factors, BMI, smoking, use of caffeinated beverages and vitamins (Table). Within-pair analysis in 28 pairs (12 monozygotic (MZ) and 16 dizygotic (DZ)) discordant for BDI≥10, confirmed higher Hcy in depressed twins than non-depressed co-twins (p=0.02). This association was much stronger in DZ (difference depressed-nondepressed, 1.7 umol/L, p=0.01) than MZ pairs (difference depressed-nondepressed, 1.8 umol/L, p=0.1). In conclusion, depressive symptoms are independently associated with Hcy in middle-aged men with no history of MD, and depressive mood and Hcy may share a genetic pathway. Hcy should be examined as a potential pathway linking depressive symptoms to CHD.

Adjusted Means of Homocysteine According to BDI Score

<table>
<thead>
<tr>
<th>BDI Score</th>
<th>N</th>
<th>Homocysteine (umol/L)</th>
<th>P for Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6</td>
<td>114</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>6-9</td>
<td>21</td>
<td>7.5</td>
<td>0.0001</td>
</tr>
<tr>
<td>10-13</td>
<td>9</td>
<td>8.2</td>
<td></td>
</tr>
<tr>
<td>14+</td>
<td>11</td>
<td>9.6</td>
<td></td>
</tr>
</tbody>
</table>
DEPRESSIVE SYMPTOMS AND INFLAMMATION: IS THERE A SHARED GENETIC VULNERABILITY?
Viola Vaccarino, James D. Brenner, Andrew H. Miller, Jerome L. Abramson, Linda Jones, Faiz A. Cheema, Emory University, Atlanta, GA, Jack Goldberg, Vietnam Era Twin Registry, Seattle, WA

Higher levels of plasma inflammatory markers have been reported in depressed patients, but little is known about whether depression and inflammation share common genetic pathways. We examined 160 male twins (88 monozygotic (MZ) and 72 dizygotic (DZ)) aged 47-57 yrs without coronary disease, selected from a national twin registry. Current depressive symptoms were measured with the Beck Depression Inventory (BDI), and elevated BDI was defined as ≥10. C-reactive protein (CRP) and interleukin-6 (IL-6) were measured in plasma. Data were log-transformed because of not normal distribution and expressed as geometric means. Mixed-effects regression was used to derive adjusted means accounting for intra-pair correlations, and fixed-effects regression to derive p values for within-pair comparisons. After adjusting for education, blood pressure, LDL-cholesterol, body mass index, smoking and physical activity, inflammatory markers were significantly higher in persons with BDI>10 among DZ but not MZ twins (Table). Exclusion of twins with lifetime major depression (n=12) did not affect the results. In conclusion, the association between depressive mood and inflammation is due, in part, to a shared a genetic pathway.

Adjusted Geometric Means of IL-6 and CRP According to BDI score

<table>
<thead>
<tr>
<th>BDI Score</th>
<th>MZ (mg/L)</th>
<th>DZ (mg/L)</th>
<th>CRP (mg/L)</th>
<th>CRP (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>1.77</td>
<td>1.52</td>
<td>1.14</td>
<td>1.34</td>
</tr>
<tr>
<td>10+</td>
<td>1.90</td>
<td>2.45</td>
<td>1.43</td>
<td>2.21</td>
</tr>
<tr>
<td>P (Intra-Pair Diff)</td>
<td>17 .01</td>
<td>68 .04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P (Interaction)</td>
<td>0.02</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HUMAN CHOLINE TRANSPORTER GENE VARIATION IS ASSOCIATED WITH CORTICOLIMBIC REACTIVITY AND AUTONOMIC CARDIOVASCULAR FUNCTION
Serina A. Neumann, Psychology, Sarah M. Brown, Psychiatry, Robert E. Ferrell, Human Genetics, University of Pittsburgh, Pittsburgh, PA, Janine D. Flor, Psychiatry, Mount Sinai School of Medicine, New York, NY, Stephen B. Manuck, Psychology, Ahmad R. Hariri, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Our previous work implicated genetic variation in the human choline transporter gene (CHT1) to play a neurobiologic role in depressive symptoms and autonomic cardiac (cholinergic) dysregulation. Here, functional magnetic resonance imaging (fMRI) was used to examine the relation of a single nucleotide polymorphism (SNP) in CHT1 on regional brain activity related to autonomic cardiac function. Thirty-two participants of European ancestry (18 men, 14 women; age 33-54 yrs) completed an fMRI session using corticobasal reactivity and prefrontal inhibitory control paradigms. Resting autonomic cardiac function as measured by heart rate variability (HRV) was quantified from ECG. Subjects were genotyped for a CHT1 G/T SNP. GG homozygotes had greater right (R) dorsal amygdala (p <0.008), bilateral anterior cingulate (p <0.009) and R caudate reactivity (p <0.015) than T allele carriers. HRV measures were related significantly to R frontal cortex (Brodmann Areas 6, 9, and 46), R hippocampal formation, bilateral caudate, and bilateral anterior cingulate reactivity (p's <0.007). Variation in CH1T is related to functional differences in the reactivity of a distributed corticobasal circuitry mediating behavioral and physiologic arousal. These relations may contribute to a biologic mechanism by which genetic variation in cholinergic neurotransmission affects cognition, mood, and autonomic cardiac function of relevance to depressive pathophysiology.

Biological, Social and Psychological Correlates of Disease Outcomes in Infancy Through Adolescence

HUMAN CHOLINE TRANSPORTER GENE VARIATION IS ASSOCIATED WITH CORTICOLIMBIC REACTIVITY AND AUTONOMIC CARDIOVASCULAR FUNCTION
Serina A. Neumann, Psychology, Sarah M. Brown, Psychiatry, Robert E. Ferrell, Human Genetics, University of Pittsburgh, Pittsburgh, PA, Janine D. Flor, Psychiatry, Mount Sinai School of Medicine, New York, NY, Stephen B. Manuck, Psychology, Ahmad R. Hariri, Psychiatry, University of Pittsburgh, Pittsburgh, PA

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Biological, Social and Psychological Correlates of Disease Outcomes in Infancy Through Adolescence

Abstract 1321
PREVALENCE & PSYCHOLOGICAL PREDICTORS OF ADOLESCENT RECURRENT PAIN
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Recurrent pain is a type of episodic chronic pain that, in children, is associated with heavy medical involvement, as well as academic, social, and emotional difficulties. Studies have estimated that recurrent pain affects 15-20% of children, but often have not used representative samples. Few studies have used longitudinal methods to investigate what psychosocial factors underlie the conditions development. This study aimed to utilize a nationally representative sample to determine adolescent recurrent pain prevalence, and test whether self-esteem and anxiety/depression are predictors of the condition. A cohort of 2488 adolescents, 10-11 years, from Statistics Canadas National Longitudinal Survey of Children & Youth were studied 5 times every 2 years. In Cycles 2-5, adolescents reported head, stomach, and back pain frequency. Adolescents also responded to self-esteem and anxiety/depressed mood scales. Head pain was the most common type of weekly pain, reported by 26% of adolescents in Cycle 2, 32% in Cycle 3, 29% in Cycle 4, and 28% in Cycle 5. (Cycle 2-5 range for stomach pain: 14-22%; back pain: 18-26%). Apart from back pain in Cycle 2, pain frequency patterns differed between girls and boys for all types of pain, at all cycles (all Chi2 tests: p<.001); girls reported more frequent pain than boys. Ordinal regression models testing whether self-esteem and anxiety/depression are predictors of the condition. Multivariate analyses indicated that adolescent recurrent pain is very common and that psychological factors are likely to play a role in its development.
Abstract 1752
FAMILY RELATIONAL FACTORS IN PEDIATRIC DEPRESSION AND ASTHMA: POSSIBLE PATHWAYS OF EFFECT
Beatrice L. Wood, Bruce D. Miller, JungHa Lim, Chiuu yu Hsu, James G. Wazwonsky, Psychiatry, SUNY at Buffalo, School of Medicine and Biomedical S, Buffalo, New York

There is a long standing literature implicating family function in childhood asthma including, associations between depression, distressed families and asthma morbidity and mortality. However, investigation of psychobiologic pathways has been limited by lack of organizing theoretical models and by methodological limitations in study design, instrumentation and data analytic techniques. This study tests a multilevel biobehavioral family model which proposes that negative family emotional climate contributes to child depressive symptoms which contribute to compromised pulmonary function and increased disease severity in children with asthma (Wood, 1993). Parent-child relational insecurity is proposed as a mediator (Wood et al, 2000). Children with asthma (n=112; age 7-18; 55% male) were serially recruited from an inner city ER. Diagnosis was confirmed by clinical evaluation and methacholine challenge, and asthma disease activity categorized according to NHLBI 2002 Guidelines. Medication adherence data was collected prospectively for 4 to 6 weeks, using a validated 24 hour recall interview technique. Children completed the Relatedness questionnaire and the Child Depression Inventory (CDI), and parent(s) completed a demographic interview and the Family Emotions Questionnaire. Pulmonary function (FEV1) was measured during stressful laboratory based family interaction tasks using a structured protocol (Wood, et al, 2000). Path analysis indicated that negative family emotional climate predicts child depression score, which in turn is associated with asthma disease severity, with relational insecurity a critical mediator. All paths significant as predicted (p<.05) and the model has a good fit (Chi Square = .072, p=.97, NFI=.998, RMSEA=.000). Depression was associated with disease severity (controlling for adherence) and with poorer pulmonary function (FEV1) r = -.19, p<.05. Findings are consistent with the biobehavioral family model providing support for a direct family psychobiological pathway of influence on child asthma.

Abstract 1753
ANS DYSREGULATION IN DEPRESSED ASTHMATIC CHILDREN UNDER EMOTIONAL STIMULATION
Bruce D. Miller, Beatrice L. Wood, Chiuu yu Hsu, JungHa Lim, James G. Wazwonsky, Psychiatry, SUNY at Buffalo, School of Medicine and Biomedical S, Buffalo, New York

Depression has been associated with morbidity and mortality in childhood asthma. Miller's ANS Dysregulation Model of Asthma posits a possible mechanism, i.e. that the emotional dysregulation of depression evokes vagoal bias which in turn potentiates vagally mediated airway constriction (Miller, 1987; Miller and Wood, 2003). To test the model, 171 subjects (93 male) aged 8 to 17 (M=11.66), recruited from an ER, were evaluated for asthma severity (NHLBI criteria) and assessed for depression (Child Depression Inventory, CDI). Subjects with scores above the clinical cutoff (p<.05) and the model has a good fit (Chi Square = .072, p=.97, NFI=.998, RMSEA=.000). Depression was associated with disease severity (controlling for adherence) and with poorer pulmonary function (FEV1) r = -.19, p<.05. Findings are consistent with the biobehavioral family model providing support for a direct family psychobiological pathway of influence on child asthma.
Abstract 1598

ONE WORKING WEEK OF PARTIAL SLEEP DEPRIVATION AFFECTS SUBJECTIVE HEALTH AND IMMUNE FUNCTION

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Several studies have assessed biological and psychological effects of sleep deprivation, but recovery processes and effects of prolonged partial sleep deprivation are little studied. Therefore, the aim of the present study was to analyze acute and longer-term effects of partial sleep deprivation (4hs for five days) on subjective health, endocrine and immune parameters. Nine healthy subjects participated in a strict 6-week sleep protocol, in which subjects slept for 8 hours a night for five days and 10 hours a night for two days. Sleep was assessed by polysomnography (PSG) over three nights. PSG parameters were significantly and positively related to household income (R = 0.23, \( p < .05 \)) and years of education (R = 0.26, \( p < .01 \)). Multivariate regression analyses, however, showed that health status and personality accounted for the association between PSQI global scores and income (beta = -0.15, \( p < .05 \)). These results suggest that the association between SES and subjective sleep quality may be mediated by health status and personality traits.
Abstract 1175

DIETING PREDICTS DAILY STRESS
A. Janet Tomiyama, Traci Mann, Shelley E. Taylor, Psychology, UCLA, Los Angeles, CA, Lisa Comer, Psychology, University of Northern Colorado, Greeley, CO

Although dieting, one of the most common treatments for obesity, is effective in the short-term for weight loss of up to 10%, research finds this loss is not maintained in the long-term. The current study hypothesizes that dieting, rather than an effective obesity treatment, is actually a chronic psychological stressor that can have adverse physical consequences. For example, chronic stress can cause prolonged activation of the HPA axis, leading to hypercortisolism, insulin resistance, and visceral obesity. Thus, if dieting is indeed a chronic stressor, it may lead not only to negative health outcomes associated with chronic stress, but also, ironically, weight regain. Our previous study found evidence that dieting longitudinally predicts self-reported chronic stress (Tomiyama et al., 2004). In order to have an on-line understanding of whether dieting is psychologically stressful, the current study uses daily diaries to examine relationships between dieting and ongoing levels of daily stress. Daily diary studies are advantageous as they assess events as they occur within the daily context of participants’ lives. 128 undergraduate females completed a baseline assessment of six diet behaviors: “Are you currently on a diet?” [1-7], “How often do you diet?” [1-7], and then reported their levels of stress hourly for two days on a PDA device (“Since you were last paged, how stressed or anxious did you feel?” [1-7]). Regression analysis supported the hypothesis that dieting is associated with more daily stress. Dieting behaviors reported at baseline (mean = 1.47, SD = 1.36) predicted higher levels of mean daily stress (grand mean = 1.37, SD = 0.58), controlling for baseline stress (mean = 1.76, SD = 2.24, r = .33, p = .027). That the relationship between dieting and daily stress remained even while controlling for baseline stress is consistent with the causal direction of dieting causing daily stress. In conclusion, this study lends further support to the hypothesis that dieting is a chronic stressor.

Abstract 1747

SPIRITUALITY (BUT NOT CHURCH ATTENDANCE) PREDICTS LOWER C-REACTIVE PROTEIN AND BETTER SELF-REPORTED HEALTH IN A SAMPLE OF MEXICAN IMMIGRANTS
Kevin Jordan, Patrick R. Steffen, Psychology, Brigham Young University, Provo, UT

Spirituality and religiosity have been related to better health outcomes. Mexican immigrants have been found to be healthier and more religious than European Americans. The purpose of the present study was to examine whether spirituality or religiosity was related to psychosocial and physical health in a sample of Mexican immigrants. Spirituality was measured using the FACIT-SP and religiosity was measured by church attendance. Physical health was measured using C-reactive protein (hs-CRP) and a self-report of overall physical health. Psychosocial well being was measured using self-report questionnaires addressing depressive symptoms, social support, and perceived stress. A sample of 72 Mexican immigrants (average age 30, 56% female, average of 8 years living in the United States) was studied. It was found that spirituality was related to decreased hs-CRP (r = -.28, p < .01), better self-reported health (r = .20, p < .05) decreased depressive symptoms (r = -.43, p < .001), increased social support (r = .35, p < .001) and decreased perceived stress (r = -.26, p < .05). Church attendance, however, was not significantly related to any of the variables of interest. These findings suggest that spirituality plays a positive role in the health of immigrants.

Abstract 1737

IN VITRO SUPPRESSION OF CYTOKINE PRODUCTION BY DEXAMETHASONE AND HYDROCORTISONE
Claudine M. Catledge, Lea Vella, David C. Mohr, Mental Health, University of California, San Francisco, San Francisco, CA

Glucocorticoid resistance (GCR) refers to the changes in the number or function of glucocorticoid receptors on immune cells, leaving cells less responsive to the regulatory effects of cortisol. GCR has been proposed as a mechanism by which stress can affect inflammation in multiple sclerosis (MS). GC has generally been tested in vitro using dexamethasone (Dex), a synthetic glucocorticoid that acts on glucocorticoid receptors but not mineralocorticoid receptors. Hydrocortisone (HC) functions more like cortisol in that it acts on both receptors. The purpose of this study was (1) to compare in vivo GCR assays using Dex and HC for IL-6 and TNF-α, and (2) to compare the predictive value of depression and stress on GCR using Dex and HC. Twelve patients with MS were followed over 16 weeks. Blood was drawn every four weeks over 16 weeks. Whole blood lymphocytes were stimulated with LPS in the presence or absence of Dex or HC for 24hr. IL-6 and TNF-α secretion were measured by ELISA. Depression and stress were assessed every 4 weeks using the CES-D and a modified version of the Life Stressors and Social Resources Inventory. GCR by Dex and HC were strongly correlated for both IL-6 and TNF-α production (r=.511, p=.002; r=.808, p<.001 respectively). Increased depression at week 8 was associated with decreased suppression of TNF-α by HC and Dex at week 16 (r=.714, p=.009; r=.584, p=.046 respectively). Greater work stress at week 16 was associated with lower week 16 suppression of IL-6 by Dex (r=.863, p<.05) but not by HC (p=.29). However, greater week 16 work stress was also related to week 16 greater suppression of TNF-α by HC and Dex at week 16 (r=-.724, p<.01; r=-.637, p=.04 respectively). These data suggest that HC and Dex suppression of IL-6 and TNF-α are highly correlated but are not interchangeable. Depression predicts TNF-α suppression by Dex and HC 8 weeks later, but the data were less reliable in cross sectional analysis. This may reflect the need for stress and distress to occur over a period of time for GCR to reliably develop.

Abstract 1721

COUNTS OF CIRCULATING PROGENITOR CELLS ARE ASSOCIATED WITH VAGAL TONE
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Longitudinal cohort studies have associated psychosocial risk factors with increased incidence of cardiovascular endpoints. The biological mechanisms linking psychosocial adversity to cardiovascular disease remain in part elusive. A possible pathway may occur by downstream changes in response to decreased vagal tone. Expanding on our previous findings that vagal tone is inversely associated with several cardiovascular risk factors, we examined the relationship between vagal tone and counts of circulating endothelial progenitor cells (EPCs). The rationale of the study based on the dense innervation of the bone marrow by the vagal nerve and studies showing that lower counts of circulating EPCs are associated with decreased event-free survival in patients with cardiovascular disease. We enrolled 35 middle aged healthy male managers of above average physical fitness (mean age = 49.8 years, no statin medication, n = 2 smokers). Heart rate was recorded during 20 hours. Mean heart rate variability was determined as the average 5-min pNN50. EPCs were counted from fasting blood collected approximately 2 hours after awakening. EPCs were identified by flow cytometry as CD45pos, CD34pos, CD133pos, CD31pos. Cultural experiments confirmed the endothelial morphology of these cells, the uptake of oxidated LDL and the expression of von Willebrand Factor. To approximate normal distribution, counts were log-transformed. Data revealed a positive association (r = 0.41, p < 0.01) between pNN50 and the log-transformed cell counts, suggesting a possible link between vagal tone and EPC counts. The vagal-tone-EPC pathway may contribute to increased cardiovascular risk by impairing endothelial regeneration.

Abstract 1683

ETHNICITY IS ASSOCIATED WITH ALTERATIONS IN OXYTOCIN CONCENTRATIONS AND RELATIONSHIP TO PAIN SENSITIVITY IN WOMEN
Susan Girdler, Karen Grewen, Psychiatry, William Maixner, School of Dentistry, Kathleen Light, Psychiatry, University of North Carolina, Chapel Hill, NC

We have previously found ethnic differences in endogenous pain regulatory mechanisms, including blood pressure (BP) and neuroendocrine factors; and have reported the absence of the expected positive correlations relating higher BP, cortisol and norepinephrine levels to increased experimental pain tolerance in African Americans (AA), relationships that were seen in Caucasians (Cauc). Our on-going study examines the neuropeptide, oxytocin (OT), and its relationship to pain sensitivity. Animal model indicate that OT has analgesic effects, though no studies exist in humans. To date 12 AA and
12 Cau women, all mentally and medically healthy and not using medications, have been tested during the late follicular phase of their menstrual cycle (days 9 thru 12). Sensitivity to ischemic (ISCH), thermal heat (TH), and cold pressor pain was assessed twice, once after rest and once after mental stress, counterbalancing order of rest/stress and pain tests. Plasma OT was collected following an extended baseline rest and also at the end of stress. Pain threshold and tolerance values were averaged across the rest/stress conditions. AA women had significantly lower circulating OT concentrations both at rest and following stress than Caucasians (F=15.6, p<.001). Controlling for resting BP, only Cau women showed the expected positive correlations between baseline OT and pain threshold and tolerance levels (r = +.26 - +.49), albeit in this small sample this relationship was statistically significant only for ISCH pain threshold (r = -.71, p<.01). In contrast, AA women had the opposite pattern of results, with negative correlations relating baseline OT to pain threshold and tolerance levels (r = -.05 - -.35), especially for TH pain tolerance (r = -.62, p<.05). These preliminary results provide novel translational data on the link between OT and human pain, and add to growing evidence that AAs have alterations in endogenous pain regulatory mechanisms.

Abstract 1617

IMMUNOLOGICAL EFFECTS OF NEGATIVE SELF-FOCUSED EMOTIONS
Robert A. Mancuso, Psychology, Occidental College, Los Angeles, CA, Margaret Kemeny, Psychology, University of California, San Francisco, San Francisco, CA

We examined whether the experience of shame during a confrontational role-playing task would be associated with changes in immune function. We hypothesized that people who reported perceived levels of shame during the role-playing task would show increased levels of interleukin 1 and soluble receptor for tumor necrosis factor and decreased levels of interleukin 6 compared to people who reported lower levels of shame. Participants were 66 undergraduate college students (23 men, 43 women) from the University of California, Los Angeles. They each engaged in a 10-minute role-playing task where they were instructed to act as an undergraduate student who was forced to change a grade on a final exam. The professor's responses were designed to elicit shame. Emotion ratings were collected before and after the experimental manipulation. Through a salivary sampling technique, oral mucosal transudate samples were collected before and after the experimental session to test for immunological changes. Using an emotion rating scale that ranged from 0 to 8, the mean level of self-reported shame during the role-playing task was 2.78 (SD=2.63), while the mean levels of self-reported guilt and embarrassment were 1.94 (SD=2.31) and 3.66 (SD=2.55), respectively. These emotions were highly correlated with one another (correlations ranged from .46 to 75, p<.001), motivating the construction of a composite variable representing negative self-focused emotions. For participants whose self-reported shame was at least 2.78, negative self-focused emotions were found to be significant predictors of an increase in interleukin 1 and interleukin 6 during the role-playing task (F(1,31)=4.38, p<.05, F(1,31)=10.13, p<.01, respectively). Negative self-focused emotions were also marginally significant predictors of an increase in soluble receptor for tumor necrosis factor (F(1,31)= 3.56, p=.07). Implications for the effects of specific types of emotion on immunological health are discussed.

Abstract 1610

PSYCHOSOCIAL PREDICTORS OF MARITAL STRESS-INDUCED IMPAIRMENT OF WOUND HEALING
Jennifer E. Graham, Institute for Behavioral Medicine Research, Lisa M. Christian, Psychology, Ohio State University, Columbus, Ohio, Ronald Glaser, Institute for Behavioral Medicine Research, Ohio State University, Columbus, OH, Timothy J. Loving, Psychology, University of Texas at Austin, Austin, TX, William B. Malarkey, Institute for Behavioral Medicine Research, Janice K. Kiecolt-Glaser, Psychiatry, Ohio State University, Columbus, Ohio

Emerging evidence suggests that wound healing may be affected by psychological stress. The goal of the current research was to investigate the degree to which depressed mood and trait hostility are predictive of stress-induced decrements in wound healing, and the degree to which social support mitigates such effects. In a larger study on the effects of conflict among married couples, each participant (N=84) received suction blister wounds on one forearm on two separate occasions: a structured supportive discussion (baseline) and a marital conflict discussion. Wound healing was determined by assessment of transepidermal water loss (TEWL) daily for 8 days, with wound measurement in millimeters. The mean percentage of values seen prior to wounding. Couples were married an average of 12.6 years and ages ranged from 22 to 77 (mean=37.0, SD=13.1). Using linear regression to control for age, gender, and body mass index as well as baseline healing rate, depressed mood (BDI) predicted wound healing during the conflict session, p<.05, and mediated the impact of Cook-Medley hostile attitude on wound healing. Self-reported support from family members and satisfaction with such support predicted faster wound healing during marital conflict, p<.01, which remained marginally significant after controlling for depressed mood. Measures of hostility, depression, and family social support also predicted which of the faster healers at baseline (n=46) were able to maintain their rapid rate of healing during the stressful session (n=18), p<.05. These findings extend literature demonstrating that close relationships and depression affect physical health and suggest that external social support may help buffer the physiologic effects of negative mood during times of relationship stress. This research was supported by training grant T32 AI55411 and grants AG16321, MH18831, MO1-RR-0034.

Abstract 1585

EXPERIENCE WITH RACISM IS ASSOCIATED WITH ELEVATED CORTISOL LEVELS IN AFRICAN-AMERICANS
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For African-Americans, the experience of racism has been linked to increased blood pressure responses to stressors and increased incidence of hypertension and other cardiovascular diseases. Few studies have examined the effects of racism on neuroendocrine activation. This field study examined the effects of racism on salivary cortisol levels in 159 African-American women and men (mean age 42.5 years, SD=14, range 18 to 81). Participants were recruited from community-based cancer education sites, including beauty salons, churches, and community-centered health and social and civic groups. Participants completed The Schedule of Racist Events and the Marlowe-Crowne Social Desirability Scale-Short Form (MC-SF) and provided a saliva sample between the hours of 11:00 am and 4:00 pm. Cortisol levels were determined by radioimmunoassay (Diagnostic Systems Laboratories, Inc.). Salivary cortisol levels were higher with increased lifetime incidence of racist experiences (r=0.176, p<0.05) and with increased experience of racism during the past year (such as being called a racist name) (r=0.202, p<0.01). Arguing over racist topics was also associated with elevated cortisol levels (r=0.165, p<0.05). Results could not be explained by the effects of response bias (MC-SF) on self-report measures. Findings from this community-based field study indicate that experiences of racism are associated with elevated cortisol levels, providing a potential mechanistic link of the experience of racism and reported poorer cardiovascular outcomes.

Abstract 1441

PROINFLAMMATORY CYTOKINES AND SEVERITY OF CAD
Kaki York, Mahteen Khudus, Qin Li, Roger Fillingim, Chris Arant, Alice Boyette, Robert Kolb, Elaine Beem, Mark Segal, Haihong Li, David Sheps, University of Florida/North Florida South Georgia FA, Gainesville, FL

Proinflammatory cytokines are known to effect progression of atherosclerosis and acute coronary syndrome, likely contributing to plaque rupture, thrombosis and ischemia. Elevation of several proinflammatory cytokines following mental stress has also been reported suggesting a possible mechanism by which mental stress affects cardiovascular health. The purpose of this study was to evaluate interleukin -beta (IL-1B) and tumor necrosis factor-alpha (TNFa) response to mental stress and its possible relationship to severity of coronary artery disease (CAD). Fifty-four participants with a mean age of 64 years and documented CAD were included. Psychological stress testing (public speaking task) and Stress/Rest radionuclide imaging were performed. Plasma cytokine and cardiac function data were collected. Stress was compared to baseline. Pearson's correlations were calculated for all variables pre and post stress. Sixteen participants (30%) exhibited reversible ischemia following psychological stress. Although baseline cytokine values were not unrelated to either segment total scores (ST) or ejection fraction (EF) at any time, both post stress IL-1B and TNFa were correlated with ST- rest (IL-
RHEUMATOID ARTHRITIS PATIENTS WITH HIGH LEVELS OF SYSTEMIC INFLAMMATION SHOW INCREASES SYSTEMIC VASCULAR RESISTANCE IN RESPONSE TO ACUTE MENTAL STRESS

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Rheumatoid arthritis (RA) is a systemic inflammatory joint disease affecting 1% of the population. RA patients have an increased risk for acute cardiovascular events such as myocardial infarction compared to the general population and patients with osteoarthritis (OA), a joint disease not characterized by systemic inflammation. The causes of this remain unknown. Myocardial infarction can be triggered by mental stress and cardiovascular disturbances during acute stress have been hypothesized as a contributory underlying mechanism. This study assessed the cardiovascular reactions to a brief mental stress task in 9 RA patients with high disease activity (C-reactive protein (CRP) ≥ 4 mg/l) and 12 RA patients with low disease activity (CRP < 4 mg/l), and 10 OA patients. Heart rate (HR), blood pressure (BP), cardiac output (CO), and systemic vascular resistance (SVR) were measured during 20 min rest, 8 min stress, and 30 min recovery. Separate 3 group (RA-high disease activity, RA-low disease activity, OA) x 3 condition (baseline, task, recovery) multivariate analyses of variance were conducted. In all patient groups HR was faster and BP higher during the acute stress task (p<0.05), compared to rest and recovery. CO did not change in response to stress. SVR increased significantly (p<0.05) in RA patients with high disease activity, but not in RA patients with low disease activity nor in OA patients. Previous research has shown that increases in SVR during acute stress are associated with mental stress-induced ischemia in patients with coronary artery disease. Thus, acute cardiovascular events in RA patients may be triggered by stress-induced increases in SVR specific to those patients with high levels of systemic inflammation.

Abstract 1142

PSYCHOBIOLOGICAL LINKAGE IN ULCERATIVE COLITIS DEPENDS ON AUTOIMMUNE ANTIBODY STATUS

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Identification of psychobiologically distinct subtypes of disease may help to resolve conflicting evidence about the role of stress or depression in ulcerative colitis (UC) and identify patients for whom psychological interventions are indicated. Perinuclear anti-neutrophil cytoplasmic antibody (p-ANCA) is an autoimmune marker which is sometimes present in UC. We tested the hypothesis that p-ANCA marks an etiopathological pathway to UC that is not dependent on vulnerability to stress and, therefore, that psychobiological linkage is stronger in p-ANCA negative UC. P-ANCA status was determined in 148 UC outpatients by immunofluorescence and ELISA at Prometheus Labs. At a single point in time, we measured UC disease activity (St. Mark's Index, a composite score derived from patient-reported symptoms and physician-observed signs, sigmoidoscopy), depressive symptoms (Dep) and health anxiety (HA). The effect size (ES) of the relationship between each psychological variable and current disease activity was determined by univariate ANOVA, correcting for age, using the eta² statistic. Seventy four subjects were p-ANCA positive and 74 were p-ANCA negative. Mean scores for disease activity, depression and health anxiety did not differ between p-ANCA positive and p-ANCA negative subjects. In p-ANCA negative subjects psychological symptoms (Dep) were associated with disease activity (Dep: ES = 0.23, p < .001; HA: ES = 0.42, p < 0.01) while in p-ANCA positive (p_HA<0.04). For anxiety, a trend for a sex interaction was found (p=.06). Anxiety symptoms were associated with metabolic syndrome in men (OR per SD=1.13, 95%CI=1.00-1.28, p=.05), but not in women (OR per SD=0.98, 95%CI=0.89-1.08, p=.67). Persons with one psychological stressor had an increased OR for metabolic syndrome (OR=1.22, 95%CI=1.03-1.44), but the highest OR was found for those with 2 or more stressors (OR=1.39, 95%CI=1.13-1.72) (p<.004). These results suggest that in the elderly, psychological stress is associated with a higher prevalence of metabolic syndrome.

Abstract 1215
subjects these relationships were small (ES < .05) and non-significant. In
order to test if self-reported UC symptoms confounded these relationships, the
analysis was repeated using only physician-observed items of the St. Mark's
Index (p-ANCA negative, Dep: ES = .05, p = .05; HA: ES = 2.6, p < .001 vs.
p-ANCA positive, all ES < .01 and non-significant). We conclude that there is
an association between disease activity and psychological vulnerability in p-
ANCA negative UC which is not present in p-ANCA positive UC. This
distinction in consistent with the hypothesis that p-ANCA negative UC is a
distinct subtype characterized by psychobiological interaction. The moderating
effect of p-ANCA status merits further exploration.

Abstract 1094

SOCIAL SUPPORT BUFFERS THE EFFECTS OF STRESS ON WOUND
HEALING
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Medicine Research, William B. Malarkey, Internal Medicine, Janice K.
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A growing literature suggests that stress influences wound healing. The
current study examined the effects of a brief naturalistic stressor, academic
examinations, on wound healing in healthy medical students. Each participant
completed questionnaires and received standard suction blister wounds on one
forearm on two occasions: prior to a major examination and during a baseline
non-examination period. Wound healing was determined by assessment of
transepidermal water loss (TEWL) daily for 8 days. Wounds were considered
healed when TEWL measurements reached 90% of values seen prior to
wounding. Complete data at both baseline and stress periods was provided by
41 students. The current analyses focus on those students who healed most
rapidly at baseline (n=23). These student, the top 50% in healing rate, healed
clustered in a second (FEV1). Blood was drawn to assess immune markers associated
with asthma, such as Th-2 cytokines including interleukin 4 (IL-4), interleukin-5
(IL-5), interleukin-13 (IL-13), as well as eosinophil count were measured. At
home, participants completed twice-daily peak expiratory flow rate (PEFR)
measures to monitor their pulmonary function across a 2-week period.
Participants who perceived higher levels of control demonstrated significantly
better perceptions of health even under stressful conditions. Of interest was
that would maintain their rapid healing rate during the stress period. Of these, 14
students showed rapid healing even when they were under stress, still healing
rapidly at baseline (n=23). These students, the top 50% in healing rate, healed
more rapidly at baseline (p<.05). These findings extend a large
literature demonstrating that close personal relationships affect a variety of
health outcomes. Further, these findings are consistent with the stress-
buffering model of social support, which suggests that the benefits of social
support are most apparent in conditions of high stress. This research was
supported by Grants T32 AI55411, PSO DE13749, and M01 RR 00345.

Abstract 1312

SOCIAL SUPPORT AND RESOLUTION OF ACUTE RESPIRATORY
ILLNESS
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Acute respiratory illnesses (ARIs) contribute substantially to excess morbidity
and mortality in the United States. Non-medical factors (e.g. anxiety;
psychosocial stress) have been found to influence clinical outcomes. Further,
we examined whether social support levels are associated with illness resolution
among adults seeking emergency department (ED) care for ARIs. We
performed a prospective cohort study in a convenience sample of ED patients
with ARIs. Subjects were interviewed by telephone within 6 weeks post-ED
visit about their treatment and illness outcomes. The 12-item Multidimensional
Scale of Perceived Social Support (7-point Likert) assessed
social support; higher scores indicated higher levels of support. Factor
analysis confirmed the instrument's validity in our sample. Cox proportional
hazards models measured the association between social support and self-
reported illness resolution. Of 1104 enrolled subjects, 771 completed the
follow-up interview, with the following characteristics: mean age 49; 64%
male; 47% White, 28% Black, 15% Hispanic; 85% medically-insured; 55%
with greater than a high school education; and 28% with annual household
income under $10,000. The mean social support level was 5.5 (SD 1.1). After
adjusting for sociodemographic and treatment variables, higher social support
was independently associated with decreased time to illness resolution
(Hazard Ratio: 1.12 for every 1 point increase in the 7-point scale [95% CI:
1.01-1.25]). Patients with higher levels of social support report faster recovery
as from ARIs. This relationship could reflect residual confounding by differences
in patients or treatment, or an actual impact of social support on biological or
psychological responses to illness.

Abstract 1061

PERCEIVED CONTROL AND IMMUNE AND PULMONARY
OUTCOMES IN CHILDREN WITH ASTHMA
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British Columbia, Vancouver, BC, Canada

Asthma is one of the most prevalent chronic illnesses in childhood, affecting
approximately 13% of children under the age of 18. Researchers have
proposed that psychosocial variables may contribute significantly to asthma
morbidity. In particular, perceived control is one variable that has been related
to a number of health outcomes. The aim of this study was to test relationships
between perceived control and biological processes relevant to asthma in
children. Forty children between the ages of 9 to 18, who were physician
diagnosed with asthma, completed the Children's Health Locus of Control
(CHLC) scale. Participants also completed pulmonary function testing,
measuring forced vital capacity (FVC) and forced expiratory volume in one
second (FEV1). Blood was drawn to assess immune markers associated with
asthma, such as Th-2 cytokines including interleukin 4 (IL-4), interleukin-5
(IL-5), interleukin-13 (IL-13), as well as eosinophil count were measured. At
home, participants completed twice-daily peak expiratory flow rate (PEFR)
measures to monitor their pulmonary function across a 2-week period.
Participants who perceived higher levels of control demonstrated significantly
better perceptions of health even under stressful conditions. Of interest was
that would maintain their rapid healing rate during the stress period. Of these, 14
students showed rapid healing even when they were under stress, still healing
rapidly at baseline (p<.05). These findings extend a large
literature demonstrating that close personal relationships affect a variety of
health outcomes. Further, these findings are consistent with the stress-
buffering model of social support, which suggests that the benefits of social
support are most apparent in conditions of high stress. This research was
supported by Grants T32 AI55411, PSO DE13749, and M01 RR 00345.

Abstract 1710

MOMENTARY STATES DIFFERENTIALLY PREDICT ASTHMA
SYMPTOM REPORTS AND PEAK EXPIRATORY FLOW IN THE
NATURAL ENVIRONMENT
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Negative mood states and stress predict subjective symptom reports in asthma
patients, but less clearly predict more objective measures of disease (e.g., peak
expiratory flow rate; PEFR). Little is known about the effect of positive mood
states on symptoms and lung function. Recent work using a circumplex model
of mood (valence and arousal dimensions) found that the valence (positive/negative) dimension predicted symptom report, whereas arousal
(sleepy/aroused) predicted PEFR. The current study related stress and several forms of mood (positive/negative affect and the circumplex model) to
subjective (symptoms) and objective (PEFR) asthma function in patients'
natural environment. Adult community volunteers (n=64; 72%
female) competed 5 assessments daily for 1 week, reporting mood (positive
and negative affect [PA/NA], arousal/valence circumplex), stress, asthma
symptoms, and PEFR. Multi-level random effects models were used for
analyses. More symptoms were predicted by higher NA, negative mood
valence, stress, and stress severity (p's<.01), but not by greater PA or arousal.
In contrast, PEFR was higher when increased PA, arousal, and positive mood
valence, stress, and stress severity (p's<.001), but not by greater PA or arousal.
The arousal component of the circumplex model of mood adds information beyond
[PA/NA], suggesting it may be a useful for studying mood influence on disease.
Results suggest that psychological processes such as perceived control may
play an important role in asthma-related biological processes, which in
turn may have implications for clinical exacerbations of asthma.

Abstract A-35

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Results suggest that psychological processes such as perceived control may
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Abstract A-35

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Abstract A-35

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for asthma. These data suggest mood and arousal may influence self-medication behavior in response to perceived symptoms in a manner inconsistent with PERF.

Abstract 1465
HEALTH BELIEFS AND BIOLOGICAL OUTCOMES IN CHILDREN WITH ASTHMA
Hope A. Walker, Louise S. Chin, Edith Chen, Psychology, University of British Columbia, Vancouver, BC, Canada

Childhood asthma is a chronic inflammatory disease affecting thousands worldwide, with symptoms being affected by numerous physical, environmental and psychological factors. It is critical to elucidate these factors for both prevention of future attacks and for illness management. Seventy-one asthmatic children living in Vancouver, B.C. between the ages of 9 and 18 were interviewed about various health beliefs and practices. Biological measures included inflammatory markers implicated in asthma (e.g., IL-4, IL-5, data collection is ongoing) as well as pulmonary function. Venipuncture was conducted to assess blood cell counts and to measure stimulated production of cytokines. Spirometry was conducted to assess pulmonary function, including Forced Vital Capacity (FVC%) and Forced Expiratory Volume in 1 second (FEV1%). Results revealed that children who believed there was a reason why they developed asthma, had lower eosinophil counts compared to children who did not have an explanation for their asthma, t(45)=2.54, p<.05. Conceptual understanding of their asthma was assessed, and those children with greater comprehension of their illness had lower production of IL-4 cytokines, r(36)=-.330, p<.05. Children who reported a shorter delay in taking medications after symptom onset had lower production of IL-5 cytokines, t(36)= -.330, p<.05. Children who reported a shorter delay in taking medications after symptom onset had lower production of IL-5 than children who reported waiting longer before taking medications, t(36)=-2.36, p<.05. Similarly, children who reported a shorter delay in seeking medical assistance after symptom onset had lower production of IL-5, t(21)=-2.17, p<.05. Behaviorally, those children who reported maintaining higher activity levels when feeling symptomatic had superior pulmonary function to those children who preferred to minimize activity [FVC%: r(64)=.291, p<.05 and FEV1%: r(64)=.254, p<.05]. These results suggest that targeting cognitive attributions and understanding of illness, as well as behavioural responses to illness may have important implications for clinical asthma profiles in children with asthma.

Abstract 1257
AUTONOMIC NERVOUS SYSTEM ACTIVITY AS A PREDICTOR OF FATIGUE FOLLOWING EXERCISE WITHDRAWAL
Ali A. Berlin, Medical Psychology, Patrick A. Deuster, Military and Emergency Medicine, Willem J. Kop, Medical Psychology, USUHS, Bethesda, MD

Fatigue and depressive symptoms occur frequently in sedentary populations, but individual vulnerability factors for developing these complaints have not been fully evaluated. This investigation examines whether baseline autonomic nervous system (ANS) balance (as measured by heart rate variability: HRV) predicts the development of fatigue that accompanies controlled exercise withdrawal. Regularly active participants (N=40; age 31±8.55% female) were randomly assigned to either exercise withdrawal (EXW) or to continue their usual activities as a control condition (CTR) for two weeks. Participants completed the Multidimensional Fatigue Inventory (MFI), Beck Depression Inventory (BDI) and had electrocardiogram evaluations at baseline (BL) and at 2 weeks follow-up (FU) in EXW and CTR. HRV analysis was performed by examining low (0.04-0.15 Hz) LF and high frequency (HF) domains (0.15-0.40 Hz). Protocol adherence was documented using ambulatory actigraphy. EXW resulted in significantly higher fatigue scores at FU compared to CTR (MFI=48.4±14.5 vs. 37.9±10.1;p<.03; Finteraction(2,72)=8.3;p<0.01). The CTR and EXW groups were not different at BL on MFI and HRV parameters, and HRV measures did not differ at FU between the groups. Baseline LF/HF ratios correlated with the increase in MFI (r=0.64;p<0.004) in the EXW, but not the CTR group (r=0.34;p=0.18), which was attributable to HF-HRV (r=−0.60;p<0.01), and not LF-HRV (r=0.24; p=0.33). Cross-sectional relations between HRV and fatigue symptoms were not significant at BL or FU. Regression analysis revealed that BL LF/HF ratio predicted change in MFI score after controlling for gender, age, weight, BL fitness level, and BL MFI score (R²change=.41;B=.74;p<.01). ANS predictors of BDI-derived depressive symptoms displayed parallel results (p's<.05).

Individuals with increased sympathetic dominance due to reduced parasympathetic control may be more prone to developing fatigue following exercise withdrawal. ANS imbalance may serve as a predictor of fatigue and other depressive symptoms among sedentary individuals.

Abstract 1216
INTER-OBSERVER RELIABILITY OF A NEW METHOD TO MEASURE ENDOTHELIAL FUNCTION
Jet Feldhuisvanden Zanten, School of Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom, Bernard Meloche, Simon Bacon, Philippe Siebenne, Andre Arsenault, Nuclear Medicine, Montreal Heart Institute, QC, Canada, Kim Lavoie, Department of Psychology, University of Quebec at Montreal (UQAM), QC, Canada

Poor endothelial function (EF) is predictive of future cardiovascular events and is becoming widely measured in behavioral and psychosomatic medicine. However, most methods of measuring EF are problematic due to poor test-retest reliability. We have developed a new nuclear medicine variation of the well-established flow mediated dilatation technique to measure EF, which can be carried out during the same session as a rest myocardial perfusion assessment. This new technique has good test-retest reliability. The present study examined inter-observer reliability. In addition, EF of 39 patients with stable coronary disease differed (p<0.05) between a control and a flow mediated dilatation protocol. Participants EF was analyzed by 2 different observers in the patients with suspected cardiovascular disease, i.e. patients who were referred for myocardial perfusion exercise testing. The hyperemic response to 5 min ischemia in the right arm was measured using planar dynamic 1 frame per second first-pass activity time curves (ATC). EF was defined as the Rate of Uptake Ratio (RUR). RUR compares the ATC in the ischemic arm to the ATC in the non-ischemic arm; a reduced score in RUR is indicative of poor EF. RUR was lower (t=6.4, p<0.001) in patients with suspected cardiovascular disease (M=3.5 +/- 1.2) compared to the low risk control participants (M=6.1 +/- 1.8). Analyses revealed highly significant correlations between the analyses conducted by the 2 observers for EF (r = .98, p<.001). Further, Bland and Altman analyses yielded no evidence of systematic bias between the 2 observers for EF. In conclusion, due to high specificity, ease of use, test-retest reliability, as well as inter-observer reliability, RUR provides a good measure of EF. This method should be a useful tool in assessing EF in behavioral research.

Abstract 1594
SUPPRESSED ANGER, CARDIOVASCULAR REACTIVITY, AND EVALUATIVE THREAT: A CLUSTER ANALYTIC PROFILE APPROACH
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Despite decades of theory and research implicating suppressed anger in the development of cardiovascular disorders involving cardiovascular reactivity (CVR), to date the theoretical components of low anger expression, guilt feelings over agonistic reactions, and defensive strivings to avoid social disapproval have not been used conjointly to profile suppressed anger. Social evaluative threat is thought to be a potent stressor for people who defensively suppress anger expression. Thus, this study cluster analyzed measures of anger expression, hostility guilt, and social defensiveness to create a suppressed anger profile (lower anger expression, higher hostility guilt, higher social defensiveness). A new anger profile (higher anger expression, lower hostility guilt, lower social defensiveness) and then examined the combined effects of suppressed anger and social evaluative threat in the prediction of CVR. Seventy-four male college students, ranging in age from 17 to 24 years (Mean = 18.8), had blood pressure (BP) and heart rate (HR) monitored during a rest period and a subsequent period of telling a story to a Thematic Apperception Test Card (TAT). Participants were randomly assigned to either a high threat (story will be compared to stories created by the mentally ill) or a low threat condition (story used to study effects of talking on cardiovascular responses). Regarding the preplanned contrasts for TAT related cardiovascular change (TAT minus rest period), suppressed anger males in the high threat condition, as predicted, showed a significantly higher (p < .0015) change in diastolic BP (Mean = 20.3 mm Hg) and HR (Mean = 15.9 bpm) than the change in diastolic BP (Mean = 12.7 mm Hg) and HR (Mean = 6.5 bpm) for all others, and (b) significantly higher (p < .05) diastolic BP and HR reactivity than the low threat suppressed anger males.
Blood pressure reactions during mental and emotional challenges have been related to consequent hypertension and atherosclerosis, but we are only beginning to identify the brain regions active in generating such reactions. Medial cortical and limbic regions, which are identified with autonomic control in animals, have been related to blood pressure reactivity in humans. Typically, however, blood pressure reactions and brain activation have been related within individuals across tasks, rather than examining individual differences in blood pressure and brain region reactivity. We examined individual differences in quantitative regional cerebral blood flow (rCBF) changes using O\(^1\) positron emission tomography in response to two working memory tasks as well as cardiovascular and diastolic blood pressure changes. Pre-defined regions of interest were examined for the anterior cingulate, amygdala/hippocampus, amygdala, and insula. Correlations were computed across 37 unmedicated hypertensive participants prior to initiation of a treatment study. Diastolic blood pressure reactivity during the 2-back working memory tasks was correlated significantly only with the amygdala/hippocampal (r=.41, p=.01) and the amygdala (r=.35, p=.04) regions of interest. Nearest blood pressure reactions were related to personality scores, ratings of current positive and negative affect, or performance. Multiple regression analyses controlling for age, gender, race, education, and mean diastolic blood pressure showed a significant increase in variance explained by the addition of either amygdala/hippocampal (r square change .23, p=.005) or amygdala reactivity (r square change .16, p=.02). At least among hypertensive participants, these results suggest that event-induced activity in the amygdala, a region involved in affective processing, is directly related to individual differences in diastolic blood pressure reactivity.

Abstract 1171

EFFECTIVENESS OF A CONSULTATION-LIAISON PSYCHIATRY INTERVENTION IN CORONARY HEART DISEASE

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The purpose of this study was to assess the effectiveness of a consultation-liaison (CL) psychiatry intervention in a group of patients admitted to a coronary care unit with myocardial infarction or unstable angina. The trial had a randomized, controlled design, with a 6-month follow-up. One hundred and twenty-nine consecutive patients were assessed during the first 48 hours of admission with the Hospital Anxiety and Depression Scale (HADS). Those with a score of 8 or greater on the Depression or the Anxiety subscales (n=72) were randomly allocated to intervention (n=37) and usual care (n=35). The intervention consisted of three 60-minute sessions, and included a psychiatric evaluation, supportive psychotherapy, psycho education and psychotropic drugs. The last session, shortly before discharge, included the spouse. Anxiety and depression (HADS) were reassessed before discharge and at 45 days and 6 months. The study showed a significant difference between intervention and control groups in terms of implications for future research and stress management strategies.

Abstract 1173

PREDICTING BLOOD PRESSURE AND HEART RATE CHANGE WITH CARDIOVASCULAR REACTIVITY AND RECOVERY: RESULTS FROM 3-YEAR AND 10-YEAR FOLLOW-UP

Janine V. Maseley, Wolfgang Linden, Psychology, University of British Columbia, Vancouver, BC, Canada

We examined whether cardiovascular reactivity and recovery following lab-induced stress is useful in predicting 3-year and 10-year ambulatory blood pressure (BP) and heart rate (HR) among initially normotensive individuals. 112 participants provided complete data 10 years apart. At baseline, BP and HR measurements were recorded during three five-minute laboratory challenges and three five-minute recovery periods following each challenge. Measurements of SBP, DBP, and HR were collected throughout this protocol, and also at 3-year and 10-year follow-up via ambulatory monitoring. After adjustment for traditional biological predictors (age, sex, baseline BP), reactivity was found to explain significant variance in follow-up data across 3-year indices and two of the 10-year indices. Recovery, entered in a following step, was found to explain additional significant variance across all 3-year indices, but not one of the 10-year indices. Family hypertension history data were not found to be significantly associated with reactivity and recovery, nor was it found to be predictive of longitudinal ambulatory BP and HR. This is the first study of long-term BP changes that used ambulatory BP as an endpoint and a multi-task reactivity protocol. Aggregating across different tasks increased the reliability of the reactivity index. The findings support the utility of reactivity and recovery in clinical predictions of proximal BP and HR, and generally support the use of reactivity in long-term BP predictions.

Abstract 1443

THE RELATIONSHIP BETWEEN FATIGUE AND CARDIAC FUNCTIONING

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Although variables such as heart rate (HR), heart rate variability (HRV), and blood pressure (BP) are commonly reported when studying the relationship between fatigue and impaired cardiac functioning, literature examining how cardiac function, such as cardiac output (CO), contractility, and stroke volume (SV) relate to normative fatigue is sparse. This study examined the relationship between self-reported fatigue and hemodynamic responses to a public speaking stressor in normal individuals. One hundred and fifty-two individuals (73 women: 36 black, 37 white; 79 men: 33 black, 46 white) participated in this study. Subjects were placed in low, moderate, or high fatigue groups based on the Profile of Moods State (POMS) fatigue subscale. HR, SV and CO during a public speaking stressor were determined using impedance cardiography. The stressor consisted of talking about being accused of shoplifting. Subjects were given 3-min to prepare (prep) and 3-min to speak. Data were analyzed using a 3 group x 3 stress period [Baseline, Prep, Talking] mixed model ANOVA. There was a stress effect for heart rate, showing an increase from baseline to prep to talking (p < .001). More interestingly, there was an effect of fatigue (p < .03) and stress (p < .027) on both SV and CO. The high fatigue group had lower SV and CO levels than the moderate and low fatigue groups. In the high fatigue group, SV did not change from baseline to prep, but decreased while speaking. Whereas CO increased during prep and remained at that level while speaking. In this study, we showed that normal individuals who report high fatigue levels have lower cardiac functioning as measured by SV and CO.

Abstract 1485

PSYCHOSOCIAL PREDICTORS OF HOSPITALIZATIONS IN CONGESTIVE HEART FAILURE PATIENTS


Congestive heart failure (CHF) is associated with significant morbidity and mortality. Diagnosis remains poor despite progress in the medical management of CHF patients, suggesting the potential role of non-medical
factors. However, investigations of psychosocial factors remain sparse. The purpose of this study was to examine the prognostic role of negative affect in CHF patients. We hypothesized that depression and anxiety would predict hospitalizations over a 2 year follow up period. Two hundred and twenty-nine patients with clinically stable CHF were recruited (mean age = 57 years; SD = 12 years; range = 27-88 y). The sample was 67% male, and 54% self-identified as ethnic minorities (49% African American). Ischemic etiology characterized 41% of the sample. At baseline, the mean brain natriuretic peptide (BNP) level was 1678.6 pg/ml, mean left ventricular ejection fraction was 30.5%, and 95% of the patients were New York Heart Association class II or III. The Beck Depression Inventory (BDI) and the Spielberger State-Trait Anxiety Scale were administered at baseline. Cox proportional hazards models were used to examine the effect of depression and anxiety on the following endpoints: all-cause hospitalizations plus mortality; cardiac-hospitalizations plus mortality; and hospitalizations due to worsening heart failure. Covariates included BNP, age, etiology, medication use, and body mass index. Baseline BDI predicted all three outcome measures at p<.05. Trait anxiety was a significant predictor of worsening heart failure-related hospitalizations after adjusting for covariates (p<.04). State anxiety was not a significant predictor of any of the endpoints. These observations underscore the importance of psychosocial factors in CHF, with elevated symptoms of depression related to a generally poorer prognosis, whereas trait anxiety appearing to be more specifically related to worsening CHF.

Abstract 1515

COLLOID OSMOTIC PRESSURE AS A MECHANISM FOR RECOVERY FROM MENTAL STRESS-INDUCED HEMOCONCENTRATION
Dolf de Boer, Alex Curlett, Matt Ridley, Christopher Ring, Douglas Carroll, Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom

In vulnerable individuals, increases in hematocrit (hemococoncentration) with mental stress will result in increased mechanical stress on atherosclerotic plaques, which may contribute to the triggering of acute cardiovascular events. Previous studies suggest arterial pressure as a mechanism for hemococoncentration with mental stress and show that recovery of such increases takes 12 to 16 minutes. The mechanisms of this recovery may involve colloid osmotic pressure (COP), a Starling force produced by a difference in the concentration of particles on different sides of the capillary wall. The present study examined mechanisms of recovery from stress-induced hemoconcentration using a time course design. Twenty healthy males completed two sessions: mental stress (30 min baseline, 4 min stress, 40 min recovery) and control (74 min rest). In each session, blood was sampled and blood pressure was measured at the same 12 time points. Separate 2 condition × 12 period MANOVAs revealed significant interaction effects for hematocrit, COP and mean arterial pressure (MAP), (p's < .01). Compared to control, stress increased hematocrit, COP, and MAP, which returned to baseline levels at different rates during recovery. Within-subject analyses on the recovery profile revealed that recovery of hematocrit was related to COP (r = .56, p = .001) and to MAP (r = .38, p = .01). To our knowledge, this is the first report of an increase in COP with mental stress, which reflects an increase in concentration of molecules and cells in the plasma. Post-stress, this increased COP is likely to be involved in the recovery of hematocrit through osmotic suction of plasma from the interstitial space. COP appears a more likely mechanism for hematocrit recovery than MAP. The slow recovery of hematocrit suggests that (1) susceptible individuals remain vulnerable for more than 10 min post stress, and (2) fluid intake during stress may reach the circulation quickly enough to improve recovery.

Abstract 1300

DETERMINANTS OF SYMPTOMS IN FUNCTIONAL DYSPESIA
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Both gastric sensorimotor dysfunction and psychosocial factors have been implicated in symptom generation in functional dyspepsia (FD). We studied gastric sensorimotor function with a barostat (sensitivity, compliance, and accommodation) and gastric emptying test. We measured psychosocial factors (depression, anxiety, fatigue, alexithymia, perceived stress, abuse history) and somatic symptom severity/somatization (SSS) using self-report questionnaires in 34 FD patients. Gastric pathophysiological mechanisms, psychosocial factors and SSS were correlated with a dyspepsia severity score (DSS) and with weight loss. Moreover, gastric pathophysiological mechanisms and psychosocial factors were correlated with SSS. Independent determinants of DSS were daily weight loss and SSS. Independent determinants of DSS were daily weight loss and SSS. Multiple linear regression. DSS was higher in women and hyperventilated patients and correlated with age, perception threshold, gastric emptying, SSS, fatigue, positive affect and the lack of joy factor of perceived stress. Three independent determinants were identified: age (beta = 0.55, p<0.06), SSS (beta = 0.41, p<0.001) and lack of joy (beta = 0.21, p<0.04) (model R² = 0.28, p<0.001). Weight loss was higher in women and correlated with DSS, SSS, depression, momentary and chronic fatigue and positive affect. Gender (beta = 0.57, p<0.05), a composite depression-SSS index (beta = 0.65, p<0.02) and momentary fatigue (beta = 0.31, p<0.03) were determinants of weight loss (model R² = 0.36, p<0.001). SSS was higher in women and correlated with DSS, weight loss, perception threshold, gastric emptying, depression, panic, momentary and chronic fatigue, positive & negative affect and perceived stress. Gastric emptying (beta = 1.71, p<0.08), DSS (beta = 0.35, p<0.05), chronic fatigue (beta = 4.16, p<0.001) and a composite depression-negative affect-stress index (beta = 1.52, p<0.001) were independent determinants (model R² = 0.64, p<0.001). In conclusion, psychosocial factors rather than gastric pathophysiological mechanisms determine symptom severity in FD.

Abstract 1603

INFLUENCE OF CULTURE ON CARDIOVASCULAR RESPONSE TO ANGER
Jeremy C. Anderson, Wolfgang Linden, Psychology, University of British Columbia, Vancouver, British Columbia, Canada

The purpose of this study was to determine whether, and to what extent, culture may influence response to anger provocation. For Part A, 67 postgraduate psychology undergraduates (34 Chinese males, 29 Chinese females, 34 Cantonese speakers (7 males, 26 females) completed a questionnaire package including measures of acculturation, self-construct, hostility and preferred response to anger. As predicted, English speakers were more likely to endorse a strategy of overt anger expression than were Cantonese speakers (p < .01), who were more likely than English speakers to endorse a strategy of either distraction (p < .01) or making a less hostile reappraisal (p < .05). For Part B, 100 psychology undergraduates comprised of 39 English speakers (16 males, 23 females) and 61 Cantonese speakers (20 males, 41 females) underwent an anger-provocation task (serial 7s with harassment) while their blood pressure (BP) and heart rate (HR) were monitored. Following anger provocation, participants were either given the opportunity to overtly express their anger (Expression Group) or left alone (Non-expression Group) while BP and HR monitoring continued. We hypothesized that for those in the Expression Group rate of BP and HR recovery would not differ between cultural groups but for those in the Non-expression Group, Cantonese-speakers would show faster recovery than English speakers, the result of differential opportunity to utilize their preferred anger strategy. Contrary to these hypotheses, it was found that Cantonese speakers generally showed faster systolic BP recovery than English speakers (p < .05) and that those in the Non-expression Group generally showed faster diastolic BP recovery than those in the Expression Group (p < .05). Results suggest that culture plays a significant role in response to anger and also that continued attentional focus on an anger-provoking event can result in attenuated cardiovascular recovery. Methodological considerations and implications for understanding stress-disease pathways are discussed.

Abstract 1520

TIME COURSE OF HEMATOCRIT IN RESPONSE TO ISOMETRIC EXERCISE
Dolf de Boer, Christopher Ring, Douglas Carroll, Sport and Exercise Sciences, University of Birmingham, Birmingham, United Kingdom

Exercise with a substantial isometric component, such as heavy lifting and snow shovelling, has been implicated in myocardial infarction and sudden cardiac death. It is possible that such exertions induce increased hematocrit, identified as a risk factor for acute cardiac events. This study examined the time course of hematocrit in response to isometric exercise and explored possible underlying hemodynamic mechanisms. After a 20-min baseline, 20 healthy young men undertook a 4-min isometric handgrip exercise at 30% of maximum voluntary contraction, followed by 20-min recovery. Blood samples and blood pressure measurements were obtained every 1-2 minutes. R-wave to pulse interval (RPI), an index of cardiovascular sympathetic influences, was measured continuously. Hematocrit increased with exercise (p = 0.4), peaking...
in the first minute of recovery (1.2% change) and had not fully recovered until 16 minutes post exercise. Exercise also increased blood pressure and shortened RPI (p's < .01). Within-subject correlational analyses indicated that hematocrit increase was related to contemporary hemodynamic activity, RPI (r = .56, p < .01) and systolic blood pressure (r = .49, p < .01) were most strongly correlated. During recovery, the associations between hematocrit and hemodynamic variables were less pronounced, except for RPI (r = .66, p < .01). During exercise, stronger associations emerged between hemodynamic activity and hematocrit at a 1-min lag than at other lags. These outcomes suggest that (1) the changes in hematocrit are partly under sympathetic nervous system control and (2) exercise-induced hemocoagulation may be a slower process and/or there is a delay between the hemocoagulation of blood in the capillaries and its emergence at the blood sampling site. Whatever the underlying mechanisms, such sustained increases in hematocrit could, in vulnerable individuals, contribute to the increased incidence of acute cardiac events associated with isometric exertion.

Abstract 1682
BRAIN ACTIVATION CORRELATED WITH CHANGES IN HEART RATE AND AUTONOMIC FUNCTIONS DURING RECTAL DISTENTION
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Background: How human brain processes the interosseous signal and forms initial autonomic arousal is one of key questions to be determined in psychosomatic research. Recent functional imaging technique revealed cortical and subcortical brain regions covaried with sympathetic activity. Purpose: We tested our hypothesis that gut stimulation might provoke cardiac autonomic arousal via activation of the regional cerebral cortices. Subjects and Methods: Twenty-two healthy male volunteers participated in twelve healthy subjects. The barostat balloon was intermittently inflated with 0, 20, or 40 mmHg with random order for 3 min. Hf[15O] positron emission tomography (PET) of the brain, electrocardiography and blood sampling for catecholamines were performed. Changes in regional cerebral blood flow were interpreted using statistical parametric mapping. Results: Rectal distention with 40 mmHg induced significant increases in heart rate, low frequency (LF)/high frequency (HF) of heart rate variability, and plasma adrenaline. The activated brain areas (p < 0.001, uncorrected) covaried with heart rate during distention were right insula, right dorsolateral prefrontal cortex, and periaqueductal grey, while those covaried with LF/HF were right insula, right superior frontal gyrus, midbrain, and pons. The activated brain areas covaried with plasma adrenaline were right insula, right orbitofrontal cortex, right superior frontal gyrus, right parahippocampal gyrus, periaqueductal grey, and pons. Conclusion: Our results suggest that the right insula, the right prefrontal cortices, and the brain stem may form the functional module of the sympathetic arousal in response to the interosseous awareness.

Abstract 1733
EFFECTS OF PREDONATION WATER LOADING ON SELF-REPORTED AND ACTUAL VASOVAGAL REACTIONS IN NOVICE BLOOD DONORS
Stephen M. Patterson, Lynne M. Rochette, Christopher R. France, Janis L. France, Psychology, Ohio University, Athens, Ohio, Aaron W. Rader, Central Ohio Region Blood Services, American Red Cross, Columbus, Ohio

The goal of this study was to reduce vasovagal reactions to blood donation (e.g., faintness, dizziness, nausea) via water loading, with the ultimate aim of increasing donor retention. To accomplish this goal, 45 relatively novice donors participated in a two part study. The first part of the study involved a 90-minute pre-donation laboratory session to assess individual water loading effects on heart rate and blood pressure. The second part of the study, conducted approximately two weeks after the laboratory session, involved a standard donation of 500 ml of blood at a local American Red Cross blood drive. At the initial laboratory session participants were randomly assigned to either a 710 ml water loading intervention group (n=24) or a no water-loading control group (n=21). Resting blood pressure and heart rates were then measured once every 5 minutes for 1 hour to assess hydration-induced cardiovascular changes. At the blood drive, participants in the intervention group drank 710ml of bottled water thirty minutes prior to donation. Following donation, each participant completed the Blood Donations Reactions Inventory (BDRI) which includes questions concerning subjective physiological reactions and post donation interventions administered by the phlebotomist (e.g., reclined chair). Results of the pre-donation laboratory session indicated that systolic blood pressure was significantly higher (F(1, 43) = 5.23, p < .05) and heart rate was significantly lower (F(1, 43) = 4.82, p < .05) 30 min after water ingestion for the fluid loading versus control group. Results for the post donation BDRI assessment indicated that individuals in the fluid loading group reported fewer reactions (t=2.18, p<.05) and fewer interventions (t=2.03, p<.05) as compared to controls. Overall, these findings suggest that a simple and inexpensive water loading procedure can be used to enhance donor satisfaction and potentially increase donor retention.

Abstract 1549
PSYCHOPHYSIOLOGY OF HEART FAILURE: A KEY ROLE OF VITAL EXHAUSTION (VE)? RESULTS FROM THE MEDVIP 1-YEAR FOLLOW-UP
A. Cordes, B. Sianske, Psychosomatics, L. Binder, Clinical Chemistry, B. Pieske, Cardiology, M. M. Kochen, General Practice, University of Goettingen, Goettingen, Germany, C. Herrmann-Lingen, Psychosomatic Medicine, University of Marburg, Marburg, Germany

To identify psychological predictors of psychological and cardiac functioning in a high-risk population, 335 patients with at least one risk factor (diabetes mellitus, hypertension, coronary disease, family history) for the development of heart failure were studied in a 1 year follow up design. Physical and mental well-being [SF12], depression, anxiety [HADS], VE [Maastricht], negative affectivity, social inhibition [DS14] and social support were assessed by validated self-ratings scales. Natriuretic peptides (NT-proANP and NT-proBNP), left ventricular ejection fraction and diastolic diameter (DD) were taken as measures of cardiac functioning. Covariance structures within each time slice and regression paths between time slices were estimated in a saturated structural equation model (multivariate regression). From these results baseline predictors of follow-up variables were identified.

VE and anxiety show significant paths to somatic variables. VE also predicts several psychological outcomes:
Predictor...Dependent...coef...p
VE...........Diast.Dia...-0.21...<.05
VE...........NT-proANP...-0.28...<.01
Anxiety...NT-proBNP...-0.10...<.05
VE...........SF12 Phys...-0.15...<.05
VE...........SF12 Ment...-0.18...<.05
VE...........Depression...-0.20...<.01
VE...........Neg.Affect...-0.14...<.05

VE is not correlated cross-sectionally to DD or NT-proANP at baseline or follow-up.
High VE at baseline predicts increased neuroendocrine activation and adverse mental condition at follow-up. These effects are additional to correlations found at baseline and autocorrelations of the variables with themselves. VE has only predictive effects on NT-proANP and DD, the latter indicating less ventricular dilatation in exhausted subjects. VE may play a small but important role in disease progression in patients with cardiovascular risk factors.

Abstract 1571
TRAUMA PREDICTING THE PROGRESSION OR PERSEVERENCE OF CERVICAL DISEASE IN WOMEN CO-INFECTED WITH HIV AND HUMAN PAPILLOMAVIRUS (HPV)
Rachel C. Roque, Psychology, University of Miami, Coral Gables, FL, Deidre B. Pereira, Clinical and Health Psychology, University of Florida, Gainesville, FL, Michael H. Antoni, Psychology, University of Miami, Coral Gables, FL

Women infected with Human Immunodeficiency Virus (HIV) and Human Papillomavirus (HPV), are at increased risk for developing cervical cancer. Given that stressors have been related to poorer control over viral infections in prior work, we examined how stress and trauma relate to the progression or persistence of squamous intra-epithelial lesions (SIL), a prodromal state of...
INFLAMMATION PREDICTS FATIGUE, QOL, AND SLEEP DISTURBANCE DURING CHEMOTHERAPY

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Cancer patients undergoing chemotherapy often experience troubling side effects, including fatigue, depression, decreased quality of life (QOL), and poor sleep. Recent data suggest that inflammation may be associated with these adverse outcomes. We studied 31 breast cancer patients at 6 timepoints before and during the 1st & 4th cycles of anthracycline-based chemotherapy. Pro-inflammatory cytokines (TNF-alpha, IL-1ra, IL-6, VEGF) & adhesion and endothelial markers (P-selectin, vWF, sICAM-1) were measured in plasma via ELISA. Fatigue was assessed via the Multidimensional Fatigue. Progression or persistence of SIL over a 12-month period was regressed on lifetime trauma history after controlling for age at first pregnancy, HIV viral load, CD4+CD8+ percent and other relevant controls. Having a trauma history significantly predicted a greater likelihood of progression or persistence of SIL (B=3.569, p=.044), and the overall model was significant (x^2(4)=20.092, p=.001). Thus, women who reported having trauma had worse cervical health (persistent or progressed SIL) measured 12 months later. These findings present a valuable clinical tool that practitioners and clinicians should be aware of: the interplay of trauma and HIV+ women's cervical health. It is imperative that a woman's trauma history be included in her medical evaluation. Experiencing trauma not only plays a role in how a woman feels mentally, but can also impact her physically by contributing to how well the body can repair itself or fight off disease.

Abstract 1367

ASSOCIATIONS BETWEEN REPRESSIVE COPING AND ACUTE STRESS DISORDER IN CANCER PATIENTS

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The aim of this project was to investigate the association between a repressive coping style and acute stress disorder in patients with cancer. Patients [N=65] were 29 men (mean age = 59.7 years, sd = 9.08) and 36 women (mean age = 58.3 years, sd = 8.15) recently diagnosed with lung cancer (65%), ovarian cancer (24%), and cancer of the bladder (11%). All patients had a pre-existing mental status better than 2. The patients completed the MarloweCrowne Social Desirability Scale (MCDS), Taylor Manifest Anxiety Scale (TMAS), and the Stanford Acute Stress Reaction Questionnaire. Repressive coping was determined by the median scores on MCDS and TMAS (repressive coping = high MCDS low TMAS). Eighteen patients (28%) were categorised as repressors and forty-seven (72%) as non-repressors. Nineteen patients (29%) reached the diagnostic criteria for ASD. Of these, one was categorised as repressor, eighteen were categorised as non-repressors. This difference in prevalence of ASD in repressors and non-repressors was significant (X^2=6.75, df=1, p=.013). The association remained significant after adjustment for gender, age, and cancer history using the Mantel-Haenszel test (OR=.096, CI .012-.799; OR=.102, CI .012-.846; OR=.105, CI .013-.843; respectively). The results of this study confirm previous findings with patients with myocardial infarction, and suggest that a repressive coping style may promote adjustment in patients with cancer, possibly due to repressors' ability to disattend threatening stimuli. However, as previous results have shown an association between repressive coping and poor prognosis in women with breast cancer, future studies are needed to clarify whether the results of this study can be repeated in female cancer patients and/or whether there are long-term beneficial effects of repressive coping.

Abstract 1327

COPIING PROCESSES, SPIRITUAL WELL-BEING, AND HEART RATE VARIABILITY AMONG BREAST CANCER SURVIVORS

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Heart rate variability (HRV) has been conceptualized as a marker of autonomic flexibility and ability to respond efficiently to environmental challenge. However, the relationship between HRV and reported coping strategies has rarely been examined. The purpose of this study was to determine whether HRV was associated with adaptive coping processes and with more global measures of adjustment in a sample of breast cancer survivors. We hypothesized that women who employ approach-oriented coping to manage stress would exhibit higher HRV. We also predicted that...
HRV would be associated with greater well-being. Twenty-three survivors of early-stage breast cancer participated in this study (mean age = 59.6, mean time since diagnosis = 7.2 yrs). Testing HRV was based on a 24-hour monitor using electrocardiography, and spectral analysis of R-R interval variability using an autoregressive algorithm provided markers of parasympathetic (high-frequency, 0.15 - 0.40 Hz) modulation of the sinus node. Participants also completed self-report measures of psychological well-being (PWB scale), spiritual well-being (FACT-Sp) and trait coping (Brief COPE). Consistent with predictions, a composite measure of approach-oriented coping was positively correlated with HRV (r = .37, p < .00). Unpacking this composite coping measure revealed that religious coping was the individual strategy most strongly associated with HRV (partial r = .45, p < .05). HRV was also significantly associated with the Faith subscale of the FACT-Sp (partial r = .46, p < .05). HRV was not related to avoidance coping or to overall psychological well-being. All analyses controlled for respiration rate. These preliminary findings suggest that a tendency to use faith-based coping strategies in response to stress may be reflected in autonomic flexibility. The observed relationship between spiritual well-being and HRV is consistent with an emerging literature on the beneficial impact of spirituality on health and may suggest a potential physiological mechanism of these effects.

Abstract 1182

POSTTRAUMATIC GROWTH IN HISPANIC AND CAUCASIAN WOMEN WITH CERVICAL CANCER
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Posttraumatic growth (PTG) may be an important positive outcome for people with chronic disease. The purpose of this study was to examine PTG in Hispanic and Caucasian women with cervical cancer. We examined 183 women (Caucasian = 133, Hispanic = 50) with cervical cancer (mean age = 51 years, SD = 9) who were recruited through the New Mexico Tumor Registry. We measured PTG using the PTGI (Tedeschi & Calhoun, 1995). Our hypotheses were that optimism (LOT-R; Scheier et al. 1994) and religion (Brief COPE) would predict PTG and that PTG would predict quality of life two years after diagnosis. We found that only religion predicted PTG (Beta = .28, t = 3.93, p < .001) and that PTG predicted better quality of life (Beta = .38, t = 5.65, p < .001). In comparing Hispanic and Caucasian women, Hispanic women were higher on the overall index of PTG (M = 2.68 vs. 2.06, t = 2.76, p < .01) and higher on four out of five PTG subscales. These subscales included new possibilities (M = 2.41 vs. 1.80, t = 2.68, p < .01), relating to others (M = 2.56 vs. 1.98, t = 2.40, p < .05), personal strength (M = 2.80 vs. 2.10, t = 2.72, p < .01), and spiritual change (M = 2.82 vs. 2.08, t = 2.50, p < .05). In addition, there was a trend for Hispanic women to be higher on appreciation of life (M = 3.07 vs. 2.62, t = 1.72, p < .10). Because Hispanic women were higher on religion but no other study variable, we tested whether religion accounted for differences in PTG. Religion fully accounted for differences in spiritual change and partially accounted for all other differences (all ps < .05). The results suggest that PTG may be related to better quality of life in cervical cancer patients and that religion may be an important predictor of PTG. In addition, Hispanic women may be more likely to experience PTG partially because of higher religiosity. Future studies should seek to better understand the role of ethnic differences and religion in PTG and the role that PTG plays in quality of life.

Abstract 1193

AN INVESTIGATION INTO LIFE EVENTS AND DIFFICULTIES, COPING STYLE AND PATTERNS OF EMOTIONAL EXPRESSION IN WOMEN WITH FUNCTIONAL VOICE DISORDERS (FVD)
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The purpose of the study was to examine the etiology of FVD in women, with either total or partial voice loss in the absence of organic pathology. The study was a matched case-control design with women 18-80 years of age, recently diagnosed with FVD (n=73) or Organic Voice Disorder (OVD) (n=35) and a control group (n=66) from a community sample of women with perceptually normal voices matched for age and occupation. Data collected as putative risk factors for FVD included the Life Events and Difficulties Schedule covering the 12 months preceding onset of dysphonia. Situations with Conflict Over Speaking Out (COSO) or Powerlessness in the System (PITS) were also examined. Additional data included Attachment Style and 5 standardized self-report questionnaires that target coping styles and personality traits related to emotional expressiveness. Comparison of groups showed similarities apart from lower levels of education and socioeconomic status in the OVD group (p < 0.016) and more women with FVD reporting violence, estrangement or sexual abuse (p < 0.02). Univariate analysis showed women with FVD, in comparison to OVDs and controls, experienced more severe events and difficulties (p < 0.001), COSO events (p < 0.001), and difficulties with COSO and PITS (p < 0.001). They had a more insecure attachment style (p < 0.01), anxious coping style(p < 0.001), less emotional expressiveness in family of origin (p = 0.017), more ambivalence over emotional expression (p = 0.002) and vulnerability to depression (p < 0.001). Factor analysis of traits followed by logistic regression showed women with FVD experienced more severe events (OR=5.90, 95% CI 2.17-16.04), moderate events (OR=6.02, 95% CI 1.51-24.04), and COSO difficulties (OR=4.93, 95% CI 1.59-15.62) than controls. This is the largest and most definitive study of its kind to show the interrelationship between these factors. The results support integrating psychotherapy with voice therapy.

Abstract 1808

DEPRESSION AND DIABETES - PATHWAYS STUDY

Over 9,000 patients from 9 primary care clinics of Group Health Cooperative(in western Washington State) received a mailed survey during 1999 to 2001. About 62% returned the survey (N=4,839). The Patient Health Questionnaire (PHQ-9) diagnosed major and minor depression, while automated diagnostic, pharmacy and lab data identified diabetes, complications, medical co-morbidity, and diabetes control (HbA1c) and health services cost. Participants with diabetes and major depression/dysthymia were
randomized to receive collaborative care for depression for 1 year. Depression prevalence was 20.5% in this diabetes population. Major depression showed strong association with diabetes symptoms (O.R.=1.93 to 4.96), while the association of symptoms with high HbA1c were more often non-significant (ranging from 0.84 to 1.34). Relative to non-depressed patients with diabetes, depression was also associated with more smoking, obesity, physical inactivity, having > 2 diabetes complications, and poor HbA1c control (>8%). Moreover, medication adherence was lower among depressed patients. Mortality was higher among patients with major and minor depression (Hazard ratio= 2.2 and 1.7 respectively). Total health services costs were about 70% higher among depressed versus non-depressed patients ($5361 over 6 months vs. $3120, p<.001). Enhanced depression care management for patients with diabetes and depression resulted in better antidepressant adherence and depression outcomes, when compared with patients receiving usual care. Self management of diabetes or HbA1c did not improve with the depression intervention. Over 24 months, patients assigned to the intervention accumulated a mean of 70 additional days free of depression (95% CI 26 to 114) and had mean health services costs that were $605 less (95% CI $1767 less to $556 more) compared to usual care patients.

Abstract 1201

EVIDENCE FOR ALTERED BIOSYNTHESIS OF PROGESTERONE TO ALLOPREGNANOLONE IN WOMEN WITH HISTORIES OF DEPRESSION
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Allopregnanolone (AP), a neurosteroid metabolite of progesterone (P), modulates GABA receptors. Prior research from our group has demonstrated that both the diagnosis of premenstrual dysphoric disorder (PMDD) and the diagnosis of prior depression (DEP) are associated with blunted AP responses to stress and with the absence of the expected positive correlation between P and AP, suggesting possible alterations in the biosynthesis of P to AP. Consequently, the objective of the present study was to examine the association of both PMDD and prior DEP with the metabolism of P to AP. Twenty-three women meeting DSM criteria for PMDD (13 with prior DEP) and 29 non-PMDD controls (12 with prior DEP) were compared for plasma P and AP concentrations following 300mg oral micronized P using a double-blind, placebo controlled design. All women were free of medication, and SCID interview confirmed the absence of current Axis I disorders. Progesterone and AP were sampled 160, 190, 225, and 255 minutes after P administration. Changes in plasma concentrations over time were assessed using area under the curve (AUC) analyses. Results revealed that while P concentrations did not differ between groups, AP concentrations following P were lower at all time points in women with prior DEP (F=4.01, p<.05). However, the association of prior DEP with reduced AP was especially evident in non-PMDD women (Group x DEP: F=5.31, p<.05). Based on POMS ratings, for all women, low dose P was associated with increased confusion, fatigue, and feeling worse (ps<.01), and there was a tendency for P to increase current depression, but only in women with prior DEP (p=.08). These results suggest that histories of DEP may be associated with persistent alterations in the biosynthesis of P to AP, especially in non-PMDD women.

Abstract 1282

META-ANALYSIS OF CORTISOL LEVELS DURING DEPRESSION
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Hyperactivity of the hypothalamic-pituitary-adrenal axis (HPA) during depression is a widely accepted tenet upon which several important models, including how depression increases risk for negative medical outcomes, are based. Although the majority of studies report increased cortisol secretion during depression, a sizeable minority of reports do not. A meta-analysis of the existing literature is necessary to determine the size of the effect and under what circumstances this effect is most reliable. The current meta-analysis coded information about age, gender, severity, hospitalization status, and an effect size statistic (Cohens d) for each study. Data were analyzed using hierarchical modeling techniques to account for the multiple effects (n=480) nested within studies (n=318). Our final sample included 14,719 individuals, the average study’s depressed sample included 24.5 individuals (SD=17.76). Overall, the average effect size was d = 0.61 (SE=0.04, p < .001), indicating that cortisol levels were 0.61 standard deviation units higher in depressed vs. control groups. To detect an effect of this size at least 80% of the time, a study would need at least 34 individuals in each group, suggesting that many studies are underpowered. There was significant between-study variance (p < .001) suggesting that variability in the effect size across studies could be explained by other factors. Age and gender accounted for less than 2% of the between-studies variance. Symptom severity and the percentage of the depressed sample that was hospitalized were each significant predictors of effect size (p < .001). Inpatient status remained significant after controlling for symptom severity. Studies that included no inpatients in their depressed samples reported a 46% smaller average effect size (d = 0.33) compared to the overall average. These results suggest that cortisol elevations large enough to have long-term implications for disease risk may be limited to a small group of patients who are hospitalized for their depression.

Abstract 1325

THE RELATIONSHIP BETWEEN DEPRESSION AND ULCERATIVE COLITIS DISEASE ACTIVITY IS MODERATED BY AUTO-IMMUNE ANTIBODY STATUS AND ATTACHMENT STYLE
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We investigated two strategies to identify subtypes of ulcerative colitis (UC) that differ in psychological vulnerability: a biological moderator, perinuclear anti-neutrophil cytoplasmic antibody (p-ANCA) and attachment anxiety in adult relationships. We hypothesized that p-ANCA marks an etiological path to UC that is not dependant on psychological vulnerability and, therefore, that psychological linkage is stronger in subjects who lack the antibody. Attachment anxiety is an interpersonal trait associated with low resilience, which is expected to have greater impact on a subtype of disease which exploits psychological vulnerability. P-ANCA status was determined in 143 UC subjects by immunoflourescence and ELISA at Prometheus Labs. Current disease activity (St. Mark's Index), attachment anxiety (AA, Experience in Close Relationships-Revised) and depressive symptoms (Center for Epidemiological Studies-Depression) were measured. Current disease activity (St. Mark's Index), attachment anxiety (AA, Experience in Close Relationships-Revised) and depressive symptoms (Center for Epidemiological Studies-Depression) were measured. High AA was determined by median split. We calculated partial correlations between depression and disease activity, correcting for age. Seventy one subjects were p-ANCA positive and 72 were p-ANCA negative. Mean scores for disease activity, AA and depression did not differ by p-ANCA status. The correlation between depression and disease activity was large in p-ANCA negative UC (r = .57, p < .001) but small and insignificant in p-ANCA positive UC (r = .16, p = .18). The correlation between depression and disease activity was moderate in subjects with high AA (r = .47, p < .001), but small and insignificant in subjects with low AA (r = .20, p = .10). The combined effects are larger: p-ANCA negative & high AA (n = 37, r = .66, p < .001), p-ANCA negative & low AA (n = 35, r = .36, p = .04), p-ANCA positive & high AA (n = 36, r = .24, p = .17), p-ANCA positive & low AA (n = 35, r = .19, p = .28). Autoimmune antibody status identifies a biologically-defined subtype of UC with strong psychobiological linkage. Patients who are the most appropriate targets of psychosocial interventions in UC may be identified by a combination of biological and interpersonal characteristics, which occurred in our sample in 25.9% of subjects.

Abstract 1359

CHANGES IN BRAIN GLUCOSE METABOLISM AFTER COGNITIVE-BEHAVIOR THERAPY IN PATIENTS WITH PANIC DISORDER
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We reported that the glucose utilization in 12 non-medicated pretreatment patients with panic disorder were significantly higher in the bilateral amygdala, hippocampus, and thalamus, and in the midbrain, caudal pons, medulla, and cerebellum as compared with 22 healthy controls (Sakai et al. 2005). Although cognitive-behavioral therapy is proved to be effective for patients with panic disorder, the therapeutic mechanism in the brain remains unclear. The present study was performed to determine regional brain glucose metabolic changes associated with successful completion of cognitive-behavioral therapy in panic disorder patients.
Positron emission tomography with 18F-fluorodeoxyglucose was performed in 12 outpatients with panic disorder at rest before and after cognitive-behavioral therapy. Eleven of 12 patients showed improvement of severity of panic disorder after 10 sessions of cognitive-behavioral therapy during about 6 months. We compared the regional glucose utilization in these patients before and after successful therapy using voxel based analysis with Statistical Parametric Mapping software. We used proportional scaling with p<0.0005 (uncorrected) at the voxel level, and cluster extent k>50 voxels. Areas of decreased glucose utilization were detected in the right hippocampus, left anterior cingulate, left cerebellum, and pons, whereas areas of increased glucose utilization were seen in the bilateral medial prefrontal cortices. The completion of successful cognitive-behavioral therapy involved not only reduction of the baseline hyperactivity in several brain areas but also adaptive metabolic changes of the bilateral medial prefrontal cortices in panic disorder patients.

Abstract 1399
THE ASSOCIATIONS AMONG DEPRESSION HISTORY, LIFE STRESS, AND CORONARY ARTERY CALCIFICATION IN MIDLIFE WOMEN.
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We evaluated the association between life stress and coronary artery calcification (CAC) and whether life stress mediates the previously reported association between recurrent major depression (RMD) and CAC. 210 women, aged 47-57, from the Pittsburgh site of the Study of Women’s Health Across the Nation (SWAN) participated in a study of electron beam tomography (EBT) measures of CAC. Women reported no history of heart disease, diabetes, and were not taking hormones. They reported on demographic, psychosocial, and biological factors and participated in the Structured Clinical Interview for the Diagnosis of DSM-IV Axis I disorders (SCID) at baseline and annually. History of depression was dichotomized as RMD vs no history or single depression episode. CAC score was dichotomized as <10 or > 10. Stress was measured as a stressful life event in the last year or a stressful ongoing problem for more than one year. To determine the effect of each stressor on the association between depression and CAC, we used a forward stepwise procedure to separate multiple regression analyses. 99 women reported a stressful life event and 38 reported a stressful ongoing problem. Both types of stress were associated with CAC > 10, p=0.04 for a life event and p=0.005 for an ongoing problem and RMD (p=0.004; p=0.0003, respectively). In the analysis without stress, compared to women without RMD, those with RMD had a 2.71 odds of having CAC > 10. In the analysis with a stressful life event, the latter was not significant, but RMD remained significantly associated with CAC > 10 (odds ratio (OR)=2.57; 95%CI=1.99, 6.69, p=0.05). The inclusion of a stressful ongoing problem reduced the OR for RMD to nonsignificance, p = 0.13, whereas the ongoing problem was marginally significant (OR=2.55; 95%CI=0.89, 7.30, p=0.08). These results indicate that stressful ongoing problems are associated with elevated CAC and attenuate the association between RMD and CAC. Chronic problems may be one pathway connecting depression history with CAC.

Abstract 1524
CHANGES IN DEPRESSIVE SYMPTOMS PRECEDE CHANGES IN ADHERENCE TO ASPIRIN IN ACUTE CORONARY SYNDROME PATIENTS
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We previously reported in a sample of 65 acute coronary syndrome (ACS) patients that adherence to aspirin over 3 months was markedly lower in patients with persistent depressive symptoms as compared to patients with remittent symptoms or persistently nondepressed patients. Our aim was to replicate this finding in a larger sample and to test whether changes in depressive symptoms precede changes in adherence. We enrolled 151 patients within 7 days of an ACS. The Beck Depression Inventory (BDI) was administered at baseline, after 1 month, and after 3 months. Upon hospital discharge, patients were provided with a 90-day supply of aspirin in a MEMS [Medication Event Monitoring System] bottle that records the date and time whenever the bottle cap is opened. Data from the caps was collected after 3 months.

We compared 3 groups of patients: persistently depressed (BDI >=10 at baseline and 3mo; N=35), remittent depressed (BDI >=10 at baseline and <10 at 3mo; N=35), and nondepressed (BDI<5 at baseline and <10 at 3mo; N=74). 7 newly depressed patients were omitted. The mean percentage of correct number of dosage taken was significantly lower in the persistently depressed patients (M=74%, SD=25%) as compared to the remitters (M=89%, SD=17%) and the nondepressed (M=89%, SD=15%; Chi-Square [Kruskall-Wallis]=15.63; p=0.001). A cross-lagged path analytic model revealed that changes in depressive symptoms from baseline to 1 month were inversely related to changes in adherence rates from 1 month to 3 months (standardized direct effect -.37, p=0.01; model fit: chi-square=2.33, p=0.13). This is the first study to show that changes in depressive symptoms temporally precede changes in medication adherence. Patients whose depressive symptoms increased over time became less adherent to their medication and patients whose symptoms decreased became more adherent. Thus, interventions targeting depression may simultaneously improve adherence behavior.

Abstract 1554
RISK AND PROTECTIVE FACTORS ASSOCIATED WITH MATERNAL DEPRESSIVE SYMPTOMATOLOGY DURING THE EARLY YEARS OF PARENTHOOD
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Maternal depressive symptomatology not only negatively affects the mother but is also associated with poor child outcomes. Understanding factors associated with maternal depressive symptomatology will help in the identification of vulnerable women for depression and appropriate interventions in the future. Moreover, the majority of past research has focused on maternal depression during the immediate postpartum period, and much less is known about risk and protective factors for maternal depression beyond the perinatal period. Therefore, the present study examined potential risk and protective factors associated with maternal depressive symptoms during the early years of parenthood (up to 35 months postpartum). Secondary data analysis was conducted on a representative data set, consisting of 1646 mothers. Bivariate statistics and binomial logistic regression were used to determine risk and protective factors associated with maternal depressive symptomatology. Additional analyses stratifying by marital status were conducted. Over ten percent of the mothers reported high levels of depressive symptomatology (e.g. subclinical levels of depression and anxiety). Mothers who reported having inadequate emotional support [OR=2.28; 95% CI (1.21, 4.29); p=0.05], having not breastfed [OR=2.00; 95% CI (1.21, 4.29); p< 0.05], a lack of child care support [OR=2.26; 95% CI (1.22, 4.17); p<0.05], ineffective coping strategies [OR=3.43; 95% CI (2.07, 5.69); p<0.05], and poor child health [OR=3.43; 95% CI (2.07, 5.69); p<0.05] were significantly more likely to report high levels of depressive symptomatology. Among unmarried women, child care support, financial distress, and emotional support were not significantly associated with depressive symptomatology. These findings highlight risk and protective factors that will help identify women at risk for maternal depression during the early years of parenthood, which in turn will help guide community intervention planning and ultimately improve maternal and child health outcomes.

Abstract 1493
THE NEURAL NETWORK OF MIRROR NEURON SYSTEM AND MENTALIZING IN ALEXITHYMIA
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"Theory of mind" (ToM) or mentalizing is the ability to understand that others have beliefs, desires and intentions that are different from one’s own. The mirror neuron system (MNS), a primitive version of the simulation as a basis of mentalizing, works when only observing an action performed by another. The representation of the self should be related to understanding of other’s mental state. Since alexithymics (Sifneos 1973) have difficulties in recognizing and verbalizing their internal emotions, they may have impairments in MNS and/or ToM. We tested this hypothesis by functional
MRI (fMRI) during the ToM and MNS tasks, and explored the relation to alexithymia. Sixteen alexithymic and 14 normal subjects (discriminated by TAS-20 (Bagby and Taylor et al. 1994) and structured interview (Arimura et al. 2002) participated. The subjects watched objects-related hand movement (Ohashi et al. 2004), and ToM animation consisting of two triangles (Castelli et al. 2000) during fMRI measurements. Time course series of EPI images were obtained and were compared by means of linear contrasts of each control and task period to test hypotheses. As a result, alexithymia scores by structured interview were significantly correlated negatively with intentionality and appropriateness of ToM scores. During MNS task, we found activation in all subjects mainly in the premotor, superior temporal sulcus (STS), parietal association areas, and the parietal operculum, while during the ToM task, the activation in the medial prefrontal cortex (MPFC), STS, and the right temporal pole was noted (p<0.05 FWE). Within the ToM-related areas, the alexithymic group showed significant lower activation than non-alexithymic group in MPFC, while the alexithymic group showed significantly stronger activities were in the MNS regions, like parietal cortex and premotor cortex (p<0.001 uncorrected). In conclusion, alexithymics tend to adopt simulating system when detecting other's intention and mind, while they have impairment of ToM, especially in its highly cognitive aspects.

Abstract 1602
BIOCHEMICAL AND BEHAVIORAL SIGNS ARE PRESENT IN A POST MYOCARDIAL INFARCT MODEL OF DEPRESSION IN THE RAT
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Approximately 65% of patients develop a depression episode following a myocardial infarct (MI). Since the limbic system is a cornerstone for mood disorders, we hypothesized that changes in intracellular signalization could occur in the limbic system after a myocardial infarct. Inflammation, cytokine release and apoptosis are among the different events observed after myocardial infarction and can also be involved in depression. The aim of the present study was thus to verify in rats the presence of apoptotic events in the limbic system following a myocardial infarct as well as to search for behavioral signs of depression.

The left coronary artery of adult male Sprague-Dawley rats was occluded for 20 minutes (MI rats); control rats were sham operated, without cardiac ischemia. Following a reperfusion period of 72 hours, the heart and the brain were sampled. Heart infarct size was estimated by triphenyltetrazolium chloride staining. PI3-kinase and Caspase-3 activity, the number of TUNEL-positive cells and the Bax/Bcl-2 ratio were measured in the amygdala and hippocampus. Additional rats were evaluated after 2 weeks post-MI (anhedonic stage) and 4 weeks post-MI (behavioral despair stage) with the Porsolt forced swim test in presence of sertraline pretreatment or not. Infarcted hearts included 54±2% of the risk zone. Compared to controls, the amygdala of MI rats showed an increased number of TUNEL-positive cells, increased Caspase-3 activity, and an increased Bax/Bcl-2 ratio; PI3-kinase activity was significantly decreased in the amygdala. No changes were found in the hippocampus. Depressive behavior was observed in MI rats without any change in myocardial infarct size. Depressive behavior was prevented by sertraline.

In conclusion, the behavioral impairment and limbic apoptotic events observed following a myocardial infarct are compatible with a model of human post MI depression.

Abstract 1267
DIABETES, DEPRESSION & A1C: THE ROLE OF SELF-EFFICACY
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Past research has found that hemoglobin A1c (A1c), a measure of average blood glucose over the past 90-120 days, correlates with depression in Type 1, but not Type 2 diabetes. We sought to replicate those findings and examine self-efficacy as a possible mechanism. Self-efficacy theory posits that behavioral accomplishments determine self-efficacy, and cognitive models of depression posit that negative self-relevant cognitions (e.g., low self-efficacy) lead to depression. We hypothesized that, in people with Type 1 diabetes, self-efficacy mediates the effect of A1c on depression. Participants were 124 patients with Type 1 (n = 52) and Type 2 (n = 92) diabetes. Mean age was 51 years. The sample was 52% female and 81.5% Caucasian. Participants completed the PHQ-9, Nine Symptom Depression Checklist and the Multidimensional Diabetes Questionnaire Self-Efficacy subscale. A1c was obtained from medical records. A regression analysis predicting depression level yielded significant main effects for diabetes type (t = 4.88, p<.01), A1c (t = -4.74, p<.01). The interaction was due to a significant correlation between depression and A1c for Type 1 (r = .51, p<.01) but not Type 2 diabetics (r = .11, p>.30), replicating prior findings. Among Type 1 diabetics, self-efficacy was significantly correlated with both A1c (r = -.42, p<.01) and depression (r = -.66, p<.01), thus meeting the requirements for mediation analysis. Mediation analysis revealed that while both A1c and self-efficacy in the regression equation, the effect of A1c on depression was no longer significant (β= .29, p>.06), but self-efficacy remained a significant predictor of depression (β = -.53, p<.01). A Sobel test confirmed that the mediation effect was significant (Z = 2.21, p<.05). Therefore, self-efficacy fully mediated the association between A1c level and depression. These results are consistent with the proposal that lower self-efficacy in reaction to awareness of higher A1c levels contributes to depression in people with Type 1 diabetes.

POSTER SESSION I

Abstract 1243
THE ASSOCIATION BETWEEN FATIGUE AND INFLAMMATORY MARKER LEVELS IN CANCER PATIENTS: A META-ANALYSIS
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Purpose: Increased levels of cytokines and neopterin may be responsible for cancer-related fatigue, the most common complaint among cancer patients. We quantitatively reviewed the empirical findings on this topic using meta-analyses, focusing on studies where immunotherapy was not used. Methods: PubMed, PsychINFO and BIOSIS were searched for all articles published until July 2005. Studies were weighted according to their quality and sample size. Results: 280 relevant articles were used for statistical analyses. Heterogeneity among the studies was tested using the I2 index. Results: 12 studies (comprising 607 participants) were included in the statistical analyses. Most of these studies measured more than one inflammatory marker, resulting in a total of 43 effect sizes. General analyses based on weighting according to the sample size showed a significantly positive correlation between fatigue and inflammatory marker levels (r = 0.07, P = 0.003). Analyses of individual inflammatory markers revealed a significantly positive correlation between fatigue and neopterin levels (r = 0.22, P < 0.0001). However, none of the associations between fatigue and the following cytokines was significant: IL-1β (r = 0.01, P = 0.888), IL-6 (r = 0.02, P = 0.654), and TNF-α (r = 0.001, P = 0.990). Conclusion: There were surprisingly few studies dealing with this area. When effect sizes remained unweighted or were weighted according to the study quality, no linkage between fatigue and inflammatory markers in cancer patients was found. However, when the sample size was controlled for, a significant association was detected, particularly when non-specific markers (e.g., neopterin) were considered.

Abstract 1398
SLEEP QUALITY AND SALIVARY CORTISOL IN OVARIAN CANCER PATIENTS
Derek G. Turesky, Susan Lutgendorf, Aliza Weinrib, Heena Maiseri, Psychology, Koen De Geest, Barrie Anderson, OB/Gyn, University of Iowa, Iowa City, IA, Anil Sood, Gyn/Onc, MD Anderson, Houston, TX, Frank Penedo, Vanessa Lehner, Psychology, University of Miami, Coral Gables, FL, Clemens Kirschbaum, Department of Psychology, Dresden University of Technology, Dresden, Germany

Sleep disturbances are common among cancer patients. Cortisol dysregulation has been associated with poorer sleep. Relationships between sleep quality and cortisol rhythms in ovarian cancer patients are unclear. This study examined sleep quality and salivary cortisol among 99 patients awaiting surgery for a potential ovarian malignancy. Surgical diagnosis confirmed 48 patients with ovarian cancer and 51 with benign masses. Patients collected salivary samples at 4 time points daily (waking, 30 min after waking, evening, before bed) for 3 days pre-surgery. Patients completed the Pittsburgh
Sleep Quality Index (PSQI) and medical data was obtained from patient records. Ovarian cancer patients had significantly higher cortisol slopes, evening cortisol, and bedtime cortisol than benign patients (all ps < 0.01). For both patient groups, pain levels, side effects of treatment, and use of sleep, pain, or depression medication were unrelated to cortisol levels. Regression models indicated that across both groups, patients with longer time to sleep onset had significantly flatter cortisol slopes (r = 0.210, p < 0.05) and those with greater daytime drowsiness had significantly higher evening cortisol levels (r = 0.236, p < 0.05). There were no significant interactions between these facets of sleep quality and group. No other facets of sleep disturbance were related to cortisol levels across both groups. Among ovarian cancer patients, those reporting daytime drowsiness had significantly higher evening cortisol than patients not reporting drowsiness (drowsy: M = 8.75, SE = 7.6; not drowsy: M = 4.85, SE = 7.0; p = 0.009). These findings indicate relationships between poorer sleep quality and dysregulated cortisol in both benign and ovarian cancer patients awaiting surgery.

Abstract 1370
DISEASE-RELATED SELF-EFFICACY AND RISK OF FEBRILE NEUTROPIA IN CANCER PATIENTS
Robert Zachariae, Anette F. Pedersen, Psychooncology Research Unit, University of Aarhus, Aarhus, Denmark, Anders Bonde Jensen, Hans von der Maase, Department of oncology, Aarhus University Hospital, Aarhus, Denmark, Ove Andersen, Department of infectious diseases, Hvidovre Hospital, Hvidovre, Denmark

Psychological factors have been shown to influence immune function and susceptibility to infectious disease, but little is known about psychological factors and infection in cancer patients. The aim of this project was to investigate the association between disease-related self-efficacy and risk of febrile neutropenia in cancer patients in chemotherapy. Patients (N = 49) were 21 men (mean age = 60.1 years, sd = 18.3) and 28 women (mean age = 58.3 years, sd = 9.51) newly diagnosed with lung cancer (57.1%), ovarian cancer (26.5%), and cancer of the bladder (16.3%). All patients had a performance status better than 2. The patients completed the Cancer Behavior Inventory (CBI) prior to chemotherapy and were subsequently monitored during the first 10 weeks of chemotherapy. A logistic regression was conducted with febrile neutropenia vs. no febrile neutropenia entered as dependent variable and CBI Total scores, gender, age, diagnosis, and baseline leukocyte counts entered as covariates. Total CBI was the only variable associated with febrile neutropenia (B = -0.066, p = 0.02). Febrile neutropenia is associated with impairments in cancer patients’ quality of life as this complication may result in hospitalizations and - in severe cases - increased mortality. Our results are the first to suggest that psychosocial factors such as low disease-related self-efficacy may be associated with increased risk of febrile neutropenia in cancer patients receiving chemotherapy. If confirmed in a larger sample, the next step could be to study whether enhancing patients’ disease-related self-efficacy can reduce immune-related treatment complications.

Abstract 1352
ILLNESS PERCEPTIONS AND POST-TREATMENT DISTRESS AND BEHAVIOR CHANGES AMONG WOMEN WITH BREAST CANCER
Erin S. Costanzo, Susan K. Lutgendorf, Mary Mattes, Psychology, University of Iowa, Iowa City, IA, Shruti Trehan, Oncology, Aultman, Canton, OH

Common-sense models of illness have been associated with behavioral and psychological outcomes among patients with various medical conditions. We examined common-sense beliefs about cancer in 68 women undergoing treatment for stages 0-3 breast cancer. Participants’ responses to the Illness Perception Questionnaire and measures of beliefs about factors that a) may have caused their cancer and b) may prevent recurrence suggested that patients perceived their disease to be controllable and to be an acute rather than chronic or episodic condition. Hormones were cited as the most important cancer cause followed by environmental factors, heredity, diet, and stress. Medical screenings were cited as most important in preventing recurrence followed by positive attitude, healthy diet, exercise, and medication. Linear and logistic regression analyses controlling for age and stage were used to determine whether these beliefs predicted distress (IES, CESD) and behavior change (e.g., diet, exercise, substance use, stress reduction) 3 weeks following the end of treatment. Women who believed stress was an important causal factor reported greater depressed mood (p = 0.02), and those who believed a positive attitude was important in preventing recurrence reported marginally less anxiety and depression (both p = 0.05). Otherwise, beliefs about cancer were generally unrelated to post-treatment distress. Illness beliefs were better predictors of adaptive health behavior change, with several causal attributions and recurrence prevention beliefs as well as perceived control predicting improvement in diet or decreased alcohol use (p = 0.05). Behavior changes frequently matched causal and recurrence prevention beliefs. For example, beliefs that diet influences cancer development or recurrence were associated with positive dietary changes (p = 0.003 and 0.03, respectively), and beliefs that stress influences cancer development or recurrence were associated with increased avoidance of stress (both p = 0.02). In sum, data suggest that although common-sense beliefs about cancer are generally unrelated to post-treatment distress, they predict important behavior changes following treatment, including positive health behavior changes.

Abstract 1326
PSYCHOSOCIAL FACTORS AND NKT CELLS IN OVARIAN CANCER PATIENTS
Donald M. Lamkin, Susan Lutgendorf, Psychology, U. of Iowa, Iowa City, IA, Anil Sood, Gynecologic Oncology, MD Anderson, Houston, TX, Stephanie McGinn, Heena Maiserti, Psychology, Koen De Geest, Barrie Anderson, Obstetrics and Gynecology, David Labaroff, Urology, U. of Iowa City, IA

Lymphocytes with markers for both NK and T cells have several diverging roles in tumor control. The current study examined relationships between psychosocial factors and NKT cell percentages in 55 women undergoing surgery for suspected ovarian cancer. Patients completed measures of mood (POMS), social support (SPS) and positive coping (COPE). Peripheral blood, ascites, and tumor were collected. NKT cell determination was made by flow cytometry using CD3+CD56+ staining. There were no significant relationships of age, sleep, cigarette smoking, coffee or alcohol use, or cancer stage with percentages of NKT cells in any compartment. Percent NKT cells in PBL did not significantly differ between cancer and benign patients. For ovarian patients, NKT cell data was available for 35 samples in PBL, 22 in ascites, and 14 in TIL. Twenty patients surgically confirmed with benign disease also had NKT samples from PBL. Among cancer patients, NKT cell percentages in ascites and TIL were significantly higher than those in peripheral blood (ps < 0.05). In PBL, vigor was significantly positively related to NKT cell percentage (r = 0.45, p = 0.015) whereas total distress had a marginally significant inverse relationship with NKT cell percentage (r = -0.35, p = 0.063). These relationships were not observed in ascites or TIL. Greater ability to use positive reframing was significantly related to higher NKT cell percentage (r = 0.41, p = 0.021) and marginally to tumor NKT percentage (r = 0.51, p = 0.094). Greater social support was related to higher NKT percentage in TIL (r = 0.60, p = 0.052); these relationships were not seen in PBL and ascites. Because NKT cells can have both proinflammatory and anti-inflammatory functions, implications of these findings for ovarian cancer prognosis are unclear. Future study with greater marker specificity is needed to address these questions.

Abstract 1271
COUPING STYLES PREDICT LONG TERM DISTRESS IN GYNECOLOGICAL CANCER SURVIVORS
Elizabeth Mullen, Aliza Weinrib, Psychology, Barrie Anderson, Gynecologic Oncology, Susan Lutgendorf, Psychology, U. of Iowa, Iowa City, IA

For most cancer patients the initial distress of diagnosis and treatment resolves within a year post diagnosis. However, sustained distress at 2 and 3 years following diagnosis has been noted in a minority of patients. We examined risk factors for elevated distress at 2 and 3 years post-surgery in 103 patients with cervical, endometrial, or ovarian cancer who completed measures of coping style (COPE) and distress (IES) pre-surgery and at 6, 12, 18, 24 and 36 months. Responses of 65 patients were available at year 2 and 53 at year 3. At 2 years, 12% reported moderate intrusive symptoms, while 9% reported elevated intrusion, according to scale norms. By 3 years, intrusion was reported as moderate in 15% and elevated in 1%. Analyses controlled for disease extent (early stage vs. regionally advanced) and necessity for prolonged treatment past 1 year (treatment intensity = total months chemotherapy or radiation/total months elapsed, calculated between 1 and either 2 or 3 years). At 2 years, neither disease extent nor treatment intensity was significantly associated with intrusion. Pre-surgery levels of spiritual
CANCER PATIENTS
MASTECTOMY AND BREAST CONSERVING SURGERY IN BREAST CANCER PATIENTS
Hyou-Gyun Son, Psychiatry, Lee Su Kim, General Surgery, Hallym University, College of Medicine, Seoul, Korea, South

There is a continuing question whether breast conserving surgery confers a measure of psychological comfort superior to that of total mastectomy for women diagnosed with breast cancer. The purpose of this study was to determine the differences of the psychiatric symptoms experienced between modified radical mastectomy and breast conserving surgery patients. We compared 38 patients who underwent modified radical mastectomy with 16 patients who underwent breast conserving surgery from a psychiatric aspect. Psychiatric symptoms and distress were measured following surgery with two self-rating scales: Symptom Check List-90-Revision(SCL-90-R) and the General Health Questionnaire(GHQ: 28-item version). There were no statistically significant differences between the modified radical mastectomy patients and the breast conserving surgery patients on the two scales(p>0.05). From our findings, it appears that breast conserving surgery is not superior to modified radical mastectomy in terms of psychiatric morbidity for breast cancer patients. The absence of differences between modified radical mastectomy patients and breast conserving surgery patients on psychiatric measure is probably due to several factors. In this study, these factors could be a fear of cancer recurrence, the nature of breast cancer itself, the burden of radiation therapy, a late post operative period and selection bias.

Abstract 1415
CHILDREN'S DISTRESS AND COMMUNICATION WITHIN THE FAMILY WHEN ONE PARENT IS TREATED FOR CANCER
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Children are still too often insufficiently informed about the illness of their parent treated for cancer. We aimed at exploring the impact on child's behavior of ill parent's gender, severity of the disease, child's age and gender and quality of communication about cancer in both parents. Fifty six children (sex-ratio=1) aged 4 to 16 and belonging to 30 families were studied via the Child Behavior Check-List (CBCL) separately completed by both parents. Each parent also filled out the GHQ-28 (psychosocial distress) and the Openness to Discuss Cancer within the nuclear Family (ODCF) scale. A 4-class variable was built from median split scores to describe the quality of communication about cancer of the couple of parents. Cancer patients' GHQ-28 and ODCF scores and the CBCL total score assessed by the ill parent were respectively correlated with spouses' scores (r=0.44, p=0.002; r=0.47, p=0.016 and r=0.29, p=0.05). CBCL total score was neither associated with the severity of cancer, nor with children's age or gender, or parents' GHQ-28 scores, but was both and independently higher when the cancer parent and the rater were the mother (two-way ANOVA : p=0.02 and p=0.02). After adjusting for cancer patient's gender, it was also paradoxically higher within the subset of children having a mother treated for cancer, in the families communicating apparently well about cancer, (two-way ANOVA for repeated measures : interaction effect p=0.007).

In conclusion, as already shown in other studies on this subject, our results confirmed the more disturbing impact on children's behavior, when the cancer...
Stress is supposed to play a role on the occurrence of psoriasis rashes. Increased levels of alexithymia were also found in patients suffering from psoriasis. The purpose of our study was to search for significant associations between stress reactivity, the ability of emotional information processing and response to treatment in psoriasis patients. Ninety three patients were recruited through an article in the local press. Psoriasis severity was evaluated by PASI score and the response to treatment by PASI change from baseline to 3-month visit. Patients completed the HAD scale (anxiety and depression), TAS-26 (alexithymia) and the Levels of Emotional Awareness Scale (LEAS) and were questioned about triggering factors they had noticed as regards the course of their disease. Fifty one patients reported stressing triggering situations and 33 could be considered as alexithymic (TAS-26>=73). A very low mean LEAS score was found in our population (45.8±13.5), compared with already published scores from other individuals. LEAS score was not correlated with alexithymia scores, excepted for limitation in daydreaming subscore (r=0.26; p<0.05). No psychological score was associated with baseline PASI. Stress reactors were characterised by a trend toward lower LEAS scores (p=0.052). At 3 months PASI scores significantly improved in the subset of patients (n=67) presenting with clinically significant improvement of mental health assessed by TAS-26 sub- scales (difficulty identifying feelings F2, describing difficulty feelings to others F3, externally-oriented thinking). No significant interaction between sex and age was found, but Tukey's multiple comparison showed significant differences among the age groups in the three factor and total TAS-20 scores. The total TAS-20, F1 and F2 scores were high in the teen years and decreased with age. Whereas from the 30's, the F1 and F2 scores did not change significantly, the F3 score increased almost linearly as subjects aged. No difference was found by sex, with both sexes showing the same age related effect in total TAS-20 and factor scores. Regarding NEO-FFI scores, similar to the TAS-20, as participants aged, Neuroticism (N) and Openness to Experience (O) showed significant decreases, and Agreeableness (A) and Conscientiousness (C) scores showed significant increases. The correlation coefficients between TAS-20 and NEO-FFI revealed that N significantly correlated positively with TAS-20 and NEO-FFI, F1 (neuroticism), F2 (openness to experience) and negatively with F3 (conscientiousness). However, O was strongly, negatively correlated with the F3 and total TAS-20 scores. Although the possibility of a cultural effect must be considered, these findings suggest that as people get older they lose the interest and curiosity in searching for novelty that they had in their youth. A developmental aspect for alexithymia was shown, at least in the Japanese population, indicating that younger people should be measured separately.

Depression and anxiety are associated with greater physical disability in patients with autoimmune disease. While these moods may be a reaction to living with a chronic illness, there is also the possibility that both mood disorders and SLE have a common pathophysiological mechanism. This study evaluated the prevalence of mood and anxiety disorders in a multiethnic Lupus population, and examined the association of these disorders to SLE symptoms and fatigue. Participants were 222 Caucasian women (mean age = 48 years), recruited from multiple outpatient clinics. All participants met ACR criteria for SLE. Each participant underwent the Composite International Diagnostic Interview, a standardized structured diagnostic interview that yields lifetime diagnoses based on DSM-IV criteria, and completed the Systemic Lupus Activity Questionnaire and Multi-dimensional Assessment of Fatigue. Participants indicated that 59% of SLE patients met criteria for one or more of the following diagnoses: major depression (MDD) (42%), specific phobia (23%), social anxiety (13%), panic disorder (8%), obsessive-compulsive disorder (OCD) (6%), bipola r I (5%), and generalized anxiety (3%). Compared to lifetime prevalence estimates for women in the U.S., SLE patients had a 3-fold increase in the rate of bipolar I disorder, a 2-fold increase in MDD, panic disorder, and OCD, and a 1.5-fold increase in specific phobia. Patients with a psychiatric diagnosis reported more fatigue and a higher severity of recent SLE symptoms, including neurological symptoms on the SLAQ (p<.001). Results indicate that mood and anxiety disorders are common in SLE and are associated with greater self-reported disease activity. Future research is needed to shed light on the connection between mood and anxiety disorders and SLE, and explore potential pathophysiological mechanisms that may be common to SLE and these mental disorders.

Stress reactivity, response to dermatological treatment and levels of emotional awareness in patients suffering from psoriasis Silva M. Consoli, C-L. Psychiatry, Georges Pompidou European Hospital, Paris, France, Sophie Rolhion, Dermatology, Jacques Pellegr, Public Health, Karine Ruel, Frederic Cambazard, Dermatology, Jacques Pellet, Psychiatry, Laurent MISERY, Dermatology, University Hospital, St Etienne, France

Increased levels of alexithymia were also found in patients suffering from psoriasis. The purpose of our study was to search for significant associations between stress reactivity, the ability of emotional information processing and response to treatment in psoriasis patients. Ninety three patients were recruited through an article in the local press. Psoriasis severity was evaluated by PASI score and the response to treatment by PASI change from baseline to 3-month visit. Patients completed the HAD scale (anxiety and depression), TAS-26 (alexithymia) and the Levels of Emotional Awareness Scale (LEAS) and were questioned about triggering factors they had noticed as regards the course of their disease. Fifty one patients reported stressing triggering situations and 33 could be considered as alexithymic (TAS-26>=73). A very low mean LEAS score was found in our population (45.8±13.5), compared with already published scores from other individuals. LEAS score was not correlated with alexithymia scores, excepted for limitation in daydreaming subscore (r=0.26; p<0.05). No psychological score was associated with baseline PASI. Stress reactors were characterised by a trend toward lower LEAS scores (p=0.052). At 3 months PASI scores significantly improved in the subset of patients (n=67) presenting with clinically significant improvement of mental health assessed by TAS-26 subscales (difficulty identifying feelings F2, describing difficulty feelings to others F3, externally-oriented thinking). No significant interaction between sex and age was found, but Tukey's multiple comparison showed significant differences among the age groups in the three factor and total TAS-20 scores. The total TAS-20, F1 and F2 scores were high in the teen years and decreased with age. Whereas from the 30's, the F1 and F2 scores did not change significantly, the F3 score increased almost linearly as subjects aged. No difference was found by sex, with both sexes showing the same age related effect in total TAS-20 and factor scores. Regarding NEO-FFI scores, similar to the TAS-20, as participants aged, Neuroticism (N) and Openness to Experience (O) showed significant decreases, and Agreeableness (A) and Conscientiousness (C) scores showed significant increases. The correlation coefficients between TAS-20 and NEO-FFI revealed that N significantly correlated positively with TAS-20 and NEO-FFI, F1 (neuroticism), F2 (openness to experience) and negatively with F3 (conscientiousness). However, O was strongly, negatively correlated with the F3 and total TAS-20 scores. Although the possibility of a cultural effect must be considered, these findings suggest that as people get older they lose the interest and curiosity in searching for novelty that they had in their youth. A developmental aspect for alexithymia was shown, at least in the Japanese population, indicating that younger people should be measured separately.

Defensive aspects of alexithymia: a Japanese community-based study

From the perspective of human development, alexithymia must have developmental aspects that would result in age-differences in the alexithymic population of a normal community. To test this hypothesis, the twenty-item Toronto Alexithymia Scale (TAS-20) and the NEO Five-Factor Inventory (NEO-FFI) were administered to 2718 Japanese subjects (1,348 men and 1,370 women, age range; 14-84yrs., mean age (SD) = 41.1(13.4) yrs.) who were divided into six age groups (under 19, 20-29, 30-39, 40-49, 50-59, over 60yrs.). The results showed a significant but poorly correlated relationship between age and the TAS-20 scores (total and each subscale; F1, difficulty identifying feelings; F2, describing difficulty feelings to others; F3, externally-oriented thinking). No significant interaction between sex and age was found, but Tukey's multiple comparison showed significant differences among the age groups in the three factor and total TAS-20 scores. The total TAS-20, F1 and F2 scores were high in the teen years and decreased with age. Whereas from the 30’s, the F1 and F2 scores did not change significantly, the F3 score increased almost linearly as subjects aged. No difference was found by sex, with both sexes showing the same age related effect in total TAS-20 and factor scores. Regarding NEO-FFI scores, similar to the TAS-20, as participants aged, Neuroticism (N) and Openness to Experience (O) showed significant decreases, and Agreeableness (A) and Conscientiousness (C) scores showed significant increases. The correlation coefficients between TAS-20 and NEO-FFI revealed that N significantly correlated positively with TAS-20 and NEO-FFI, F1 (neuroticism), F2 (openness to experience) and negatively with F3 (conscientiousness). However, O was strongly, negatively correlated with the F3 and total TAS-20 scores. Although the possibility of a cultural effect must be considered, these findings suggest that as people get older they lose the interest and curiosity in searching for novelty that they had in their youth. A developmental aspect for alexithymia was shown, at least in the Japanese population, indicating that younger people should be measured separately.

MOOD AND ANXIETY DISORDERS IN WOMEN WITH SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

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Repressive coping is associated with a number of negative health outcomes (e.g. hypertension, heart disease, cancer), purportedly because repressors (high in repressive coping) are less likely to attend to symptoms of illness or distress. Similarly, repressive coping may interfere with efforts to make health behavior changes. This study evaluated the effects of repressive coping among 57 adult participants (mean age = 45±11; 84% female; 53% presurgery; 86% white, 12% black, 3% American Indian) in a behavioral weight management program. Participants completed the NEO-FFI (Neuroticism, Openness, Extraversion, Agreeableness, Conscientiousness scales, Watson Depression Inventory) and quality of life (Impact of Weight on Quality of Life (IWQOL)) at baseline and at the conclusion of the 12-week behavioral weight management program. Twenty-four repressors (43% of sample) were identified from responses to the Taylor Manifest Anxiety Scale and Marlowe-Crowne Social Desirability Scale (low anxiety, high defensiveness). Consistent with the model of repressive coping, repressors entered the program reporting significantly less depressive symptoms than non-repressors (p<.001) but BMI did not differ between the two groups. Data were analyzed using repeated measures analysis of variance, with time as a within subjects variable and repressor status as a between subjects variable. Results indicated a significant time main effect for BMI (p<.001), with repressors and non-repressors achieving significant weight loss. Analysis of the IWQOL indicated improved quality of life among non-repressors in the domains of sexual life (p<.001) and self-esteem (p<.001). However, quality of life among repressors did not change. Thus, although all participants achieved successful weight
loss, only non-repressors reported enhanced quality of life for sexual life and self-esteem following the behavioral weight management program. Enhanced quality of life among these individuals may be important for encouraging adherence to weight loss programs.

Abstract 1200

EFFECTS OF EMOTIONAL SELF-MONITORING ON WEIGHT LOSS SELF-EFFICACY AND PERSONALITY: A BEHAVIORAL WEIGHT MANAGEMENT PROGRAM PARTICIPANTS

Andrea K. Bushy, Monica L. Jefferson, Sooyeon Suh, Charles F. Emery, Psychology, Ohio State University, Columbus, OH

Studies indicate that weight loss self-efficacy is important for long-term weight loss among individuals in behavioral weight management programs. Emotional self-monitoring may contribute to weight loss self-efficacy and, thus, to weight loss. This study evaluated the influence of emotional self-monitoring on weight loss self-efficacy in a sample of 57 overweight and obese adults (age=44±11) enrolled in a behavioral weight management program. Participants were randomly assigned to either the usual care condition, or an emotional self-monitoring intervention (11 weeks of daily self-reporting of intensity of 6 psychological states). Participants completed measures of weight loss self-efficacy (Eating Self-Efficacy Scale, Exercise Self-Efficacy Scale) at baseline and after intervention. In addition, body mass index and fitness level (12-minute walk distance) were evaluated at each time point. Data were analyzed with repeated measures ANOVA, with time (baseline vs. 12 weeks) as a within-subjects variable and group (emotional self-monitoring vs. usual care) as a between-subjects variable. Results indicated time main effects for BMI (p<.0001), eating self-efficacy (p<.0001), and 12-minute walk distance (p<.0001), reflecting that all participants achieved weight loss, improvements in eating self-efficacy, and enhanced fitness, regardless of condition. Because approximately 53% of the sample was preparing forgastric bypass surgery, analyses were repeated controlling for the influence of surgery status. Results indicated a significant time by group interaction for 12-minute walk distance (p<.05), indicating that self-monitoring participants achieved significantly greater gains than control subjects. Thus, although emotional self-monitoring did not result in greater weight loss or increased weight loss self-efficacy in comparison to usual care, self-monitoring was associated with increased fitness gains, which may be associated with long term weight loss success.

Abstract 1575

RACE MAY MEDIATE THE ASSOCIATION BETWEEN THE SEROTONIN TRANSPORTER GENE PROMOTER POLYMORPHISM (5HTTLPR) AND NEO PI-R PERSONALITY DOMAINS

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An association between 5HTTLPR genotypes and personality in humans has been reported. Replication of these findings has been inconsistent. Recently research has suggested that 5HTTLPR genotypes may not affect personality directly but instead interact with environmental factors to influence patterns of behavior. To determine whether 5HTTLPR interacts with race to affect personality, the NEO PI-R was administered to 69 white and 92 black, community volunteers. Using MANOVA modeling of all five NEO PI-R domains simultaneously, we found no significant main effects but a significant interaction (5HTTLPR x race) (p=.0148). The ANOVAs associated with this test showed trends for the gene x race interaction effects on Neuroticism (N) (p=.08), Extraversion (E) (p=.11), and Conscientiousness (C) (p=.07) using 3 genotypes (l/l, l/s, s/s). When we collapsed genotype groups, the gene x race interaction effect on N was significant (p=.037). Blacks with the 'l' genotype (n=51) had higher N scores than black 's' carriers (n=41), while white carriers of the 's' allele (n=28) had higher N scores than 'l' genotype whites (n=42). This pattern was previously found by Gelernter (1998). In contrast to N, C showed evidence for molecular heterosis, interacting with race. When comparing the heterozygotes to the homozygotes, the 'l' genotype was associated with high C in blacks but low C in whites, while being homozygous for either allele was associated with low C for blacks but high C for whites. This study replicated the 5HTTLPR genotype x race interaction effect on N (Gelernter et al., 1998). Race may be an indicator of the effects of differential environmental conditions that interact with variants of the 5HTTLPR gene to affect personality.

Abstract 1601

HOSTILITY PSYCHOMETRICS: USING TRAIT SCALES TO PREDICT DAILY LEVELS OF HOSTILE MOOD AND INTERACTIONS

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Hostility measures are associated with cardiovascular disease risk. The purposes of the current study are to determine which trait scale and factor dimensions of hostility best predict daily levels of hostile mood and interactions. 151 subjects (67 men, 84 women, 30-50 yrs) from an ongoing study on hostile adults, selected for high scores on the Buss-Durkee Hostility Inventory (BDHI) and Cook-Medley Hostility Scale (CMHS), were examined. Trait anger was assessed via the Spielberger Trait Anger Expression Inventory (STAXI). Subjects carried a palm pilot for 4 days and were prompted at various times to complete an electronic diary (ED) with 41 items relating to mood and social interactions (M=68.33, SD=10.15 entries completed). A composite scale from the ED termed 'state hostility' was selected as the dependent variable for the current study, with 3 mood items (hostile, angry, and irritable) and 3 social interaction items (conflict, interference, and badly treated). Univariate analyses showed the Buss-Perry Aggression Questionnaire, CMHS and BDHI to predict state hostility (Beta=−.21; SE=.085; t=2.541; p<.012). A principal components factor analysis with varimax rotation on the BDHI and STAXI subscales of Anger-In (AI), Anger-Out, and Trait Anger yielded a 3 component factor structure, measuring cognitive hostility (e.g., high loadings on AI), behavioral hostility (e.g., high loadings on Verbal hostility), and affective hostility (e.g., Trait Anger). Univariate analyses showed all 3 factors to predict state hostility (Beta=−.21; SE=.085; t=2.541; p<.012; and Behavioral (Beta=−.37; SE=.037; t=2.14; p=.034). These findings suggest that all 3 factors of trait hostility have predictive validity.

Abstract 1500

THE EFFECTS OF DISTRACTION THROUGH THE SPEECH TASK

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In this study, the effects of distraction were examined, by using subjective reports of anxiety and subjective/objective evaluation about the speech performance, and by measuring autonomic responses, such as heart rate and skin conductance level, which were analyzed in each testing stage per 1 min. 26 participants (13 participants for each group) underwent five testing stages within a single experimental session: baseline (10 min), speech preparation (10 min), rest (10 min), speech (10 min), and recovery (30 min). After the baseline stage, participants were informed that they would be asked to give a speech during which they would be videotaped and that the topic of the speech was "I'm very interested in..." Then participants were given 10 min to prepare their speech. After that, participants were told to wait for 10 min for machines to be set up, which were for the purpose of recording participants' speech; this was the rest stage. In the rest stage, the puzzle task was given as distraction manipulation for the distraction group. On the other hand, for the control group, participants were asked not to do anything in particular. As we presented before, in the subjective anxiety and autonomic responses, there were significant differences between the distraction and the control group. Moreover, in heart rate, we found that the significant difference between two groups was shown in only 1 min after starting speech (p<.05) and that in the distraction group, there were no significant changes during the speech stages while in the control group gradually downregulated. In objective evaluation, although 4 participants were removed from analysis because of failure in recording, also significant the interaction (subjective/objective x groups; F(1, 20) = 4.44, p=.05) and this showed there was significant difference between subjective and objective evaluation in the control group (p<.05). According to these and other results, we discussed about the effect of distraction through the speech task.
Abstract 1758

MEASURING LIFE EVENT STRESS: LESS IS MORE
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Although life event checklists remain popular to assess life event stress exposure, some have argued that a life event count is insufficient to understand the impact of event stress on health and well-being, and that self-generated events and information about the duration and intensity of events should also be collected. The response burden associated with acquiring additional information about event stress is warranted if these measures provide information not available with solely an event count. In this study, we compared a simple count of checklist-endorse life events with measures of life event frequency (self-generated and checklist-prompted), duration, and intensity. A population-based sample of 50-67 yr-old Caucasian, African American, and Latino American men and women completed an event history calendar (EHC) in which they identified stressful events that had happened in the last 12 months, the month(s) during which they experienced the stress, and each event’s degree of stressfulness. They then completed a 51-item life event checklist and a traumatic events checklist. Endorsed events were summed to create a simple life event count, and any previously unidentified events were added to the EHC for assessment of frequency, duration, and intensity. Tests of convergent validity showed that the simple life event count was the only life event measure with acceptable associations with all criteria. For example, perceived stress was correlated with event intensity, $r=0.19$, $p=0.02$, and with simple event count, $r=0.17$, $p=0.05$; depressive symptoms were correlated with event duration and intensity, $r=0.16$. The simple event count was the most sensitive of the life event measures and is sufficient to detect relevant associations.

Abstract 1218

THE EFFECTS OF HABITUAL COFFEE INTAKE ON CIRCULATING VON WILLEBRAND FACTOR RESPONSES TO MENTAL STRESS
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Coffee is widely consumed in the Western diet, although its effects on health are conflicting. Recent research has documented an association between low grade inflammation and habitual coffee intake, which has implications for cardiovascular health. Coffee is thought to activate the stress axis, enhancing cardiovascular responsivity, although the effects of coffee intake on inflammatory responses to mental stress have not been examined. We therefore studied the relationship between coffee drinking habits and inflammatory responses to mental stress in 76 healthy, non-smoking men (mean age ± SD: 33.5 ± 8.3 yrs). Background dietary intake was assessed through a validated self-administered questionnaire. Following a baseline period, participants were required to complete a 3-min speech task followed by a 5-min mirror tracing task. Blood pressure (BP) and heart rate (HR) were monitored continuously using a Finapres BP device. Blood samples were drawn from the antecubital fossa during baseline and immediately post task for the assessment of von Willebrand factor (vWF) that was performed using a standard ELISA kit. Habitual coffee intake ranged from 0 to 4 cups per day. vWF was significantly elevated by 4.6% following the stress period [t (1,75) = 2.4, $p=0.02$] and there was significant cardiovascular activation during both tasks ($p<0.001$). Standard multiple linear regression analysis, adjusted for body mass index, level of the dependent variable, and dietary intake of tea, red wine, and supplements revealed that greater habitual coffee consumption was related to heightened HR (B=3.5, $p=0.005$) and vWF responses (B=2.6, $p=0.038$) to mental stress. Total caffeine intake was unrelated to stress responses suggesting that ingredients in coffee other than caffeine are responsible for our findings. Given that vWF is a risk marker for heart disease, moderate levels of habitual dietary coffee intake in combination with psychosocial stressors may be a significant risk to cardiovascular health.

Abstract 1225

INCREASED EMOTIONAL DISTRESS IN CARDIAC PATIENTS WITH A TYPE D PERSONALITY: THE INFLUENCE OF MARITAL STATUS
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Type D personality (TD), an emerging risk factor in cardiovascular disease (CVD), refers to the experience of increased negative emotions paired with the non-expression of these emotions. Little is known about the mechanisms responsible for the impact of TD on CVD morbidity and mortality. We examined whether marital status mediates the relationship between TD and emotional distress. Patients ($n=411$; 19% women, mean age = 60 (+/- 10.92) treated for acute myocardial infarction or cardiac arrhythmias completed the Type D Personality Scale (DS14) at baseline and the State-Trait Anxiety Inventory (State-Trait) and the Beck Depression Inventory at 2 months follow-up. Two months post-treatment, 145 (36%) patients reported increased levels of anxiety (State-Trait=39) and 94 (23%) increased levels of depressive symptoms (BDI=10). TD patients without a partner more often experienced anxiety (79% vs. 57%) and depressive symptoms (57% vs. 39%) compared to TD patients with a partner. Differences between groups were significant ($p<0.0001$). TD patients without a partner had a 10-fold elevated risk of symptoms of anxiety (OR:10.43; 95% CI: 2.83-38.47, $p<0.0001$) and a nearly 8-fold risk of depressive symptoms (OR:7.77; 95% CI:2.56-23.58, $p<0.0001$) compared to non-TD patients with a partner. In multivariate logistic regression analyses, these differences remained, adjusting for gender, age, education, smoking, treatment, and previous cardiac disease. These findings suggest that Type D patients without a partner are at significantly higher risk of cardiac-related morbidity.

Abstract 1229

DEPRESSION AND CARDIOVASCULAR MORBIDITY IN THE MEDICARE HEALTH OUTCOMES STUDY
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Purpose: Among elderly Medicare enrollees, one in five people with ischemic heart disease and one in four with congestive heart failure reports feeling "depressed or sad much of the past year." Depression has been shown to increase cardiovascular mortality, but a number of negative studies among the elderly point to the need for further study. No reports have examined the relationship between depression and cardiovascular morbidity in the Medicare Health Outcomes Study. Sample and Methods: In a sample of 177,760 Medicare enrollees from the 1998 Cohort I of the Health Outcomes Study, we examined whether various levels of self-reported depression are related to four specific cardiovascular conditions (chest pain at rest, myocardial infarction, congestive heart failure, and stroke), while controlling for demographics, physical and mental functioning, smoking, and diabetes. Results: Depression for two weeks or more in the past year was strongly related to chest pain at rest (Rel Risk=2.79, 95% CI, 2.74-2.84), myocardial infarction (RR=1.49, 1.45-1.52), congestive heart failure (RR=1.81, 1.77-1.86), and stroke (RR=1.78, 1.74-1.82). This pattern of significantly increased risks for all four cardiovascular conditions persisted when depression was reported as "depressed or sad much of the past year," or "depressed or sad most days during any two years of your life." Analyses of covariates (gender, age, physical and mental functioning, smoking status, and diabetes status) are pending. These findings support the need for careful screening for depression among the elderly with cardiovascular disease, and they point to the need for follow-up studies of this cohort to identify the factors that exacerbate or buffer the effects of depression on mortality among the elderly.

Abstract 1231

SOCIAL SUPPORT AND EJECTION FRACTION PREDICT CARDIOVASCULAR REACTIVITY TO MENTAL STRESS IN PATIENTS WITH IMPLANTED DEFIBRILLATORS
Christoph Herrmann-Lingen, Bernhard Lache, Psychosomatic Medicine, Philipps University, Marburg, Germany

Background: Excessive physiological reactions to mental stress predict disease outcomes in several patient groups, with social support buffering the stress response. In patients (pts) with severe cardiac disease, however, autonomic dysfunction may prevent even mild, adaptive reactions to stressors, favoring the onset of malignant ventricular arrhythmias. Objective: To investigate cardiovascular effects of mental stress testing in cardiac pts with implanted defibrillators (ICD) and to identify characteristics

A-49
of pts who do not react physiologically to established mental stressors. Method: Self-rated anxiety, depression, and social support were assessed in 55 ICD pts (78% men, age 61±12 y, 50% with ejection fraction [LVEF] < 40%). Pts underwent mental arithmetic and anger recall tests while ECG, non-invasive beat-to-blood pressure and impedance cardiogram were continuously monitored.

Results: Autoregression showed significant stress-induced increases in heart rate, blood pressure and cardiac output in most pts, but 18% showed no consistent activation pattern. Pts who did not increase cardiac activation during stress reported similar affective symptoms and subjective stress levels as reagible pts. They had, however, more severe heart disease and reported less social support than pts with typical stress response. In logistic regression, as reagible pts. They had, however, more severe heart disease and reported less social support than pts with typical stress response. In logistic regression, reduced LVEF (multivar. OR=3.8 [1.1-13.3] for one-point increase on a 4- point severity scale; p=0.035) and low social support (multivar. OR=4.1 [1.3-12.7] for z-standardized scores; p=0.015) were both independently related to suppressed stress response.

Conclusion: Stress reactivity is impaired in pts with severe heart disease. In these pts social support seems to be associated with relatively higher stress response, suggesting that social support may not only buffer excessive stress reactivity but also help preserve adaptive reactivity in severely ill cardiac pts.

Abstract 1252
SPECIFIC COPING STYLES PREDICT CARDIOVASCULAR REACTIVITY IN COMMON LABORATORY STRESSORS
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Cardiovascular reactivity has been found to be important in understanding the development of cardiovascular illnesses such as hypertension later in life. How an individual appraises and reacts to a stressor can affect the physiological and psychological impact that stressor has on the individual. In order to better understand how coping may influence reactivity 44 participants completed two measures of coping strategies (Ways of Coping Questionnaire and COPE) before participating in two standard laboratory stressors (mirror tracing and mental arithmetic). Reactivity was measured as change scores from baseline to task conditions. The COPE subscale "focus on and venting of emotions" was found to be related to systolic blood pressure responses (r=.43 p<.01), suggesting that individuals who strongly experience emotional distress and readily express their emotions experience greater physiological arousal. This may be due to the fact that participants were not given the opportunity to express their emotions during the laboratory stressor tasks. The Ways of Coping Questionnaire subscale "accepting responsibility" was found to be related to diastolic blood pressure reactivity (r=.43 p<.01), suggesting that individuals who see themselves as the impetus of their problems tend to have a higher constant pressure on their blood vessels during stress.

Abstract 1190
FEASIBILITY OF RECRUITING DEPRESSED PATIENTS WITH CORONARY ARTERY DISEASE FOR A RANDOMIZED PSYCHOTHERAPY INTERVENTION TRIAL
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About 50% of all depressed CAD patients can be classified as Type D personality. Because of its nature as a global, long-standing pattern of negative affectivity and social inhibition, psychodynamic psychotherapy could especially be suitable for treatment. The aim of this study was to explore numbers of eligible patients for a planned randomized trial on psychodynamic psychotherapy in depressed CAD patients, stratified for the Type D pattern. Consecutive patients hospitalized for CAD in 9 cardiological departments were checked for inclusion criteria, i.e. recent coronary angiograms, no severe heart failure, no severe medical or psychiatric comorbidity and sufficient knowledge of the German language. Eligible patients were asked to complete the Hospital Anxiety and Depression Scale (HADS), the 14-item Type D Scale (DS14) and three items on their willingness to participate in a trial. A total of 831 patients with CAD were identified. Of these, 504 (60.6%; 79% men, age 65±11 y) fulfilled the inclusion criteria and accepted to participate in the survey. Of the 129 patients (25.6%) scoring ≥8 on the HADS, 74% showed definite and 14% possible interest in a psychotherapy intervention. Forty percent stated that they would definitely and 33% they would possibly participate in such an intervention. Twenty-five percent stated they would definitely and another 36% they would possibly participate in a randomized psychotherapy trial. Of those who were depressed and at least possibly willing to participate in the randomized trial (9.4% of 831 patients), 67% showed the Type D pattern.

These findings confirm prevalence data from previous research and document high acceptance rates for psychotherapy in depressed CAD patients with the Type D pattern.

Abstract 1192
ASSOCIATION OF PSYCHOSOCIAL FACTORS WITH A NEW RISK CHART FOR THE PRIMARY PREVENTION OF CARDIOVASCULAR DISEASES OF THE EUROPEAN SOCIETY OF CARDIOLOGY
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Recently, the European Society of Cardiology has published a new chart for the estimation of total risk for the development of fatal cardiovascular events within the next 10 years (SCORE). SCORE, a risk chart for primary prevention, includes age, sex, systolic blood pressure, total cholesterol and smoking status, but no psychosocial risk factors. Aim of the current study was to explore the association of total risk with established psychosocial risk factors in a large sample of working people.

Employees of the Ford Motor Company, Cologne, Germany, without clinical evidence for any manifestation of cardiovascular disorders were investigated including a blood sample for total cholesterol, standardized assessment of blood pressure, and a questionnaire with single items on depression, social isolation, work strain and partnership problems, resp. A total of 3,422 employees was investigated (age 43.8±9.9 y; %: men 86%; German 87.2, partnership 84.9; workers 38.2, office clerks 42.9, senior executives 16.3). Prevalence (%) of depressive symptoms was 13.5, lack of social support 6.1, job strain 3.4, and problems with partner 4.5, resp. Depressive symptoms (p=0.012) and living alone (p=0.001) were associated with higher total risk, but only in subjects older than 50 y (p=0.014 and p<0.001). Lack of social support (p=0.001) was related to higher risk only in subjects younger than 50 y (p<0.001). We found significant associations of some established psychosocial risk factors with the SCORE chart, but, significant interactions with age suggest age-dependent effects of psychosocial risk factors on total risk in the primary prevention of cardiovascular diseases.

Abstract 1277
CHRONIC STRESS, ACUTE STRESS, AND PRECLINICAL MARKERS OF CARDIOVASCULAR DISEASE IN FEMALE ADOLESCENTS
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Though research indicates that atherosclerosis begins developing in the early decades of life, little is known about the factors that contribute to this phenomenon. Genetic and lifestyle variables are likely to be very important. However, they do not explain all of the variance in early plaque growth. The goal of this project was to determine whether stressful life experiences promote biological alterations that foster early cardiovascular disease (CVD). We expected that chronic and acute stressors would have different biological consequences, and that their co-occurrence would be associated with the poorest outcomes. One hundred physically healthy females between the ages of 15 and 19 were enrolled. The presence of acute and chronic stressors was assessed through a structured interview. For 2 days following the session, participants collected saliva 6 times daily for cortisol assessment. Finally, a blood sample was drawn to measure C-reactive protein (CRP), insulin and glucose, and mRNA for the glucocorticoid receptor in leukocytes. Analyses controlled for age, ethnicity, and BMI. The simple presence of an acute or chronic stressor was not reliably associated with biological outcomes (ps > .05). However, when young women were exposed to an acute event in the
A systematic review examined whether selective serotonin reuptake inhibitor (SSRI) antidepressants were associated with an increased or decreased risk of cardiovascular adverse events (CAEs) in randomized controlled trials (RCTs) involving patients with coronary artery disease, diabetes mellitus, stroke, geriatric depression, nicotine dependence, alcoholism, HIV infection, and obesity. We identified RCTs of SSRIs indexed on Medline between 1967 and May 2005, searched the Cochrane Collaboration register of RCTs (Nov. 2004) and reviewed the bibliographies of 3 systematic reviews. Serious CAEs were classified as death from a cardiovascular event, heart failure, stroke, transient ischemic attack, and myocardial infarction. Non-serious CAEs were defined as palpitations, chest pain, angina, arrhythmia, hypertension, hypotension, syncope, and unspecified cardiovascular or neurological events. Aggregate rates of specific CAE types were calculated in three separate treatment groups: SSRIs, tricyclic antidepressants (TCAs) and other active treatments. Odds ratios (ORs) and 95% confidence intervals were calculated using Petos methods. An OR greater than 1 suggests greater risk in the SSRI group while an OR less than 1 suggests greater risk in the non-SSRI group. An OR of 0.69 (95% CI: 0.37, 1.21) suggests that SSRIs compared with placebo were not associated with greater risk of serious CAEs, and may have conferred reduced risk. For non-serious CAEs, the OR of SSRIs compared with placebo was 1.18 (95% CI: 0.90, 1.57), also suggesting no increased risk. Compared to TCAs, SSRIs had significantly less risk of non-serious CAEs with OR=0.46 (95% CI: 0.24, 0.86). ORs for other comparisons were based on few studies and had wide confidence intervals, making estimation of risk inconclusive. A limitation of this analysis is that only 46% of trials reported the presence or absence of CAEs, suggesting that future RCTs should improve assessment and reporting of adverse events.

Abstract 1138

DETERMINANTS OF QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE

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To determine the impact of clinical and psychosocial factors on quality of life (QoL) in patients with chronic heart failure (CHF), we developed structural equation models. In 199 patients with CHF, we analyzed NYHA functional class, LVEF, 6-minute-walktest, peakVO2, QoL (SF-36), anxiety and depression (HADS). Two recursively specified linear structural equation models with manifest variables were analyzed for explaining variance of QoL. Model I postulates a negative influence of physical capacity via an increased psychosocial stress on QoL. Model II postulates a negative influence of psychosocial variables via a worse clinical state on QoL.

In both linear structural equation models NYHA functional class, 6-minute-walktest, anxiety and depression directly influence QoL. Only model II showed a good fit (probability CHI-Square=0.75), whereas model I was discarded concerning its fit to the data (probability CHI-Square=0.007). Model II explained 55% of variance of QoL. Moreover, in this model a significant influence of depression via the 6-minute-walktest (ß=0.19) and NYHA functional class (ß=0.22) on QoL could be shown.

So, while an influence of physical capacity via the psychological state on QoL could not be confirmed, we could show that depression leads to a decreased QoL directly and via a reduced physical capacity.

patient data (*=mean±SD):

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<th>age* (years)</th>
<th>NYHA functional class (%):</th>
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<th>SF-36 sum score* (%)</th>
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Abstract 1241

A SYSTEMATIC REVIEW OF CARDIOVASCULAR ADVERSE EVENTS IN SSRI ANTIDEPRESSANT TRIALS INVOLVING HIGH RISK PATIENTS

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Abstract 1024

CLINICAL VS. EPIDEMIOLOGICAL INFERENCE OF CAUSALITY & THE 50%-90% CONUNDRUM

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PURPOSE: Episodically clinical cardiologists become agitated over the observation of epidemiologists that traditional risk factors can only account for 50% of observed cases of CHD, while the clinician finds 90% of his/her patients to have one or more risk factors (Greenland et al., 2003; Khot et al., 2002; Magnus & Beaghehole, 2001).

METHODS: Prevalence of one or more traditional risk factors (body mass index, early family history of CHD, hypercholesterolemia, hypertension, packyears of smoking, diabetes, sex, current smoking, years of education and hours of exercise per week) in 133 patients with documented CHD was compared with mathematical variance accounted for (i.e., cumulative R-squared from a regression analysis) in Age at Initial Diagnosis (AAID).

RESULTS: All but one (< 1%) of the sample had one or more risk factors. On the other hand, only 19.6% of variance in AAID was attributable to the risk factors.

CONCLUSIONS: The presence of one or more risk factors in a patient with CHD cannot be assumed to account (or to account entirely) for the CHD, nor explain much of the variability in AAID. The clinician's failure to see the larger picture is due to his/her focus on the single case without benefit of matched controls from the larger population. The search for other risk factors should continue.

References:

Abstract 1027

PSYCHOSOCIAL OUTCOMES IN A SECONDARY PREVENTION SETTING: ROLE OF ETHNICITY AND SOCIOECONOMIC STATUS

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Indicators of socioeconomic status (SES) such as income, education, and employment are key determinants of cardiovascular health, access to cardiac services, and psychosocial adjustment. We examined whether quality of life (QOL) and cardiac anxiety differ as a function of SES and ethnicity in patients at risk for a primary or secondary coronary event. Patients (N=71; 87% male) who were referred to a full-day cardiac risk reduction education program enrolled in this study. Patients completed the Cardiac Anxiety Questionnaire (CAQ), Short-Form 36 Health Survey (Mental and Physical Component Summary: MCS and PCS), and measures of SES and ethnicity. Compared to Canadian-born participants, participants born outside of Canada reported higher CAQ (t[64.13]=-2.02, p=0.048) and lower MCS (t[64.58]=2.10, p=0.039) scores. Participants who did not define themselves as Canadian were more likely to be of lower SES (t[65.77]=1.79, p=0.078) than patients who were self-defined Canadians. CAQ [F(2,61)=5.58, p=0.01] and MCS [F(2,61)=10.84, p<0.01] scores differed by income, where individuals who earned less than CDN$40,000 per year reported greater cardiac anxiety and poorer mental health.
well-being than those with higher incomes. The relationship between income and PCS scores approached significance [F(2,61)=2.72, p=0.074]. Sex, marital status, education, prior myocardial infarction, and medication use were unrelated to cardiac anxiety or QoL (all p>10). Our findings indicate that lower financial resources and a non-Canadian ethnic affiliation are associated with poorer QoL and higher cardiac anxiety. A better understanding of psychosocial outcomes in apparently vulnerable populations is needed to aid in the development of rehabilitation programs that are socially and culturally sensitive.

Abstract 1034

DEMOGRAPHIC AND PSYCHOSOCIAL FACTORS AFFECT TREATMENT EXPECTATIONS IN A CARDIAC POPULATION

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Past research has shown treatment expectancies (TE) to be related to medical and psychological treatment outcomes. This study investigated whether some of the demographic and psychological factors associated with treatment outcomes in past studies are themselves associated with TE. We examined whether demographic (age, gender, education) and psychological factors (anxiety and depression, anxiety sensitivity and optimism, measured by the Hospital Anxiety and Depression Scale; Anxiety Sensitivity Index; Life Orientation Test) affected patients' expectancies regarding the likelihood that the implantable cardioverter defibrillator (ICD) will protect them from a malignant arrhythmia and how likely they were to experience symptoms of concern when the device was comprised of 122 patients receiving their first ICD for secondary prevention of sudden cardiac death, enrolled in a randomized controlled trial of a psychosocial intervention. Participants (78% male; 66% participation rate) had a mean age of 60.6±13.9 years and 48% had post-secondary education. Better ICD TE were related to higher education (X1=5.08, p<0.03), lower anxiety sensitivity (t(120.4)=3.49, p<0.01), and higher optimism (t(116.1)=2.81, p<0.01). After controlling for education, anxiety sensitivity (OR=2.34; 95%CI: 1.2-8.0), and type D personality (OR = 3.0; 95%CI: 1.1-8.1).

Abstract 1048

THE ADVERSE EFFECT OF TYPE D PERSONALITY ON FAILURE TO CONSULT FOR CARDIAC SYMPTOMS IN CHF

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Chronic heart failure (CHF) is a medical condition that has been associated with high mortality and morbidity rates, and impaired quality of life. Aspects of self-management, e.g. adequate consultation behavior, form an integral part of keeping the progression of CHF at bay. Patients with a Type D personality, defined as being high on both social inhibition and negative affectivity, may delay consultation of medical services, despite aggravation of symptoms. Therefore, we examined prospectively whether patients with a Type D personality are at risk for inadequate self-management and failure to consult for cardiac symptoms. 178 patients (21% women; mean 67±8 years) with systolic heart failure completed the Type D Personality Scale (DS14) at baseline, and the European Heart Failure Self-Care Behaviour Scale, (self-management) and Health Complaints Scale (cardiac symptoms) at 2-months follow-up. Medical information was obtained from the patients' records or the treating cardiologist. We found consultation behavior to be a specific facet of self-management. Type D patients experienced more cardiac symptoms (OR=10.5;95%CI:3.6-30.8) and worried more about these symptoms (OR=5.1;95%CI:2.1-12.5) as compared to non-Type Ds at two-months follow-up. However, despite their high levels of cardiac symptoms and worrying, Type D patients were less likely to report their symptoms to medical services as compared to non-Type Ds (OR= 3.4;95%CI:1.4-8.2). These findings show that Type D patients are at increased risk of failing to consult their cardiologist or nurse in case of manifest cardiac symptoms, despite being anxious about these symptoms. Poor self-management, in particular inadequate consultation behavior, in Type D patients is a potential behavioral pathway that may explain their increased risk for adverse clinical outcome. However, this needs to be confirmed in a prospective study of CHF patients looking at hard medical events.

Abstract 1054

PREVALENCE OF PTSD AND PREDICTORS OF POSTTRAUMATIC STRESS IN FIRST-TIME MYOCARDIAL INFARCTION PATIENTS

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Patients may experience a myocardial infarction (MI) as a life-threatening event that may lead to posttraumatic stress disorder (PTSD). We investigated the prevalence of DSM-IV PTSD and characteristics of MI perception as potential predictors of posttraumatic stress in 124 consecutive patients who had experienced a first-time MI within the previous year (108 men, 16 women, mean age 60±12 years). Patients completed the Posttraumatic Diagnostic Scale (PDS) after a median of 36 days post-MI (range 14-365 days). Higher MI perception (defined as emotional reaction score >0-10) was associated with more cardiac symptoms (OR = 6.5; 95%CI: 1.7-25.2), helplessness (3.0;95%, 3.4), and pain (5.8±3.0) they experienced when the infarction occurred. 22 patients (18%) had at least mild symptoms (i.e. >14 PDS points) and were invited for a clinical interview using the Clinician-Administered PTSD Scale (CAPS). Of the 20 patients who consented to undergo the interview, 6 patients (5%) had full-blown PTSD and another 6 patients (5%) had subsyndromal PTSD (i.e. symptoms without functioning impairment). Some predictors of low income (e.g. hyperarousal). In all patients, PDS scores correlated with fear of death (r=.48, p<.01), feelings of helplessness (r=.60, p<.01), and pain intensity (r=.29, p=.01) but not significantly so with age, gender, number of days since the MI, and both highest level of creatinine kinase and left ventricular ejection fraction during hospitalization. In stepwise linear regression analysis, helplessness (R2=.351, standardized beta-coefficient=.59, p<.001) and pain intensity (r=.29, p=.01) but not significantly so with age, gender, number of days since the MI, and both highest level of creatinine kinase and left ventricular ejection fraction during hospitalization. In stepwise linear regression analysis, helplessness (R2=.351, standardized beta-coefficient=.59, p<.001) and pain intensity (R2=.29, beta=.17, p=.022) were independent predictors of PDS scores explaining a total of 38% of the variance. In first-time MI patients, the total prevalence of full blown and subthreshold PTSD was 10% as per a clinical interview. Much of the variance in posttraumatic stress severity could be explained by feelings of helplessness perceived during the infarction, whereas objective measures of myocardial damage and functioning did not contribute to posttraumatic stress. Clinical studies seem warranted to investigate whether targeting feelings of helplessness on admission and rigorous control of infarction pain may decrease posttraumatic stress in post-MI patients.

Abstract 1193

CHRONIC AND EPISODIC PSYCHOLOGICAL DETERMINANTS OF QUALITY OF LIFE IN CHRONIC HEART FAILURE

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OBJECTIVES: To determine the relative importance of psychological determinants of quality of life (QoL) in chronic heart failure (CHF) as compared with other predictors of CHF severity and functional status. METHODS: One hundred twenty-five patients completed a questionnaire both at baseline and at a 6-month follow-up. The following psychological determinants were included: vital exhaustion (MQ) and depressive symptoms (BDI) as episodic determinants, and type D personality as a chronic determinant (DS14). The MLWHFQ was used as QoL-measure. Left ventricle ejection fraction and the six-minute walking test were used to assess CHF severity and functional status. RESULTS: Remarkably, multivariate analyses revealed that QoL at follow-up wasn't predicted by any of the CHF characteristics. However, QoL was predicted by vital exhaustion (OR = 6.5; 95%CI: 1.7-25.2), depressive symptoms (OR = 4.5; 95%CI: 1.9-11.1), and type D personality (OR = 4.0; 95%CI: 1.6-10.4). Also, after controlling for MQ at baseline, QoL at follow-up was predicted by vital exhaustion (OR = 6.2; 95%CI: 1.5-26.1), depressive symptoms (OR = 3.1; 95%CI: 1.2-8.0), and type D personality (OR = 3.0; 95%CI: 1.1-8.1). Accordingly, 45% (49/109) of the vitally exhausted, 60% (34/57) of the vitally non-exhausted, and 26% (22/85) of the non-exhausted patients had at least mild symptoms (i.e. >14 PDS points) and were invited for a clinical interview using the Clinician-Administered PTSD Scale (CAPS). Of the 20 patients who consented to undergo the interview, 6 patients (5%) had full-blown PTSD and another 6 patients (5%) had subsyndromal PTSD (i.e. symptoms without functioning impairment). Some predictors of low income (e.g. hyperarousal). In all patients, PDS scores correlated with fear of death (r=.48, p<.01), feelings of helplessness (r=.60, p<.01), and pain intensity (r=.29, p=.01) but not significantly so with age, gender, number of days since the MI, and both highest level of creatinine kinase and left ventricular ejection fraction during hospitalization. In stepwise linear regression analysis, helplessness (R2=.351, standardized beta-coefficient=.59, p<.001) and pain intensity (R2=.29, beta=.17, p=.022) were independent predictors of PDS scores explaining a total of 38% of the variance. In first-time MI patients, the total prevalence of full blown and subthreshold PTSD was 10% as per a clinical interview. Much of the variance in posttraumatic stress severity could be explained by feelings of helplessness perceived during the infarction, whereas objective measures of myocardial damage and functioning did not contribute to posttraumatic stress. Clinical studies seem warranted to investigate whether targeting feelings of helplessness on admission and rigorous control of infarction pain may decrease posttraumatic stress in post-MI patients.
SEX DIFFERENCES IN THE PREVALENCE OF PSYCHIATRIC DISORDERS IN 2262 PATIENTS REFERRED FOR NUCLEAR STRESS TESTING

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Research has documented a link between psychiatric disorders and worse cardiac outcome in patients with coronary artery disease. In general, psychiatric disorders appear to be more common in women than in men. However, few studies have evaluated sex differences in the prevalence of psychiatric disorders in patients undergoing diagnostic stress testing. The present study evaluated the prevalence of mood and anxiety disorders in 736 women and 1526 men referred for exercise stress single photon emission computed tomography (SPECT) test. All patients underwent a brief, structured psychiatric interview (PRIME-MD) on the day of their exercise stress test (treadmill, Bruce protocol). A total of 44% of women and 31% of men met criteria for one or more psychiatric disorder (chi square=36.6, p<.001); 33% of women vs. 24% of men met criteria for a mood disorder (chi square=23.7, p<.001); 27% of women vs. 17% of men met criteria for an anxiety disorder (chi square=30.5, p<.001). Compared to prevalence rates in the general population (4% for major depressive disorder; 10% for anxiety disorders), results indicate psychiatric disorders are much more prevalent in patients presenting for exercise stress testing. Moreover, rates of psychiatric disorders are nearly 50% higher in women than in men. Given research linking psychiatric morbidity to worse cardiac outcome, assessment of psychiatric disorders during cardiac investigation, and subsequent treatment of these disorders, may improve cardiac outcome. This strategy may be especially warranted in women.

Abstract 1144

EFFECTS OF GENDER, AGE, AND MOOD STATE ON EXPECTATION OF RESTENOSIS AFTER CORONARY BYPASS SURGERY

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Patients’ health perceptions and expectations may influence recovery from illness and adherence to medical recommendations. We examined the effects of gender, age, and mood state on expectation of restenosis after coronary artery bypass graft (CABG) surgery. The sample included 123 patients (61 F, 62 M, age 60±10 years) recruited within one year after surgery and enrolled in a depression treatment trial. At baseline (prior to random assignment), participants were administered the Brief Depression Scale, Hopelessness scales, and were given a questionnaire that assessed whether they expected to have additional coronary artery blockages in the future, as well as the (non-mutually-exclusive) factors that were likely to cause this to happen. Approximately 72% expected restenosis. Those who did were significantly younger and more depressed, anxious, and hopeless than those who did not expect restenosis (p<.05). Gender had no effect on expectation of restenosis. Among patients who expected restenosis, 95% believed that it would be caused by biological factors (high cholesterol, diabetes, etc.); 70% cited behavioral factors (e.g., smoking, lack of exercise, etc.); and 63% cited emotional factors (e.g., depression, anxiety, etc.) Patients who cited biological factors were significantly more anxious than those who did not (p<.05). Those who cited emotional factors were significantly younger and more depressed, anxious, and hopeless (p<.05). Neither demographic factors nor mood states differed between patients who did or did not believe that their own health-related behaviors would contribute to restenosis. These findings suggest that age and current mood state affect both expectations about whether restenosis will occur after CABG surgery and beliefs about the factors that are likely to cause it.

Abstract 1163

ASSOCIATIONS BETWEEN MOOD AND ANXIETY DISORDERS AND ENDOTHELIAL FUNCTION IN PATIENTS UNDERGOING MYOCARDIAL PERFUSION IMAGING: A PILOT STUDY

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Both mood (e.g., major depressive disorder) and anxiety (e.g., panic disorder) disorders have been linked to increased cardiovascular disease (CVD) morbidity and mortality. However, the mechanisms linking these chronic negative mood states to increased CVD morbidity remain poorly understood. Impaired endothelial function (EF) is an early marker of atherosclerosis, is highly correlated with other indices of CVD (e.g., stenosis), and is predictive of CVD events. There is preliminary data suggesting an link between psychological factors (e.g., anxiety and depression) and impaired EF. However, the extent to which EF is impaired in patients with mood and anxiety disorders has not been explored. The present study assessed EF using a nuclear medicine variation of the well-established flow-mediated dilatation technique in 45 patients (37 men, mean age = 64 yrs) referred for myocardial perfusion single photon emission computed tomography (SPECT) stress testing. The rate of uptake ratio (RUR) between hyperemic and non-hyperemic arms was used to measure EF. Patients underwent sociodemographic and medical history interviews, followed by a brief, structured psychiatric interview (PRIME-MD) the day prior to undergoing the EF test (hyperemic challenge). Psychiatric interview results classified patients as having a mood disorder only (MD, n=4), anxiety disorder only (AD, n=5), a mood and anxiety disorder (MAD, n=2), or no disorder (ND, n=34). Results of GLM analyses controlling for age and sex indicated a trend for a main effect of depression (F (1,43) = 3.23, p=.08) for EF in patients with an AD had the highest RUR (5.03) compared to patients with a MD (RUR = 3.85), MAD (RUR = 3.44), or ND (3.49). Though preliminary, findings suggest AD patients undergoing SPECT stress testing have the highest endothelial reactivity to hyperemia compared to patients with MD, MAD, or ND. Additional research is needed to confirm these findings.

Abstract 1170

THE IMPACT OF ANXIETY DISORDERS ON EXERCISE STRESS TEST PERFORMANCE: ARE THEY AS IMPORTANT AS DEPRESSION?

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We have previously reported that patients with major depressive disorder (MDD) exhibit poor exercise stress test performance by achieving lower % of predicted heart rates (%MPHR), exercise duration, and max RUR compared to non-MDD patients. We also reported that electrocardiographic (ECG) measures are less sensitive than single-photon-emission-computed-tomography (SPECT) for the assessment of ischemia in MDD patients, possibly due to poorer exercise performance. However, the extent patients with anxiety disorders may also exhibit poorer exercise performance has not been evaluated. This study assessed exercise stress test performance (including exercise duration, max %MPHR) in patients with anxiety vs mood disorders. 2279 patients underwent treadmill testing with continuous ECG assessments, followed by SPECT imaging. Patients then underwent a psychiatric interview (PRIME-MD) to assess anxiety and mood disorders. Results indicated no evidence of reduced exercise performance on any exercise parameter in patients with anxiety disorders (F (1,2276) = 2.95; p>.05) after controlling for comorbid mood disorders, age, and sex. However, we did find independent main effects for mood disorders on exercise duration (F (1,2276) = 5.45) and %MPHR (F (1,2276) = 8.19) indicating poorer exercise performance in mood
disorder patients, independent of comorbid anxiety disorders, age, and sex (p<.01). Though ECG measures were less sensitive relative to SPECT measures of ischemia in mood disorder patients (F=4.09, p=.05), there were no differences between measures in anxiety disorder patients (F=2.39, p=.12). Results suggest that the impact of psychiatric comorbidity on exercise performance may be limited to or stronger in patients with mood disorders (who may be more fatigued and lack the motivation to exercise) than in patients with anxiety disorders.

Abstract 1184

EVIDENCE FOR ENDOTHELIAL DYSFUNCTION IN POSTTRAUMATIC STRESS DISORDER
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Posttraumatic stress disorder (PTSD) confers an increased risk of cardiovascular diseases though the psychobiological mechanisms involved are elusive. We hypothesized that categorical diagnosis of PTSD and severity of PTSD symptom clusters (i.e. re-experiencing, avoidance, arousal, and overall score) would be associated with markers of endothelial dysfunction that occurs early in the course of atherosclerosis. We measured plasma concentration of soluble tissue factor (sTF), von Willebrand factor antigen (VWF:Ag), and soluble intercellular-adhesion molecule-1 (sICAM-1) in 14 otherwise healthy patients with a chronic PTSD and in 14 age- and gender-matched non-PTSD controls. Patients with PTSD had higher sTF than controls (median/inter-quartile range 163/142-256 pg/ml vs. 128/111-145 pg/ml; p=.016) with this difference becoming insignificant when controlling for anxiety and depression. Only plasma sTF was correlated with sICAM-1 in PTSD patients. In sum, the categorical diagnosis of PTSD was not independently associated with markers of endothelial dysfunction, but PTSD symptom clusters and PTSD severity showed a continuous relationship with sTF in PTSD patients compared to controls and with VWF:Ag in all subjects. The findings suggest one mechanism by which posttraumatic stress could contribute to atherosclerosis and cardiovascular diseases.

Abstract 1185

THE CYTOKINE PROFILE IN POSTTRAUMATIC STRESS DISORDER SUGGESTS A LOW-GRADE SYSTEMIC PROINFAMMATORY STATE
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After exposure to a trauma, a substantial proportion of subjects will develop post-traumatic stress disorder (PTSD). PTSD may increase cardiovascular risk but the psychophysiological mechanisms involved are elusive. We hypothesized that circulating levels of markers of systemic inflammatory activity would be associated with PTSD. We measured plasma levels of proinflammatory C-reactive protein (CRP), interleukin (IL)-1beta, IL-6, and IL-10 in 14 patients with PTSD and in 14 age- and gender-matched non-PTSD controls. TNF-alpha was higher in patients than in controls (p=.050). Also, there was a statistical trend towards higher IL-1beta (p=.07) and lower IL-4 (p=.09) in patients than in controls. Controlling for traditional cardiovascular risk factors, group differences were significant for IL-4 (p=.023), a statistical trend for TNF-alpha (p=.060), and insignificant for IL-1beta, respectively. There was a significant interaction between PTSD diagnosis and the total symptom score of the Clinician Administered PTSD Scale (CAPS) for both IL-1beta (R2=.181, p=.024) and TNF-alpha (R2=.172, p=.028) independent of covariates. CAPS total symptom score predicted IL-4 independent of PTSD diagnosis (R2=.123, p=.050). In general, symptom clusters of trauma re-experiencing and avoidance showed associations with TNF-alpha and IL-1beta, and symptom cluster of arousal related to TNF-alpha and IL-4. In contrast, CRP, IL-6, and IL-10 were not significantly different between groups and not predicted by PTSD symptom clusters. The findings suggest that PTSD patients showed a low-grade systemic proinflammatory state, which, moreover, was related to PTSD severity. This suggests one mechanism by which PTSD could contribute to atherosclerosis and cardiovascular diseases.

Abstract 1275

EFFECTS OF ACUTE MENTAL STRESS ON PLASMA VOLUME IN PATIENTS WITH HEART FAILURE
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Acute psychological stress has been shown to trigger cardiovascular events. However, the exact mechanism by which this occurs is unclear. Previous research has suggested that stress-induced changes in plasma volume (PVOL) may be one potential pathway. To date there are no known studies that have assessed this phenomenon in patients with heart failure, a population who, in general, have problems with fluid control. Thirty seven patients with heart failure (M(SD) age = 55(15), left ventricular ejection fraction = 30(11), 68% male, 49% Caucasian) underwent 2 acute mental stress tasks. Following a 20 minute rest period and a 3 minute standard mirror trace task (MT) and a 3 minute public speech task (SP), which included an additional 2 minute preparation time, the tasks were administered in random order. Prior to the baseline period, an indwelling catheter was placed in an antecubital vein of the patients non-dominant arm. Blood was withdrawn using a Cored pump during the last 3 minutes of the rest period and during the stress tasks. PVOL was calculated using the Dill and Costill equation. Hematocrit and hemoglobin was obtained from a standard hospital full blood count analysis.

When controlling for tasks order, general linear model analyses revealed a main effect of task on PVOL (F=3.54, p=.041). Post-hoc analyses revealed that MT significantly reduced PVOL compared to baseline (M(SD) = -4.83 (13.84)% p=.044), but SP did not significantly reduce PVOL (+2.38 (13.88)% p=.304). In a partial correlation, controlling for order, PVOL change to MT was significantly related to PVOL change to SP (r=.39; p<.05). These findings suggest that acute mental stress reduces PVOL in patients with heart failure. However, there seemed to be a difference between stress tasks, as MT induced a significant drop whereas SP did not. Further research is needed to address the mechanisms of these changes and the impact that such changes have on future outcomes.

Abstract 1091

DO MEN AND WOMEN DIFFER ON MEASURES OF PSYCHOLOGICAL STRESS INDUCED ISCHEMIA?
Kaki M. York, Qin Li, Hai Hong Li, Roger Fillingim, Dorian Lucey, Melinda Bestland, Gainesville, FL, David S. Sheps, Medicine, University of Florida/North Florida South Georgia FA, Gainesville, FL

Acute psychological stress has been shown to cause transient myocardial ischemia in some people with coronary artery disease (CAD) but little is known about the effect of psychological stress on ischemia in women. Previous studies had relatively few women or required a positive exercise stress test. The goal of this study was to consider the effects of gender on ischemia in a larger sample, with broadly defined CAD. This study included 114 people (44 women,70 men). Participants had a mean age of 64 years and a documented diagnosis of CAD (positive stress test, abnormal catheterization even with minimal disease, or previous myocardial infarction). The majority of participants had no exercise induced ischemia in stress tasks, as MT induced a significant drop whereas SP did not. Further research is needed to address the mechanisms of these changes and the impact that such changes have on future outcomes.

PSYCHOLOGICAL STRESS INDUCED ISCHEMIA?
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SHORT-TERM COGNITIVE-BEHAVIORAL STRESS MANAGEMENT PROGRAM EFFICACY IN CARDIAC PATIENTS
Margarita Beresnevaite, Cardiology, Rasa Rauguliene, Kaunas University of Medicine Institute of Cardiolog, Kaunas, Lithuania

In order to research the effects on mental disorders and psychological stress of a 12-wk cognitive-behavioral stress management program there were investigated 22 pts following coronary angioplasty, in comparing with 33 pts in control group. All subjects were diagnosed according to the DSM-IV and SCL-90-R before therapy, at 6 and 12 months after coronary angioplasty. There were 11 pts (50%) in therapy group and 13 pts (39%) in control group with DSM-IV diagnoses. The SCL-90-R scores of depression, anxiety, somatization, Global Severity Index (GSI) scales were the largest ones. At 6 and 12 months after angioplasty the number of pts with DSM-IV diagnoses decreased significantly [n=11(50%) and n=3(14%), p<0.01]. Significant reductions in anxiety [62.5T+/-10.3 and 55.6T+/-11.6, p<0.05], somatization [65.5T+/-8.5 and 59.5+/-11.2, p<0.05] and GSI [64.4+/-9.2 and 58.7+/-10.2, p<0.05] were observed at 6 months after angioplasty. However the changes in anxiety and GSI scores lost the significance at 12 months after angioplasty. We didn't observe the positive dynamics in the control group. There were no cardiac events over 7-12 months after angioplasty in both groups, therefore the therapy influence on the course of CHD was evaluated. The implication of this study is that a short-term cognitive-behavioral stress management program should be recommended for the reducing the number of DSM-IV diagnoses and for the improving in the anxiety, somatization, distress symptoms for the patients having undergone coronary angioplasty. The findings show also that repeated therapy is needed during 7-12 months after angioplasty in order to stabilize the improvement in psychological status. The further research is needed for the estimating of therapy efficacy on the course of the disease.

Abstract 1095
FURTHER FINDINGS ON A SOCIAL REGULATION MODEL OF HOSTILITY
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Models of the effects of hostility on health tend to focus on its physiological correlates. Alternatively, previous research suggests that hostility may be associated with poor health through social regulation mechanisms. Hostile individuals may be at risk because their behavior promotes agonistic exchanges. Non-hostile individuals may be protected because their behavior mitigates counter-aggression. In the present study, we examined whether naive observers would distinguish social and emotional dimensions of hostile and non-hostile individuals' behaviour. Fifty-three men and 51 women who scored high and low on hostility were interviewed about an event that made them angry. For half the participants, the interview was conducted in a supportive manner. For the others, the interview became more challenging half-way through. Verbatim interview transcripts were read by five independent groups of judges. One rated how anger-provoking the incident would have been. The others rated the participants' anger, disgust, contempt and friendliness. The provocativeness of the incidents described did not differ by participants' sex, hostility or interview condition. Hostile participants' transcripts conveyed significantly more contempt and marginally more disgust than non-hostile participants. When the interview was challenging, hostile and non-hostile participants did not differ in perceived friendliness. However, when the interview was delivered in a supportive manner, hostile participants were judged to be more friendly than high hostile participants. The findings are consistent with a social regulation model of the effects of hostility. Moreover, they suggest that non-hostile people modulate threat in agonistic situations with a proactive mitigating strategy.

Abstract 1463
ANXIETY ENHANCES THE PERCEPTION OF ANGRY FACES
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General models of perception, cognition, memory, language and emotion highlight the notion that there is an interactive component to these processes that is often short-handed as "top-down processing". A few attempts have been made to examine the perception of facial expressions of emotion with regard to influences of difficulties of emotional processing. Enhanced perception of negative expressions of emotion by individuals with anxiety problems have been reported (Mogg, McNamara, Powys, et al. 2000). The present study supports this notion of hyper-vigilance to negative emotions, but uses a paradigm sensitive to difficulties in decoding facial expressions of emotion and signal detection analysis. The ability to detect a standardized set of six facial expressions of emotion (Ekman & Friesen, 1976) was examined for 69 participants. Anxiety was assessed by the State Trait Anxiety Inventory (STAI) a self _evaluation questionnaire developed by Spielberger, Gorsuch, Lushene, Vag & Jacobs (1983). Anxiety scores were negatively correlated with sensitivity to all of the emotional expressions except anger. Participants who scored high on the measure of sensitivity to the angry faces had high scores on the anxiety questionnaire (Pearson Correlation = - .362 p<.01). An analysis of variance comparing the sensitivity scores (A'= .85 vs .80) found statistically significant difference between the high and low anxious participants p<.001, µ= 11. Analysis of sensitivity (A'), bias (B) and specific errors of detection all support the hypothesis that the anxious participants were hyper-vigilant to the pictures of angry faces and that this represents enhanced perceptual processing.

Abstract 1543
SEROTONIN SYNTHESIS EVALUATION WITH alpha-METHYL-L-TRYPTOPHAN IMAGING
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It has been proposed that the brain serotonergic system is one of the brain monoaminergic systems affected in depression.Imaging with labelled alpha-methyl-L-tryptophan [a-MTrp] has been evaluated as a possible tracer method for the visualization of region brain serotonin [5-HT] synthesis. Studies have been performed on laboratory animals using autoradiography with 14C and 3H-labelled tracers, and positron emission tomography (PET) with a 15C-labelled tracer. Subsequently, the studies have been extended to humans, including both normal subjects as well as patients with various brain disorders (e.g., epilepsy, depression, obsessive compulsive disorder, borderline personality disorder, and patients suffering from migraine headaches). The rat experiments have shown excellent blood-brain penetration of tryptophan hydroxylase (TPH) and labelled a-MTTrp, as well as between 5-HT and labelled a-MTrp. It has been shown that the regional trapping constants correlate with the regional tryptophan conversion into 5-HT. The experiments in rats have shown that drugs known to have an effect on the brain serotonin system (e.g., fluoxetine, D-fenfluramine, Ecstasy, buspirone), but not on plasma Tp concentration, affected brain 5-HT synthesis in a non-uniform manner. These drugs have different effects following chronic and acute administration. The data suggest that 5-HT synthesis is differentially controlled in the terminal areas than in the cell bodies. As TPH is not saturated by either Trp or oxygen, the changes in the blood concentration of these substrates resulted in changes in the brain 5-HT synthesis calculated from uptake of a-3[14C]Trp. Experiments in normal subjects suggest that 5-HT synthesis is higher in male than in female normal subjects. We have also shown that there is a difference between 5-HT synthesis in normal subjects and in depressed and borderline disorder patients. Antidepressants also influence 5-HT synthesis in a region specific manner in humans.

Abstract 1020
ANTIPSYCHOTICS IN THE TREATMENT OF DELIRIUM: A REVIEW OF PROSPECTIVE TRIALS
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The purpose of this study was to evaluate the evidence supporting the use of antipsychotics in the treatment of delirium. A search of MEDLINE (July 1980 - July 2005) and Cochrane databases were undertaken to identify prospective antipsychotic treatment trials utilizing standardized criteria for diagnosing delirium and evaluating delirium severity. Fourteen articles were identified, 9 single agent studies and 5 comparison studies. Study medications included haloperidol, chlorpromazine, olanzapine, risperidone and quetiapine. Improvements in delirium severity were observed with all antipsychotic medications. Methodological limitations identified in studies included; lack of blinding, poor randomization and failure to use intention-to-treat analysis. No trial controlled for spontaneous improvement in delirium or included a non-medication placebo control. Delirium severity improved by 43% - 70% as measured on delirium scales in the 12 trials reporting this outcome.
Individual response and remission rates were reported in 6 trials each and varied between 50 -100% and 42-100%, respectively. The dose of medication used in the majority of trials varied between 50 mg and 150 mg (range = 36 mg - 325 mg) daily of chlorpromazine equivalents. Serious adverse events attributable to medication were uncommon in studies. Although improvement in delirium was observed in all studies, the evidence supporting the use of antipsychotics in delirium is limited by the small body of literature and methodological shortcomings in most studies. Antipsychotics appear to be safe in the delirious population and the majority of individuals have improvement in delirium during treatment; however, without controlled studies, it has not been demonstrated that antipsychotics improve clinical outcomes in delirium.

**Abstract 1535**

**STRESS-BUFFERING VERSUS STRESS-ENHANCING EFFECTS OF CLOSE RELATIONSHIPS AMONG CURRENTLY DEPRESSED AND NEVER-DEPRESSED WOMEN**

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It has been argued that close relationships buffer the effects of stress on physiological responses and ultimate health outcomes. Yet, among depressed individuals, these relationships may become strained and amplify rather than buffer stress responses. We examined stress-related cardiovascular responses among 18 depressed and 18 never-depressed 20-40 year old females. Subjects engaged in a 20-minute baseline, followed by a 10-minute speech stress and a 30-minute recovery. Systolic and diastolic blood pressure (SBP and DBP) were assessed repeatedly throughout this period. Subjects were randomly assigned to 1 of 2 task orders: for half of the sample, the speech task was completed first; for the other half, the speech task was completed following a guided imagery task - in which subjects were asked to relive in their imagination a time in their lives in which they experienced intense feelings of love or infatuation. Repeated measures and area under the curve analyses indicated a Task Order X Depression Group interaction for both SBP and DBP obtained throughout the speech task [SBP: F(1,32)=7.23; DBP: F(1,32)=5.38, ps < .05]. In line with the stress-buffering hypothesis, never-depressed individuals who first completed the relationship-focused task displayed consistent reductions in SBP and DBP prior to, during and following the speech task, as compared with never-depressed women who completed the speech task first. In contrast, depressed women displayed an opposite pattern of results. Depressed women who first completed the relationship-focused task displayed consistent ELEVATIONS in both SBP and DBP prior to, during and following the speech task, as compared with depressed women who completed the speech task first. Thus, elevated levels of interpersonal distress displayed by depressed individuals may negate or even reverse the potential stress-buffering effects of close relationships. Potential mechanisms underlying these effects and pertinent study limitations will be discussed.

**Abstract 1308**

**IS ACCULTURATION ASSOCIATED WITH SOMATISATION IN DISTRESSED WOMEN OF PAKISTANI ORIGIN LIVING IN UK?**

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In a population-based sample of Pakistani women in UK we tested the hypothesis that somatisation was associated with a low level of acculturation. 175 randomly selected Pakistani women were screened with the Self-Rating Questionnaire (SRQ) & interviewed, in Urdu or English, using the Schedule for Clinical Assessment in Neuropsychiatry (SCAN); 78 had depressive disorder, 60 had a SRQ score >7 but no depressive disorder and 37 had a low SRQ score. They completed a 16-item acculturation questionnaire; scoring 9 or more indicated acculturation to UK society. GP records were available for 153 women.

Outcomes were somatic and psychological subscores of SRQ and no. of visits (n=111) more often completed the SRQ in Urdu than English (56% vs 11%), were older than the remainder (40.2yrs [10.9] v 30.7 yrs [sd=10.5], p<0.001) and fewer were single (3% v 27%). Their somatic and psychological scores on SRQ were similar to women with high level of acculturation (table) except depressed women with low acculturation had higher psychological scores. Women with low acculturation made more visits to the GP in the 6 months prior to interview compared to women with high acculturation (mean=4.3, se=0.3 vs 3.20, se=0.5, p=0.030), presented more bodily symptoms to the GP (5.0, se=0.4 vs 3.3, se=0.6, p=0.028) but there was no difference in no. of visits for anxiety and/or depression (mean=0.37, se=0.1 vs 0.32, se=0.1, p=0.80).

Distress in women with a low level of acculturation was associated with frequent somatic presentations to the doctor but also more reported psychological symptoms.

**Abstract 1031**

**COMORBIDITY BETWEEN CARDIAC DISEASE AND PSYCHIATRIC MORBIDITY IN THE ELDERLY COMMUNITY POPULATION**

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In a cross sectional design, a representative sample of 6963 subjects, aged 60 years old and over was examined to evaluate comorbidity between cardiac disease and psychiatric distress in Brazil. All subjects completed in person interview. Cardiac disease and psychiatric distress were measured by means of a questionnaire administered during home visits. The questionnaire was a structured self-report instrument and inquired about socio-demographic characteristics and physical and mental health status. Mental health status and identification of psychiatric disorders were assessed using a validated Portuguese-language version of SPES in its shorter 6-item version. Cardiac disease was assessed through answers to the question: During the last 6 months you have had heart problems? Those subjects who were taking prescriptions for cardiac disease or had been hospitalized because of cardiac problems were considered as having cardiac problems. Bivariate and multivariate analysis between cardiac disease, other physical and mental health disturbances and socio-demographic variables were explored. Through a logistical analysis, emerged as potential variables associated to cardiac disease: high blood pressure OR = 4.06 (95% C. I. 3.43 4.80), presence of psychiatric morbidity OR = 3.68 (95% C. I. 2.78 4.87),
diabetes OR = 2.51 (95% C. I. 1.59 3.98), pulmonary disease OR = 2.42 (95% C. I. 1.52 3.84), lower income OR = 2.03 (95% C. I. 1.29 3.17), non smoking status OR = 1.55 (95% C. I. 1.3 1.86), caucasians OR = 1.30 (95% C. I. 1.09 1.55), been born in urban areas OR = 1.19 (95% C. I. 1.03 1.37). Cardiac problems are more common among those with high blood pressure, and those with psychiatric morbidity. The findings presented here indicate the important association between psychiatric distress and cardiac disease. These findings suggest important directions to be further explored with elderly populations particularly the association of cardiac disease and mental status.

**Abstract 1224**

**CARDIOVASCULAR RESPONSES TO SOCIAL STRESS AMONG POSTMENOPAUSAL WOMEN WITH VICTIMIZATION HISTORIES**

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Women are often targets of victimization, and are at risk for developing posttraumatic stress disorder (PTSD) as a result. Although impairment in social functioning is not a cardinal symptom of PTSD, victimization survivors often report disruption in their social relationships. One way to explore this social impairment is by studying the cardiovascular (CV) responses of these survivors to social stress, as trauma and PTSD may alter autonomic regulation.
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West Nile Virus (WNV) has spread across the country since its introduction to the United States in 1999. In severe cases, WNV can be complicated by a number of neurological deficits, thus possibly mimicking conversion disorder. Here we report a 19-year-old pregnant female referred to psychiatry as a possible case of conversion disorder who later tested positive for West Nile Virus.

Ms. A, a single, 19-year-old African American woman, was admitted to the obstetrics and gynecology unit of a teaching hospital in her eighth month of pregnancy after presenting with unilateral paralysis of her right leg and foot. A routine examination including a complete blood count, electrolytes, urea, liver and thyroid function tests, urinalysis, and a non-contrast CT scan of the head yielded normal results. An initial diagnosis of a neurological deficit was made; however, repeated maneuvering of her posture as well as a neurology consult did not indicate involvement of the sciatic nerve.

A psychiatric consult was called to rule out conversion disorder. On evaluation, Ms. A had no presenting symptoms and denied any previous psychiatric history. She described her mood as euthymic without any suicidal ideation. There was no evidence of psychosis such as delusions or hallucinations and no evidence of mania or any other anxiety disorders. Ms. A denied any history of sexual or physical trauma, as well as any current stressors. She showed concern about her current condition and did not demonstrate the classical la belle indifférence. She denied any current use of alcohol or drugs. A mental status examination revealed Ms. A to be calm and cooperative. Her speech was spontaneous and normal in rate, tone, and volume, and her affect was full-ranged.

The fact that Ms. A did not have any current or previous stressors and the fact that she was psychiatrically asymptomatic argued against a diagnosis of conversion disorder. We therefore recommended to the primary treatment team to investigate Ms. A more aggressively. Following further testing, Ms. A was positively confirmed for West Nile Virus infection.
and sodium excretion was obtained hourly during the 5 hour protocol. Repeated measures ANOVA with race and sex as independent variables was used to analyze the data. The hour by condition (experimental/control) interaction was highly significant (P=0.0001) for systolic blood pressure, with similar baseline levels for the experimental (107±10 mmHg) and control (107±10 mmHg) conditions and a greater increase in BP in the experimental compared to the control condition (6±3 m mHg; P=0.001). Neither the hour by race nor the hour by sex interactions was significant. Similar results were observed for diastolic blood pressure and heart rate. The hour by race interaction was highly significant for sodium excretion (P=0.006) with a significantly smaller stress-induced increase in sodium excretion for African-Americans in the experimental condition (3.1±4.5 v 5.9±6.7 mEq/hr; P=0.03) coupled with similar changes in the control condition. The hour by sex interaction approached significance (P=0.06) as did the time by condition interaction (P=0.06). In conclusion, the results support the impaired stress-induced pressure natriuresis theory to explain the role of stress in the greater incidence and prevalence of essential hypertension in African-Americans.

Abstract 1750

EFFECTS OF EXERCISE ON DEPRESSIVE SYMPTOMS IN HYPERTENSIVE PATIENTS

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This study examined the relations among self-reported depressive symptoms and peak oxygen consumption, and exercise in a sample of 107 overweight patients with mild hypertension. Patients were randomly assigned to aerobic exercise only, a behavioral weight management program including exercise, or a wait list control group. Participants completed the Beck Depression Inventory (BDI) and underwent an exercise stress test prior to and following a 6-month intervention. The sample ranged in age from 30 to 70 years (M=48 years (SD = 8)) and consisted of 45% males and 55% females. Results revealed a treatment group by depression severity interaction (p < .01), such that patients in the weight management and exercise groups with higher BDI scores at baseline demonstrated significantly greater reductions in BDI scores compared with controls. In a further exploratory analysis, we found that among patients who underwent exercise training with more severe baseline depressive symptoms, improvements in oxygen consumption were associated with improvements in depressive symptoms. Results from the present study suggest that an intervention utilizing exercise may reduce self-reported depressive symptoms among patients with hypertension, and that improved aerobic capacity may mediate changes in depression.

Abstract 1749

SUBJECTIVE SOCIOECONOMIC STATUS IS A STRONGER PREDICTOR OF AMBULATORY BLOOD PRESSURE THAN IS OBJECTIVE SOCIOECONOMIC STATUS IN A SAMPLE OF MEXICAN IMMIGRANTS

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Subjective socioeconomic status (SES) has been shown to have a stronger relationship with health outcomes as compared to objective measures of SES such as education and income. Because Mexican immigrants tend to have better health outcomes compared to European Americans in spite of having lower levels of objective SES, it would be interesting to examine whether subjective SES is related to health outcomes in Mexican immigrants. The purpose of the present study was to examine the relative relationships between subjective and objective measures of SES and ambulatory blood pressure in a sample of Mexican immigrants. A sample of 72 Mexican immigrants (average age 30, 56% female, average of 8 years living in the United States) was studied. It was found that higher subjective SES was related to lower daytime diastolic blood pressure (r = -.21, p < .05), and there was a nonsignificant trend for higher subjective SES to be related to lower daytime systolic blood pressure (r = -.17, p = .06). Subjective SES was not related to sleep blood pressure. Objective measures of SES (education and income) were not related to any of the blood pressure measures. The results of this study suggest that subjective SES may be more useful than objective measures of SES in understanding immigrant health.

Abstract 1739

THE EFFECT OF A HIGH FAT VESUS A LOW FAT MEAL ON CARDIOVASCULAR REACTIVITY

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Exaggerated cardiovascular responses to stress have been linked prospectively to the development of hypertension. While several personality traits and behaviors are associated with reactivity, the role of diet has been largely ignored. The present study examined the effect of a single high-fat meal on cardiovascular responses to a series of standard laboratory stressors. Twenty-eight participants were fed a high and a low-fat meal on two separate occasions followed by laboratory stress tasks (math task, public speaking, arm ischemia, cold press) during which blood pressure and measures of cardiovascular function (via impedance cardiography) were recorded. A repeated measures ANOVA revealed significantly greater reactivity following the consumption of the high-fat meal for systolic and diastolic blood pressure and total peripheral resistance (p < .05) across tasks. These results suggest that even a single high-fat meal may be associated with heightened cardiovascular reactivity and offer insight into the pathways through which a high-fat diet may impact cardiovascular function.

Abstract 1728

THE EFFECT OF SELF-PACED PROGRAMMED INSTRUCTIONS VS TRADITIONAL METHODS OF EDUCATION ON BLOOD PRESSURE KNOWLEDGE IN HYPERTENSIVES

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Self Paced Programmed Instruction (SPPI) is a computerized interactive patient education program. After reading programmed information, patients answer questions and receive immediate computerized feedback until mastery of the material is achieved. This method of learning was proposed by B. F. Skinner but has not been used to educate patients about various medical conditions. In this study we compared the effectiveness of SPPI and Traditional Methods of Education (TME) in promoting patient knowledge about hypertension. Twenty-two hypertensive subjects were included in the study and were randomized to either the SPPI or the TME condition. Subjects in the TME condition (n=9) received brochures containing information about the causes, complications, and treatment of hypertension based on AHA guidelines. Subjects in the SPPI condition (n=13) completed a computerized SPPI module covering the same information. All subjects completed a 15-item pre-test measure of hypertension knowledge before the intervention and the same (post-test) 2-3 months following the intervention. Paired samples t-tests were used to examine the effects of the two intervention conditions on subjects’ knowledge about hypertension. As predicted, patients in the TME condition showed no improvement from pre-test (64.5% correct) to post-test (62.2% correct). In contrast, subjects in the SPPI condition showed significant improvement in knowledge (57.9% correct pre-test, 90.7% correct post-test; t= -9.174, p< .001). These findings suggest that SPPI may be an useful educational tool for promoting patient knowledge about hypertension in clinical practice. Future research should examine the effectiveness of SPPI in larger samples and with different patient populations.

Abstract 1596

EFFECTS OF PASSIVE LEG RAISE AND AMBULATORY BLOOD PRESSURE ON HEAT PAIN SENSITIVITY

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The effects of 24hr ambulatory blood pressure and a passive leg raise on self-report pain ratings of thermal pain stimuli were examined. Men (n=34, age=39±13.5) with a wide range of mean daytime systolic blood pressure (SBP) values were presented with thermal stimuli via a 3x3cm thermode placed on the forearm. Participants received 9sec hot stimuli which were counterbalanced on previous and following days. Heat pain thresholds were measured (96% correct) using a pseudo-randomized pain trials (44.4ºC) or clearly (46.5ºC) painful). Participants received 20 mild and 20 clearly painful
stimuli while lying supine and another set of 40 stimuli with their legs raised and kept passively at 50°. Participants initial leg condition was randomized. Participants verbally rated intensity and unpleasantness of each stimulus on a numerical analogue scale ranging from 0-100. There were no significant associations of SBP with age or state anxiety. There was however a significant association between SBP and BMI (r=0.39, p<0.05). There was a monotonic relation between stimulus temperature and mean pain ratings. In general, participants with higher SBP rated the more painful stimuli as less unpleasant than participants with lower SBP. Mixed linear modelling revealed that pain intensity interacted with SBP and leg position F(1,2644)=12.73, p<0.01. Participants with higher SBP showed a significant decrease in pain intensity ratings when their legs were raised (M+/SE 40.2+/4.9) compared to when they were flat (42.9+/4.9) (t=3.29, df(2644) p<0.01). Participants with lower SBP showed an opposite trend that did not reach significance. Similarly, the decrease in unpleasantness ratings when legs were raised in participants with higher SBP was significantly different from the increase in pain ratings seen in participants with lower SBP F(2,461)=1.68, df(2643) p>0.05. Results were unchanged when order of leg raise was factored into the model. These findings support the idea that passive leg raise, possibly by activating cardiopulmonary baroreceptors, can affect sensitivity to heat pain though the effect is moderated by blood pressure.

Abstract 1712

POWER THREATS LINKED TO AGONISTIC STRIVING AND HIGH BLOOD PRESSURE IN URBAN YOUTH
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We previously have shown that low-income urban youth who exhibit "agonistic striving" (a chronic struggle to control others) have high ambulatory diastolic blood pressure (DBP) in the normal environment. In a new sample, we tested the hypothesis that threats to social power within a school setting induce agonistic (AG) behavior and thus raise DBP. Participants (N=301) were students in a large city high school (50% White, 40% Black, 10% Latino) in NY State. New scales were developed to measure 3 orthogonal dimensions of social power: Threats to Status, Acceptance, and Dominance. Analyses evaluated links between power threats and: (a) trait affect/self-esteem; (b) AG behavior; and (c) DBP reactivity to social stress (DBPR).

Trait affect/self-esteem was assessed with the Positive Affect (PA) / Negative Affect (NA) Scale (Watson & Tellegen), and Self-Esteem (SE) scale (Rosenberg). AG behavior and DBPR to social stress were measured with the Social Competence Interview (SCI; Ewart).

Results showed that threats to social Status and Dominance correlated positively with NA and negatively with SE (all values of r<0.05): Status threats with NA (r = .56) and SE (r = -.41); Dominance threats with NA (r = .63) and SE (r = -.49). Acceptance threats did not correlate significantly with trait affect or self-esteem.

Tests of our main hypotheses in 59 students showed that Dominance threats predicted AG behavior, r = .32, and DBPR to SCI, r = .33; AG and DBPR were correlated, r = .28 (all values of p<0.05). Threats to social Status and Acceptance were not correlated with AG or DBPR. Results confirm and extend earlier findings with youth in a different city: Threats to social power in school environments may foster chronic emotional stress and lower self-esteem; power threats, specifically in the form of Dominance challenges, may induce patterns of AG striving and DBPR linked previously with high ambulatory DBP in low-income urban youth.

Abstract 1685

INTERNAL CONSISTENCY RELIABILITY OF CARDIOVASCULAR REACTIVITY TO STRESS
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Measures of cardiovascular reactivity to stress are heritable and predict future cardiovascular disease. Thus, these measures may be useful intermediate phenotypes for prospective and genetic studies of cardiovascular risk. Adequate measurement reliability is prerequisite to such use. Prior research has focused on the temporal stability (test-retest reliability) and inter-task consistency of cardiovascular reactivity. However, these assessments may underestimate the actual reliability and precision of cardiovascular measurement, because variations over time and tasks may attenuate reliability. Few studies have assessed the reliability of cardiovascular reactivity within tasks (internal consistency). The present study evaluated the internal consistency reliability of cardiovascular reactivity.

Participants were 142 healthy, unrelated Black adolescents and young adults (93 females, 49 males), age M (SD) = 17.8 (1.8) yr. They were exposed to a 3-min video game task, two 5-min mental arithmetic tasks, a 3-min forehead cold pressor test, and 10 min of whole-body cold exposure. Appropriate baseline rest periods preceded each task. Impedance cardiography and blood pressure measures were obtained during the baseline and task periods, and measures of cardiovascular reactivity were derived by subtracting baseline levels from task levels. Reliability was assessed with alpha and intraclass correlation coefficients.

Measures of cardiovascular reactivity were reliable for video game, r = .65 to .90, mental arithmetic, r = .84 to .95, cold pressor, r = .82 to .94, and whole-body cold exposure, r = .75 to .97, all p < .001. Alpha and intraclass correlation coefficients were similar, indicating excellent rank order and absolute consistency. Measurement precision approached the intrinsic accuracy limits for all measures. Thus, measures of cardiovascular reactivity are highly reliable and should be useful intermediate phenotypes for studies of cardiovascular risk.

Abstract 1684

INTERLEUKIN-10 LEVELS AND HEMODYNAMIC RESPONSE FOLLOWING MENTAL STRESS
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A positive association between pro-inflammatory cytokines and blood pressure has previously been reported, suggesting a role of inflammation in the pathogenesis of hypertension. Pro-inflammatory cytokines have also been shown to rise in individuals following mental stress. The anti-inflammatory cytokine interleukin-10 (IL-10) inhibits the production of pro-inflammatory cytokines and is believed to have a cardioprotective effect. We investigated the response of IL-10 to mental stress and examined its relationship to blood pressure, heart rate and double product before and after stress in patients with coronary artery disease (CAD).

Fifty-four participants with known CAD (mean age 64 years) had their blood pressure (BP) and heart rate (HR) measured following 30 minutes of rest. They then completed a public speaking task during which serial BP and HR measurements were performed and the peak values were recorded. The double product (HR x BP) was calculated. Plasma cytokines were measured 45 minutes post stress. Spearman's correlations were calculated for all variables pre and post stress.

Raw IL-10 values were unrelated to BP or HR at any time. However, the change in IL-10 following stress was negatively associated with resting systolic BP (r=-.42, p<.01), resting double product (r=-.29, p=.03), and post stress systolic BP (r=-.26, p=.06), but was unrelated to HR at any time. These results suggest that the change in the anti-inflammatory cytokine IL-10 following mental stress is associated with lower resting blood pressure and double product and a diminished blood pressure response to mental stress. Current evidence supports the theory that mental stress contributes to the pathogenesis of hypertension by stimulating inflammation and our findings suggest that the anti-inflammatory effect of IL-10 may reduce this effect.

Abstract 1555

TASK PERFORMANCE AND ATTITUDES AFFECT SEX DIFFERENCES IN PRESSURE NATRIURESIS IN TEENS
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Previously, we reported sex differences in the pressure natriuresis response to a prolonged competitive video game task. Our purpose was to determine if task performance and attitudes are related to sex differences in the pressure natriuresis response. Subjects were 335 teenagers, aged 15 to 19 years (166 boys and 169 girls). The stress protocol consisted of playing a video game in same sex pairs for one hour. This was preceded and followed by 2 hour rest periods. Urine samples were collected hourly and hemodynamics were taken at 15 minute intervals. A subset of 133 subjects answered questionnaires about their video game playing experience at 30 minutes into the game and at the end of the stress hour. Boys compared to girls had greater changes in systolic
blood pressure (SBP: 7.7± 8 v 5.7±7 mm Hg; P=.022) with a similar change in heart rate (HR: 8.0±8 v 8.0±9 bpm; P=NS) and sodium excretion (UoV: 4.0±7 v 3.1±6 mEq/hr; P:NS). Boys also had higher video game scores (34671 v 24202; P=.0001). Overall, video game score was correlated with the change in SBP (r=.019; P=.0001), UoV (r=.013; P=.0009) and HR (r=.09; P=0.049). Within sex, boys who had higher video game scores had greater changes in BP (r=.21; P=.002), in UoV (r=.15; P=.023) and HR (r=.08; P=0.010). Girls in contrast showed no correlations between the variables. Boys and girls who won the video game competition reported they liked playing more (r=.33; P=.006 for boys; r=.26; P=.013 for girls) and that they thought they played better (r=.42; P=.0001 for boys; r=.297 P=.006 for girls). The losers of both sexes reported more anger. In conclusion, task performance has a greater effect on the pressure natriuresis response in boys than girls, mainly through a greater BP response to stress. Sex differences may have resulted due to the girls not being as interested in video games in general as boys. Feelings of winning also affected self perceptions of performance.

Abstract 1573
THE EFFECTS OF HOSTILITY AND DEFENSIVENESS ON CARDIOVASCULAR ACTIVITY
Jules P. Harrell, Psychology, Howard University, Washington, DC; Rachel Andre, Psychology, University of Florida; Guadille, Florida; Leah J. Fleck, School of Public Health, Morgan State University, Baltimore, Maryland; Sonia R. Bell, Ina N. Daniels, Anastasia Amuzu, Psychology, Howard University, Washington, DC

The current study investigated the impact of defensiveness and hostility on resting blood pressure levels and cardiac responses to viewing a racial stressor. Seventy-four African American students (39 women and 35 men) completed the Marlowe-Crowne Social Desirability Scale (a measure of defensiveness) and the Cook Medley Hostility Scale. Following brief relaxation instructions, we obtained measures of resting blood pressure. Subsequently, cardiac measures were taken as the participants reflected on a video presentation of a racially noxious stressor. Analyses determined that systolic blood pressure was higher in those with higher levels of hostility (p < .05, eta2 = .07). Two sets of findings supported our hypothesis that defensiveness (as measured) increased the relationship of hostility to cardiovascular activity. The interaction between hostility and defensiveness was significant for both systolic (p = .01, eta2 = .08) and diastolic (p = .05, eta2 = .05) blood pressure. Only individuals low in defensiveness evidenced blood pressure differences as a function of hostility. In addition, the largest changes in heart rate while reflecting on racism occurred in participants with low levels of defensiveness and high hostility (p < .05, eta2 = .12). Surprisingly, defensiveness alone was associated with larger heart rate and stroke volume changes as participants reflected on the racist scenario (p < .05, eta2 = .06 and p < .01, eta2 = .13 respectively). Defensive participants also reported higher levels of disgust in response to the racist material (p < .05, eta2 = .07). Therefore, in addition to defensiveness moderating the relationship of hostility to cardiovascular activity, it was associated independently with several cardiovascular measures. [NIMH-COR grant MH-16580 and NIGMS/NIH grant 5S06GM08016-34.]

Abstract 1661
HIGHER NEGATIVE EMOTION EXPRESSION IS ASSOCIATED WITH SLOWER BLOOD PRESSURE RECOVERY FROM A STRESSFUL TASK AMONG OLDER PEOPLE
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Previous research showed that negative affect, such as anger and anxiety, is associated with slower blood pressure (BP) recovery after a stressful event. However, most studies used trait measures to assess negative affect, and the affective states of individuals who are currently under stress have rarely been examined. The present study was to explore the relationship between emotion expression during a stressful task and BP recovery. 61 spouse caregivers (59% women, age M=71) of Alzheimer's patients and 66 comparison subjects (62% women, age M=70) underwent a BP reactivity protocol with a stressful speech task (5 min), followed by a 10-min recovery period. BP was measured periodically based on a pre-set schedule. Each subject's expressed emotion speech was audio taped and rated on its emotional content, classified as having either high or low negative emotion expression (NEE). The task BP measure and four BP measures during recovery period were modeled using Hierarchical Linear Modeling (HLM). At Level 1 model, the intercept was used as a measure of BP reactivity, whereas the linear slope was indicative of BP recovery speed. At Level 2, BP reactivity and recovery were predicted by NEE and common covariates, such as baseline BP, BMI, beta-blocker medication use, diagnosis of hypertension, family history of hypertension, gender, and age. SBP and DBP were analyzed separately. HLM analysis showed that higher NEE predicted slower SBP recovery (B=30, p=.04), but not DBP recovery (B=.07, p=.20), after controlling for covariates. In contrast, NEE was not predictive of either SBP or DBP reactivity. These associations were not different between caregivers and non-caregivers. These results provide evidence that NEE during a stressful task is associated with slower CV recovery. More research is needed to elucidate mechanisms underlying these associations.

Abstract 1050
CAFFEINE IN COFFEE EXAGGERATES POSTPRANDIAL GLUCOSE AND INSULIN IN TYPE 2 DIABETES
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Caffeine is a widely consumed stimulant drug that can exaggerate postprandial hyperglycemia in patients with type 2 diabetes. However, recent studies suggest that coffee, the greatest source of dietary caffeine, contains other compounds that improve glucose metabolism in diabetes and counteract the detrimental effects of caffeine. This study tested the effects of caffeine presented in coffee on postprandial hyperglycemia in 20 adult coffee-drinkers (11 female) who had type 2 diabetes treated by oral agents and/or diet and exercise. The cross-over design compared 2-hour glucose and insulin responses to a mixed carbohydrate meal following a moderate dose of caffeine (250 mg) administered in brewed decaffeinated coffee or decaffeinated coffee alone. Two days of morning testing after overnight fast and caffeine abstinence were conducted in a 2-week period, and treatment order was counterbalanced. Postprandial glucose and insulin responses were quantified as the incremental areas for the 2-hour plasma glucose and insulin concentration-time curves. In within-subject comparisons, caffeine in decaffeinated coffee significantly increased postprandial glucose (28% larger AUC) and insulin (19% larger AUC) responses to the mixed meal, compared to decaffeinated coffee alone (both p<.02). Effects were similar to those observed earlier for caffeine in capsules. The other chemical constituents of coffee do not protect against the hyperglycemic effects of caffeine. The observed reductions in postprandial glucose associated with acute caffeine abstinence in this study resemble closely those seen with current prescription drugs used to control glucose after meals. Caffeine abstinence may prove to be an important component of type 2 diabetes management.

Abstract 1085
IMPROVEMENT IN SEXUAL FUNCTIONING IN DEPRESSED DIABETIC PATIENTS TREATED WITH WELLBUTRIN XL®
Gregory S. Sayuk, Ray E. Cloose, Internal Medicine, Billy D. Nix, Psychiatry, Monique M. Williams, Internal Medicine, Patrick J. Lustman, Psychiatry, Washington University School of Medicine, St. Louis, Missouri

Major depressive disorder (MDD) is present in one in four patients with type 2 diabetes (T2DM) and has adverse effects on sexual functioning that are independent of T2DM neuropathy. Antidepressant medications impose additional risks for sexual dysfunction, and thus likely contribute to poor acceptance of and adherence to antidepressant treatment (Rx) by T2DM patients. Bupropion has gained favor in MDD patients because of fewer side effects; specific use in T2DM has not been studied. Eighty-nine patients (mean age 51.9 years, 49.4% African-American, 62.9% female) with T2DM and DSM-IV-defined MDD received Wellbutrin XL® (extended release bupropion) in a 10-week, open-label MDD Rx trial. Seventeen (19.1%) failed to complete the study protocol (side effects, n = 5; lost to follow-up, n = 12), and 60 (67.4%) met criteria for remission of depression following Rx [Beck Depression Inventory (BDI) total score <10]. Sexual functioning, measured with the Sexual Energy Scale (SES), improved during Rx in the 72 who completed Rx (SES mean pre- and post-Rx: 3.4 ±2.4 to 5.7 ±2.8, p <.0001), with 49 (68.1%) exceeding the threshold required for significant improvement (post-Rx SES score>5). In multiple regression analysis that included age, race, gender, presence of diabetes, glycemic control, initial BDI, improvement in depression during Rx, and baseline SES score, only
improvement in depression (p = 0.01) and higher baseline SES (p < 0.001) were retained as independent predictors of improved sexual function. In conclusion, depression improvement with Wellbutrin XL® was associated with significant improvement in sexual function, independent of many baseline demographic, MDD, and DM characteristics. Rates of Rx discontinuation in this population were low, a finding that may reflect the observed improvement in sexual function.

Abstract 1088

PREDICTORS OF PREMATURE ANTIDEPRESSANT DISCONTINUATION IN DEPRESSED PATIENTS WITH TYPE 2 DIABETES: THE IMPORTANT ROLE OF RACE AND EDUCATION LEVEL
Monique M. Williams, Internal Medicine, Patrick J. Lustman, Billy D. Nix, Psychiatry, Gregory S. Sayuk, Ray E. Clouse, Internal Medicine, Washington University School of Medicine, St. Louis, Missouri

Type 2 diabetes (T2DM) is present in 20 million US adults, one in four of whom also suffers from major depressive disorder (MDD). MDD is associated with hyperglycemia and increased risks of diabetes complications, effects that are partially reversed by depression treatment; unfortunately, most diabetic patients do not receive specific treatment for depression, or discontinue treatment prematurely. Factors responsible for poor adherence to antidepressant regimens have not been determined in type 2 diabetic patients. In this cohort, AA race and lower education were independent predictors of premature discontinuation of antidepressant therapy. Special efforts may be required to retain subjects with these demographic characteristics, subjects who are difficult to recruit yet should be adequately represented in depression treatment trials of T2DM patients.

Abstract 1317

HOSTILITY MODERATES THE EFFECT OF CAREGIVING ON FASTING PLASMA GLUCOSE
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Numerous research findings document that being a caregiver can have adverse effects on mental and physical health. There has been less research aimed at identifying factors that moderate the impact of caregiver stress on health, and hence account for individual differences in response of caregivers to the stress. Vitaliano et al. found that hostility/anger potentiates the negative impact of caregiving on glucose metabolism. We attempted to replicate this important finding. Our sample consisted of 173 primary caregivers for family members with dementia and 168 participants who did not have caregiving responsibilities. We hypothesized that high levels of hostility would amplify the adverse effects of caregiving on fasting plasma glucose (FPG) levels. Regression analyses were conducted to examine the interaction of the Cook-Medley Hostility Scale (CMH), including the 4 subscales of cynicism (CYN), hostile affect (HAF), aggressive responding (AR), and hostile attributions (HATB), with status as a caregiver. Age, race, gender, and body mass index were adjusted in all analyses.

Because depression and diabetes have both been associated with abnormal hypothalamic-pituitary axis function, it has been hypothesized that depression can impair glucose tolerance in diabetes. However, there is significant controversy over whether depression is actually associated with poor glycemic control in diabetes. The aim of this study was to determine if changes in depressive symptoms would differentially affect glycemic control in type 1 as compared to type 2 diabetic patients. Patients were eligible if they had type 1 or type 2 diabetes and a Beck Depression Inventory (BDI) score of 10 or above. A total of 90 patients were enrolled (28 with type 1 and 62 with type 2 diabetes) to a 12 week CBT intervention. BDI was assessed biweekly during 12 months. HbA1c levels were assessed at 5 time points (at baseline and at the 3, 6, 9 and 12 month follow-ups). Pre-treatment BDI and HbA1c levels were similar in type 1 and type 2 diabetic patients, with mean (SD) pre-treatment BDI levels of 18.5(5.9) and 17.6(5.8) (p = 0.60) and mean HbA1c levels of 7.9(1.3) and 7.5(1.7) (p = 0.30) in type 1 and type 2 diabetic patients respectively. There was no association between pre-treatment depression symptoms and HbA1c levels (Spearman’s rho = 0.06, p = 0.60). BDI decreased significantly (p = 0.001) over the 12 month period with mean BDI levels at the last follow-up period being similar in the type 1 (10.2(5.6)) and type 2 group (8.7(5.8)) (p = 0.40) respectively. Follow-up HbA1c levels did not change significantly over time in either group and mean HbA1c level at the 12 month follow-up was 7.8(1.3) and 7.5(1.7) (p = 0.35) for type 1 and type 2 patients respectively.

Despite large changes in BDI in both type 1 and type 2 patients, HbA1c levels did not change significantly over the 12 week CBT treatment period or the 9 month follow-up period in either patients with type 1 or type 2 diabetes. Thus, the results of this study cast considerable doubt on the role of depression in glycemic control in patients with diabetes.

Abstract 1264

DEPRESSION IN DIABETES: CONSEQUENCE RATHER THAN CAUSE
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The prevalence of depression is doubled in patients with type 2 diabetes. The reason for this increased prevalence is still unknown. The aim of the present study was to investigate whether the increased risk of depression in type 2 diabetes patients is most likely caused by metabolic dysregulation or that it is rather a consequence of the psychosocial burden of diabetes. Baseline data of the Utrecht Health Project (UHP) were used. This is an ongoing longitudinal study among all inhabitants of a new residential area of Utrecht, a large city in The Netherlands. Subjects with cardiovascular disease were excluded. 4,203 men and women participating in the UHP (mean age +/- SD: 38.0 +/- 12 years) were classified into four mutually exclusive categories: normal fasting plasma glucose (FPG < 5.6 mmol/l), increased FPG (5.6 and < 7.0 mmol/l), high FPG (7.0 and < 11.1 mmol/l) and diagnosed type 2 diabetes. Depression was defined as either a score of 25 or more on the depression subscale of the Symptom Check List (SCL-90) or self-reported use of antidepressants. Subjects with increased or high fasting glucose had no increased prevalence of depression. Diagnosed type 2 diabetes patients had a twofold increased prevalence of depression (OR = 2.11 (1.08-4.11)) after adjustment for gender, age, body mass index, smoking, alcohol consumption, physical activity, education level and number of chronic diseases. Our findings suggest that the increased prevalence of depression in type 2 diabetes is not mechanistically related to disturbed glucose homeostasis but that it is rather a consequence of the psychosocial burden of diabetes.
SALIVARY DHEA-S COLLECTION METHODS USING PASSIVE DROOL VS. PLAIN COTTON SWAB SALIVETTES

Courtney A. Whetzel, Douglas A. Granger, Laura C. Klein, Biobehavioral Health, Penn State University, University Park, PA

Dehydroepiandrosterone sulfate (DHEA-S), is secreted from the adrenal cortex and shares many characteristics with the stress hormone, cortisol. Research suggests that DHEA-S has many wide spread effects on health and development that are separate from the effects of cortisol. Both DHEA-S and cortisol can be measured reliably in saliva, making saliva collection a valuable tool for health research because it minimizes the need for invasive sampling procedures. Typical saliva collection methods include the use of plain cotton swab collection kits (e.g., Salivettes). Unfortunately, new research suggests possible problems with the plain cotton collection kits that may interfere with determination of some hormones by enzyme immunoassay (EIA) procedures (Shirtcliff et al. 2001). Thus, it is important to determine the potential confound that the cotton swab may have on DHEA-S determination through EIA. This study compared DHEA-S levels in saliva samples collected using the Salivette cotton swab and a passive drool methods in 20 healthy young adult men and women aged 18-30 years. Saliva samples were collected from 10 participants in the morning (0800 hrs; 5 men, 5 women) and in the afternoon (1600 hrs; 5 men, 5 women). Samples were assayed for DHEA-S in duplicate using a commercially available kit (DSL, Inc., Webster, TX). DHEA-S levels collected via Salivette and passive drool were positively correlated (p<0.05, r=+0.79), which suggests moderate assay interference with the plain cotton swab. Mean levels of DHEA-S were not significantly different between collection methods. DHEA-S salivary levels were significantly higher in males than in females in both types of saliva collection (p<0.05). This sex difference has been reported with serum DHEA-S, but not with salivary DHEA-S. DHEA-S levels did not differ between morning and afternoon collection times for men or women. Results suggest that DHEA-S can be measured accurately using the cotton aided saliva collection method.

Abstract 1172

DHEA-S AND CORTISOL RESPONSES TO STRESS AND CAFFEINE IN HEALTHY YOUNG MEN: IS DHEA-S A RELIABLE MARKER FOR STRESS?

Courtney A. Whetzel, Biobehavioral Health, Frank E. Ritter, Information Science and Technology, Psychology, Laura C. Klein, Biobehavioral Health, Penn State University, University Park, PA

Dehydroepiandrosterone (DHEA) and its non active sulfate form (DHEA-S) are the most widely circulating steroids in the human body. DHEA-S appears to have many positive effects on health and cognition, though this area of investigation is relatively new. The majority of reports regarding DHEA-S have focused on diseased (e.g., chronic fatigue syndrome, Alzheimer’s disease) and specific age populations (e.g., the very young or the very old). DHEA-S shares many characteristics with the more common stress hormone, cortisol, yet the effects of stress on DHEA-S are relatively unknown. Therefore, the present study examined DHEA-S and cortisol responses to stress and caffeine (a known sympathomimetic) in 45 healthy men aged 18-30 yrs. Participants completed a 2.5 hr lab session that began at 1 PM and consisted of a baseline (pre-stress, pre-caffeine) saliva sample, a 20-min math serial subtraction stressor, and a post-stress saliva sample. Participants received one of 3 caffeine doses (0 mg, 200 mg, or 400 mg) 20-min before the stressor. Saliva was collected via Salivette and samples were frozen for later analysis. Salivette samples were thawed and analyzed using a commercial DHEA-S enzyme immunoassay kit (DSL, Webster TX). Stress resulted in a 40% decrease in DHEA-S levels regardless of method (P<0.05). Cortisol levels increased in response to stress (P<0.05), but the effects were less consistent across individuals than that observed for DHEA-S. Cortisol also increased in response to caffeine in a dose-dependent manner (P<0.05). Cortisol has been the primary hormone for assessing stress responses in laboratory settings. The present results suggest that DHEA-S could be an important additional measure for evaluating stable stress effects in young healthy adults.

Abstract 1474

PLASMA LEVELS OF AGOUTI-RELATED PROTEIN(AGRP) ARE INCREASED IN ANOREXIA NERVOSA

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AgRP, an orexigenic neuropeptide, and alpha-melanocyte-stimulating hormone (alpha-MSH), an anorexigenic one, are produced in the arcuate nucleus of the hypothalamus and known to be partly regulated by leptin. Although very little known about the function of circulating these melanocortin peptides, elevated plasma alpha-MSH and AgRP have been reported in obesity, suggesting that peripheral melanocortin peptides might be also related to energy homeostasis. However, no study has investigated these peptides in eating disorders. Therefore, in this study, to determine the possibility of the disturbance in these peptides in eating disorders, we measured plasma alpha-MSH, AgRP, and leptin levels in 13 female patients with anorexia nervosa (AN) [age, 23.1 +/- 7.6 yr; body mass index(BMI) 14.8 +/- 1.8 kg/m^2], 15 female patients with bulimia nervosa(BN) [age, 26.7 +/- 4.7 yr; BMI 19.3 +/- 2.6 kg/m^2], and 17 age-matched female controls (age, 25.8 +/- 3.9 yr; BMI 20.2 +/- 1.6 kg/m^2). We collected blood samples after overnight fast, and measured plasma peptides using ELISA. Plasma AgRP levels increased significantly in AN patients compared with controls (p < 0.001) while plasma alpha-MSH levels were not significantly different among the three groups. Plasma leptin levels decreased significantly in AN patients compared with controls (p < 0.001), whereas baseline levels did not differ. Additionally, women in the probable case group showed significantly higher cortisol responses to the stress test compared to the probable non-case group (time x group effect: F (2,41, 25.74) = 2.99, P = 0.04), whereas baseline levels did not differ. Additionally, women in the probable case group showed significantly higher state anxiety (F (1.00, 3.06) = 6.32; P = 0.02) and lower mood state (F (1.00, 163.31) = 9.83; P < 0.001) throughout the experiment. Furthermore, the probable case group showed higher stress susceptibility, higher trait anxiety and higher levels in the Symptom Checklist (SCL-90R). No differences were found for prior episodes of psychiatric disorders, obstetrical complications, birth weight or mode of delivery. Our data provide evidence that healthy pregnant women developing postpartum depressive symptoms might be identified already during pregnancy by means of their higher cortisol reactivity and their higher psychological reactivity in response to psychosocial stress. The higher cortisol stress response might be interpreted as a biological prodromal symptom, preceding postpartum depressive mood changes.

Abstract 1664

IMPACT OF DEPRESSION AND ANXIETY ON QUALITY OF LIFE IN INFLAMMATORY BOWEL DISEASE (IBD)

Leighann Litcher-Kelly, Arthur A. Stone, Psychiatry, Stony Brook University, Stony Brook, NY

This study examines the relationship between depression and anxiety symptoms and IBD-specific quality of life. Depression was assessed using both the Beck Depression Inventory (BDI) and momentary assessments of depressed symptoms on an electronic diary (ED dep); anxiety was measured...
using the Trait subscale of the State-Trait Anxiety Inventory (STAI) and electronic diary momentary assessments of anxious symptoms (ED_anx); symptoms were measured using 2 100-point horizontal visual analogue scales; ED_dep and ED_anx were computed by taking each person’s mean over the 3-week study period. The correlation between the BDI and ED_anx was \( r = 0.57 \), \( p < 0.05 \). Using hierarchical regression analyses we examined the mean over the 3-week study period. The correlation between the BDI and ED_anx was \( r = 0.57 \), \( p < 0.05 \).

Using polymerase chain reaction. Results: Genotype indicated 187 (61%) s/s, 92 (30%) s/l, and 17 (6%) l/l. Atypical 8 (3%) extra-l/l or s subjects were excluded from the analysis. There was no difference in 5-HTTLPR genotype between 102 IBS cases and 194 controls. No definite relation between 5-HTTLPR and anxiety or 5-HTTLPR and depression was found. However, subjects with abdominal bloating showed significantly more l/l genotype than subjects without abdominal bloating (10% vs 4%, \( p < 0.032 \)). Bloating score from the SIBSQ in subjects with I1 genotype (3.0 +/- 1.7, mean +/- SD) was significantly higher than that in subjects with s/l and s/s genotype (2.3 +/- 1.3, \( p < 0.022 \)).

Conclusion: These data suggest certain role of serotonin transporter gene polymorphism in functional gastrointestinal disorders.

Abstract 1625

PRELIMINARY ANALYSIS OF COGNITIVE FUNCTIONING IN A LARGE SAMPLE OF LIVER TRANSPLANT CANDIDATES

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Cognitive deficits can detrimentally impact daily activities and self-care, yet they have not been systematically evaluated in a large cohort of patients awaiting liver transplantation. We sought to prospectively assess cognitive capacity in a large sample of liver transplant candidates in order to determine degree of impairment prior to transplant. We studied 104 consecutive patients (mean age=54 years; 51% male; 74% Caucasian, 19% African American) who presented to our outpatient clinic for liver transplant evaluation between November 2004 and June 2005. Participants had a mean MELD score=11.33 (range=6-35). Each participant completed the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), the Shipley Institute of Living Scale (SILS), the Folstein Mini-Mental State Exam (MMSE), and Trail Making Test, Parts A and B (TMT-A and TMT-B). Participants in our sample scored in the Below Average range of functioning (where mean score=100; SD=10) on measures of memory (mean=89.51, SD=17.43), attention (mean=87.62, SD=17.23), and spatial perception (mean=88.69, SD=20.39). Serial cognitive tests to several minutes in organization and processing speed (TMT-B completion time in seconds: mean=137.22, SD=88.64). Controlling for the effects of prior education, MELD scores were strongly negatively correlated with MMSE score (\( p < 0.001 \)), SILS Abstraction abilities (\( p = 0.05 \)), and RBANS immediate and delayed memory subtests (\( p < 0.01 \) and \( p < 0.002 \), respectively). MELD scores were strongly and positively correlated with completion times on the TMT-A and TMT-B (both \( p < 0.007 \)). Independent sample t-tests indicated patients with higher MELD scores (>10) experienced significantly greater difficulty with delayed memory (\( p = 0.03 \)) than those with lower MELD scores. Patients awaiting liver transplant have significant difficulties with memory and abstract thinking, as well as with tasks requiring careful thought and sustained attention. Medical evaluation of encephalopathy fails to recognize cognitive impairments in this population, necessitating thorough pre-transplant cognitive assessments. Long-term follow-up is warranted to determine degree of recovery of cognitive functions after liver transplant.

Abstract 1525

THE EFFECT OF STRESS ON FUNCTIONAL GASTROINTESTINAL SYMPTOMS - A STRUCTURAL EQUATION MODELLING APPROACH

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Functional gastrointestinal disorders (FGD) are among the most prevalent syndromes observed in gastroenterology and clinical medicine in general. Not much is known about the etiology of these disorders, although a variety of possible causes have been discussed. Psychological factors seem to play a significant role in manifestation and maintenance of FGD. The role of stress and its significance in FGD symptomatology has been discussed. However, the multi-faceted nature of psychological stress has not been accounted for in many studies investigating the influence of stress. We set out to examine the role of stress in its many facets in the expression of FGD symptoms in a healthy population. A total of 1901 subjects have enrolled in an online survey that was designed to assess stress-related variables such as dispositional stress.
reactivity, perceived chronic stress, individual coping strategies, as well as FGD symptoms. By means of structural equation modelling (SEM), it was possible to examine a model including multiple pathways and interdependencies between these variables. Our proposed model shows a direct and indirect influence of stress reactivity on FGD symptoms, mediated by the use of coping strategies and perceived chronic stress. SEM analysis indicates a good fit of this model (Chi²(94, 1900) = 1171.54, p = 0.0, GFI = 0.93; AGFI = 0.90, CFI = 0.94, SRMR = 0.05; RMSEA = 0.077, p (RMSEA) = 0.0). Our results show that stress exerts a significant influence on FGD symptomatology. Further studies should examine long-term implications of stress factors in both etiology and symptom maintenance in FGD.

Abstract 1297

PSYCHIATRIC DISORDER AND EXTRA-INTESTINAL SYMPTOMS IN A POPULATION BASED-SAMPLE OF IRREVERSIBLE BOWEL SYNDROME.

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In a population-based sample we assessed the association between extra-intestinal symptoms, psychiatric disorder and health-related quality of life in people with irritable bowel syndrome (IBS). We mailed a random sample of 6000 adults with the Mayo Clinic Bowl Disease Questionnaire, the Psychiatric Diagnostic Screening Questionnaire and SF36. Analyses adjusted for the confounders of age, sex, years of education, comorbid chronic fatigue and fibromyalgia. Of the 3048 subjects who completed all questionnaires, 371 (12.2%) patients fulfilled the Rome II criteria for IBS (15% of females and 7% of males). The PDSQ indicated that 265 (8.7%) had one or more psychiatric disorder. The prevalence was higher in IBS (16.4%, n=61) compared to the rest of the sample (7.6%, n=204), p<0.001. 61 participants had both IBS and a psychiatric disorder, 310 had IBS alone and 2677 did not have IBS. No.of extra-intestinal symptoms and SF36 summary scores are shown in the table.

In linear regression, after adjusting for all possible confounders, IBS, neuroticism and pain severity were all independently associated with number of extra-intestinal symptoms (p<0.0005). Number of extra-intestinal symptoms, but not IBS or psychiatric disorders were strongly associated with health-related quality of life. Extra-intestinal symptoms in IBS may indicate concurrent psychiatric disorder but they are also independently associated with impaired health-related quality of life.

<table>
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Abstract 1209

THE IMPACT OF COMORbid PAIN ON TREATMENT OUTCOMES FOR A TELEPHONE-BASED COLLABORATIVE CARE STRATEGY FOR TREATING PANIC AND GENERALIZED ANXIETY DISORDER

Carrie Farmer Teh, Health Policy, Harvard University, Boston, MA, Bea Herbeck Belnap, Fang Zhu, Bruce L. Rollman, Medicine, University of Pittsburgh, Pittsburgh, PA

Pain is often comorbid with anxiety and may affect clinical outcomes for treatment of the anxiety disorder. We examined the impact of comorbid pain on primary care patients who participated in a successful NMH-funded trial of a telephone-based collaborative care strategy for treating panic and generalized anxiety disorder (PD/GAD). We used the PRIME-MD to identify patients with PD and/or GAD at four practices sharing a common electronic medical record (EMR) protocol. Eligible patients reported a baseline

Structured Interview Guide for the Hamilton Rating Scale for Anxiety (SIGH-A) >13 and/or Panic Disorder Severity Scale (PDSS) >6. We informed patients of these findings via EMR and randomized patients to either our intervention or to a "usual care" control condition. We assessed pain with the 5-point pain item within the SF-12; anxiety symptoms with SIGH-A and PDSS; and health-related quality of life with the SF-12 mental component scale (SF-12 MCS). From 7/00-4/02, we recruited 191 patients who met all study eligibility criteria (42% GAD, 10% PD, 48% PD/GAD). Mean age was 44 (range 19-63), 81% were female, and 95% were Caucasian. At baseline, 61% reported that pain interfered with their normal work "moderately", "quite a bit", or "a lot" ("high pain"). At 12-month follow-up, anxious intervention patients who reported "high pain" levels at baseline achieved greater symptom reductions on the PDSS (Effect size: 0.49 vs. -0.04; p=0.02) than anxious patients reporting lower pain levels, but there was no difference on either the SIGH-A (0.43 vs. 0.09; p=0.18) or the SF-12 MCS (0.37 vs. 0.16; p=0.47) by pain level. Primary care patients with PD and/or GAD often report high-levels of comorbid pain and may differentially benefit from a telephone-based collaborative care strategy for treating these disorders.

Abstract 1189

DISRUPTION OF CIRCADIAN AUTONOMIC RHYTHM DISTINGUISHES FIBROMYALGIA PATIENTS AMONG A CLINICAL SAMPLE OF PATIENTS WITH PAIN SYNDROMES

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PURPOSE:To determine if heart rate variability (HRV) measures distinguish fibromyalgia (FM) patients from other patients presenting with pain syndromes. The nature of autonomic dysfunction in FM is unclear. Measures of HRV include time-domain, frequency-domain, and circadian rhythm. There is no consensus about which measure is the most relevant pathophysiologically or clinically.

SAMPLE:Patients in an academic rheumatology practice that specializes in Fibromyalgia.

METHODS:Retrospective case study of 27 female patients who had HRV collected as part of their clinical care. We examined HRV measures in time-domain(SDNN, RMSSD), frequency domain(LF, HF, LF/HF, Total Power),and circadian rhythm(change in HF power between midnight and 5 am). Student's t-test was performed comparing these measures between women with and without FM.

RESULTS: There were no significant differences in time domain or frequency domain measures of HRV among women with and without FM. There was a significant difference in circadian pattern of HF power between women with and without FM. The mean circadian change in HF power (in mse squared) was -3.50 for women with FM, and 5.16 for women without FM (p=0.000001). CONCLUSIONS: Female patients with FM show a loss of high-frequency power in heart rate variability in a circadian pattern, distinguishing them from female patients with non-FM pain syndromes. This finding may reflect disrupted parasympathetic activity. Time domain and frequency domain measures of HRV may be inadequate to distinguish FM in a clinical sample. Examining circadian pathophysiology in this disorder of pain and sleep disruption may yield more insights into the nature of FM. Circadian abnormalities of HRV, but not other abnormalities of HRV, are also found in Gulf War Illness, suggesting a link between these conditions.

Abstract 1022

A COMPUTER ADMINISTERED AND SCORED TEST TO VALIDATE THE COMPLAINT OF CHRONIC PAIN

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A 32 question computer administered and scored test was administered to 148 chronic pain patients. Based on their scores, patients were divided into objective pain patients, mixed objective-exaggerating pain patients, and exaggerating pain patients. 95.4% of the time the objective pain patients had moderate or severe abnormalities on at least one objective measure of organic pathology (MRI, CT, EMG, etc.). 79% of the time the exaggerating pain patients had mild or no abnormalities. This test helps differentiate between patients who have a "Pain disorder associated with a general medical
ANGER MANAGEMENT STYLE, INHIBITION/EXPRESSION OF ANGER, AND SYMPTOM-SPECIFIC REACTIVITY IN CHRONIC PAIN PATIENTS
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Anger management affects pain severity in patients with chronic low back pain (CLBP). However, the mechanisms by which anger may worsen pain are unclear. A symptom-specific reactivity model holds that anger amplifies pain through increased muscle tension near the injury site. For CLBP patients, anger may induce greater tension in low back muscles (lower paraspinals; LP) than in muscles distant from low back (trapezius). Also, inhibiting anger expression may cause prolonged physiological recovery; effects exacerbated among patients who usually express anger. 88 CLBP patients performed mental arithmetic (MA) with harassment. Half then told stories about 3 pictures of people (Express); the other half described objects in the same 3 mental arithmetic (MA) with harassment. Half then told stories about 3 pictures (Inhibit). Subjects recovered for 5-min. The Anger-out (hi, low) x Condition (Express, Inhibit) x Interaction during stories (assessed by LIWC) was significant: Hi Anger-out/Express used the most (p<.05). Anger-out x Condition x Period (BL, MA, Stories, 3-min, 5-min) effects for LP were significant [F=2.9;p<.05]: a) for Lo Anger-outs, LP tension did not change depending on Condition, whereas for Hi Anger-outs it did [F=3.4; p<.01]; b) for Hi Anger-out/Express, high LP tension during MA returned to BL level during Stories [F=1], whereas Hi Anger-out/Inhibit maintained elevated LP tension even at 5-min recovery [F=5.3;p<.01]. For trapezius, only Period effects were significant. Anger-out x Condition x Period effects were significant for SBP [F=2.8;p<.05]: a) Hi Anger-out/Express increased SBP from MA to Stories [F=3.5;p<.05] but then recovered to BL levels by 3-min recovery; b) Hi Anger-out/Inhibit did not show SBP increases during Stories but maintained significant SBP elevation at 3-min recovery [F=3.5; p<.05]. Results support a matching model for anger management and pain such that CLBP patients who typically express anger may maintain elevated symptom-specific LP muscle tension when prevented from doing so.

A TRIAL OF EXTERNAL QIGONG THERAPY FOR IMPROVING THE SYMPTOMS OF FIBROMYALGIA SYNDROME
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External qigong therapy (EQT) is an essential part of traditional Chinese medicine that differs from qigong movement therapy. EQT refers to the process by which qigong practitioners direct their own qi energy into others to break qi blockage, then remove sick qi from the body in order to achieve balance and restore health. This preliminary study was an open trial without a control. Ten patients who met ACR criteria for fibromyalgia syndrome (FMS) completed 5-7 sessions of EQT over a 3-week period from the same qigong healer. Prior to the first and immediately after the last session of treatment patients were examined by the same rheumatologist. Outcomes included the Fibromyalgia impact Questionnaire (FIQ), Modified Pain Research Consortium tender point count (TPC) and the Beck Depression Inventory-II (BDI). Questionnaires were repeated in a 1-month follow-up. After treatment, all subjects demonstrated improvement in functioning, pain and other symptoms. More specifically, the mean tender point count was reduced from 152.9 at baseline to 65.6 at the follow-up after EQT treatment (p<.01); mean scores on MPQ decreased from 27.0 to 7.2 (p<.01); mean FIQ scores decreased from 65.5 to 35.5 (p<.01); and mean BDI scores reduced from 24.3 to 8.3 (p<.01). Further, among the 6 subjects who took medications for their pain before the study 3 reported reduction and 2 reported complete elimination of medication use at the end of the study. Many subjects reported reductions in other FMS symptoms, e.g. poor sleep, fatigue, cognitive dysfunction. Results from the 1-month follow-up indicated some rebound in comparison with the post-treatment measures, but scores were still superior to those observed at baseline. Although promising, many unknown elements in this anecdotal study of EQT in FMS could be resolved with a randomized controlled trial.

AN INVESTIGATION INTO THE EFFECTS OF THE CO2 CHALLENGE TEST ON INDICES OF THE HYPOTHALAMIC PITUITARY ADRENAL AXIS AND SYMPATHETIC NERVOUS SYSTEM
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The manipulation of psychological stress is an important technique in psychosomatic medicine; used to characterise emotional and physiological responses to stressful encounters. Many procedures have been developed to achieve this stress response. However, some approaches are limited by their lack of face validity, ease of administration, safety, and their inability to activate all of the body’s key physiological stress systems. Our group has developed a new stress task, the CO2 challenge test, that seeks to overcome many of these limitations. The aims of the present study were to examine whether (i) the task could activate the hypothalamic pituitary adenal (HPA) axis and sympathetic nervous system (SNS); (ii) whether effects were stable over time and (iii) whether salivary indices correlated with plasma indices to enable the task to be conducted non-invasively.

22 healthy participants inhaled a single breath of CO2 (35%) and oxygen (65%). Blood pressure and heart rate were recorded for 5 minutes pre and post task; blood and saliva samples were taken pre and 2, 10, 20 and 30 minutes post task for the measurement of, noradrenaline, plasma and salivary cortisol and salivary alpha amylase. The protocol was repeated 4-6 weeks later. Paired sample t-tests examined whether significant changes occurred in the HPA and SNS indices pre and post the CO2 challenge test. All parameters changed significantly (all p<.05). Further paired sample t-tests explored whether responses of these parameters at time 1, differed significantly from those observed at time 2. No significant differences were apparent (all p>0.05) suggesting that individuals had not habituated to the task. Finally, correlation analyses revealed that amylose did not correlate with noradrenaline, but that significant positive correlations were evident between plasma and salivary cortisol (all p<0.01). The CO2 test appears to activate the HPA and SNS, effects are stable over time and most parameters can be measured non-invasively.

REDISTRIBUTION OF IMMUNE CELLS IS REGULATED DEPENDING ON SITUATIONS: FROM THE RELATIONSHIP BETWEEN LEARNING AND IMMUNE SYSTEM
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To raise the possibility for living, organisms have to elicit appropriate immune response depending on several situations. Previous studies have indicated that the redistribution of immune cells in peripheral blood was elicited by laboratory acute stressor task and accumulated the findings about the underlying mechanism. However, there is no study examining whether the variation of immune cells could occur actually according to the situation or not. Therefore, present study tried to examine this issue. For this purpose, we used a stochastic learning task as an acute stressor task. In this task, twenty participants were divided into learnable (L group) or unlearnable (UL group) group. It was known in previous researches that L group could cope with the situation by learning the appropriate response in the task while UL group could not. Thus, it was thought that the physiological reactivity in several parameters should differ between groups. Participants in both groups experienced baseline period, task period, and rest period and blood samples for natural killer cells (NK cells), CD3+ T cells, CD4+ helper T cells, and CD8+ cytotoxic T cells were collected at intervals of these blocks. Cardiovascular parameters such as blood pressure (BP), heart rate (HR), cardiac output (CO), and total peripheral resistance (TPR) were monitored during the experiment. As the results, we observed the significant interactions between group and period meaning NK cells and CD4+ helper T cells varied remarkably only in L group during the task (p<.05). Moreover, BP, HR and CO elevated more pronouncedly in L group (p<.01) while UL group did not show such reactivity in immune and cardiac parameters. These results should mean the possibility that organism could regulate their immune responses depending on the situation and the underlying mechanism in this result is concerned with inhibitory control of prefrontal cortex.
DISCLOSURE CONSTRAINTS FOLLOWING EMOTIONAL AROUSAL: EFFECTS ON CARDIOVASCULAR REACTIVITY TO SUBSEQUENT STRESS
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Self-disclosure following emotional events is characteristic of emotional experience. Health outcomes differ for individuals with and without emotional disclosure opportunities, perhaps due to the impact disclosure constraints have on coping with subsequent stress. The current study examined whether varying disclosure opportunities after emotional arousal would affect cardiovascular reactivity to a novel stressor. Thirty 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 and blood pressure methods provided continuous assessment of heart rate (HR), cardiac output (CO), pre-ejection period (PEP), and total peripheral resistance (TPR).

Results indicated that, after controlling for baseline values, women who emotionally disclosed had lower HR (p = .05) and lengthened PEP (p = .01) during the math task compared to women without emotional disclosure opportunities. Further, among emotion disclosers, only HR was elevated above baseline levels during the math task (p = .01). Women without disclosure opportunities demonstrated greater HR (p = .01), CO (p = .06) and shortened PEP (p = .00) during the math task compared to baseline, with no compensating decline in TPR, suggesting not only greater sympathetic activation to the stressor compared to emotional disclosers, but also a suboptimal cardiovascular stress profile during the task. There were no differences in math performance between the groups. These findings suggest that constraints on emotional disclosure have physiological consequences during subsequent, novel stress, indicating a potentially important pathway linking social contexts of emotion to health.

Abstract 1374

AFFECTIVE STARTLE MODULATION AND CARDIOVASCULAR STRESS REACTIVITY TYPES IN ANGER PRONE SUBJECTS
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Cardiovascular stress reactivity (CR) and affective startle modulation (SM) are common paradigms in psychophysiology research. Whereas most studies concentrate on one of these paradigms, the present study combined both concepts to better understand the psychophysiological mechanisms of affect regulation. 120 male students (mean age 25 years) underwent a standardized mental stress task with continuous SBP and DBP recordings. Before the stress test, subjects were assessed for trait-anger (TA), anger-in (AI), anger-out (AO) and anger control (AC) (STAXI). In a second session, they were presented with 42 pictures (IAPS) varying in valence (pleasant, neutral, unpleasant). During the session, an acoustic startle stimulus was given and EMG was recorded. Startle modulation was defined as EMG difference between unpleasant and pleasant pictures.

Based on SBP and EMG reactivity, we formed four groups (median split): 1) low SM and low CR (Nonresponders), 2) low SM and high CR (Cardiovascular Reactors), 3) high SM and low CR (Startle Modulators), 4) high SM and high CR (Double Responders). For TA, ANOVA revealed a significant interaction effect [SMxCR [F(3,116)=4.2 p<.043] with highest TA in the Double Responders and lowest TA in the Startle Modulators. Further, there was a trend [F(3,121)=3.17, p=.08] for a main effect for CR referring to higher TA in Cardiovascular Reactors and Double Responders. The Nonresponders showed highest AI and highest AO scores, whereas the Cardiovascular Reactors showed the lowest AO scores, indicated by a trend for an interaction effect [SMxCR [F(3,116)=3.0 p=.086]. For AC, ANOVA revealed a trend for an interaction effect [SMxCR [F(3,116)=3.5 p=.064], with highest AC in the Cardiac Responders and lowest AC in the Double Responders. In this nonclinical sample we could demonstrate significant associations between physiological reactivity patterns and TA and different anger expression styles. Further research is needed to find out whether other affect states such as e.g. anxiety form equal reactivity patterns.

INTERPERSONAL DEPENDENCY AND PHYSIOLOGICAL REACTIVITY TO INTERPERSONAL LOSS
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Psychologists speculate that high levels of interpersonal dependency (i.e., a tendency to seek help, guidance, and support from others, even in situations where autonomous functioning is possible) should be associated with increased physiological reactivity, especially in the face of interpersonal conflict or loss. However, no studies have addressed this issue directly. Moreover, a recent meta-analysis documented associations between high levels of interpersonal dependency and elevated rates of physical illness in both retrospective (r = .31) and prospective (r = .27) studies. Exploration of physiological responses to interpersonal loss in dependent people may help illuminate one pathway underlying these dependency-disease links. The purpose of the current pilot study was to examine whether exposure to an emotional stressor with an interpersonal theme will differentially affect cardiovascular reactivity in individuals with high or low levels of interpersonal dependency. Twenty three women completed the Interpersonal Dependency Inventory (IDI), and following a rest period, they viewed a 5-minute film clip depicting intense sadness felt by a mother upon the death of her adult daughter. Startle reactivity (eyeblink, pupil diameter, startle electromyography (EMG) and diastolic 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 demonstrated increases in both diastolic and systolic blood pressure (ps < .05) and decreased RSA (p = .06) from baseline during the viewing of the film clip, whereas women with low levels of dependency demonstrated no significant changes. These findings suggest that interpersonally-meaningful events have different physiological consequences for individuals depending on their levels of interpersonal dependence, and may help explain observed dependency-disease links.

Abstract 1499

INFLUENCE OF ATTENTION MANIPULATION ON COGNITION, EMOTION, AND AUTONOMIC RESPONSES
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Based on the self-regulation theory, perseverative self focused attention exacerbates negative affect such as depression and anxiety. On the other hand, a technique designed to produce a shift away from self focus leads to reductions in levels of anxiety. In cognitive theory, there is interaction between cognition and emotion. Previous findings have demonstrated that increasing anxiety state leads to shift to allocate more cognitive resource to negative stimulus. For comprehensive understanding of psychological activity, we attempted to describe the interaction between cognitive, affective, behavioral, and physiological responses by self-focus and external-focus. This study tested the prediction that in anxiety state brief inductions of self-focus versus external-focus would differentially affect emotion states, autonomic responses, and cognitive negativity bias. To increase anxiety state, participants were introduced to prepare speech. After the preparation, we gave participants their own heart rate feedback. Seven participants in the self-focus condition were let to know the sound was their own heart beats and the other seven participants in the self-focus condition were let to know the sound was not their own heart beats and the other seven participants in the self-focus condition were let to know the sound was not their own heart beats. Following the attention manipulation, participants evaluated the emotion, cognitive negativity bias, and physiological responses by self-focus and external-focus. This study tested the prediction that in anxiety state brief inductions of self-focus versus external-focus would differentially affect emotion states, autonomic responses, and cognitive negativity bias. To increase anxiety state, participants were introduced to prepare speech. After the preparation, we gave participants their own heart rate feedback. Seven participants in the self-focus condition were let to know the sound was their own heart beats and the other seven participants in the self-focus condition were let to know the sound was not their own heart beats.
Abstract 1176

TIME COURSE EFFECTS OF UNCONTROLLABLE ACUTE STRESS ON IMMUNE AND CARDIOVASCULAR RESPONSES
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The objective of the study was to investigate the time course and the duration of effects of controllability of acute stress on responses of immune, endocrine, and cardiovascular activities. For two days, twenty healthy women divided into two groups (controllable and uncontrollable groups) completed a mental arithmetic task (four trials) as a stressor in which controllability was manipulated by correct or yoked-bogus feedback. The manipulation of controllability was performed only on the first trial of the first day of the experiment. The increase in HR and NK cells of the uncontrollable group were lower than those in the controllable group. In conclusion, differentiation of immune and cardiovascular acute stress responses according to controllability of a stressor can be delayed.

Love affects mood, autonomic nervous and endocrine systems
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As we well known, self-related positive emotion such as love often makes us energetic, suggesting that such self-related positive emotion may control mood and the biological systems, such as autonomic nervous, endocrine and immune systems. To investigate the effects of self-related positive emotion on mood and the biological systems, we recorded simultaneously mood status, heart rate (HR), skin conductance level (SCL), serum levels of several hormones (endorphin, oxytocin, vasopressin and epinephrine) and proportions of T cells and natural killer (NK) cells in blood when subjects viewed the video images of the person whom they loved. The mood status was assessed by profile of mood status (POMS), the serum levels of several hormones were measured by Enzyme-Linked Immunosorbent Assay (ELISA), and the proportions of T cells and NK cells in blood were measured by flowcytometer. Evoked love emotion, they became more vigorous and the increase in SCL was observed. In addition, the serum level of endorphin significantly increased and the serum level of epinephrine significantly decreased. Significant changes in HR, the serum level of oxytocin and vasopressin were not found. Unfortunately, significant changes in the immune system, proportions of T cells and NK cells in blood, were also not observed in this study. These results suggested the possibility that self-related positive emotion, love, makes us vigorous by means of the activation of SCL-related autonomic nervous and endorphin-dependent endocrine system. Furthermore, this emotion has a role in stress reduction through the decrease in blood level of epinephrine.

Abstract 1187

PHYSIOLOGICAL CORRELATES OF INTERPERSONAL MISTREATMENT IN WOMEN
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Interpersonal mistreatment, a form of chronic social stress, has important implications for health. Among African American women, reports of interpersonal mistreatment are positively associated with subclinical atherosclerosis, indexed by intima media thickness (Troxel et al., 2003). The present study evaluated physiological correlates of interpersonal mistreatment that, cumulatively, could contribute to poorer health status in women. In contrast to prior research, we evaluated physiological responses during social interactions, a relevant context for women endorsing prior experiences of interpersonal mistreatment. We also distinguished types of mistreatment based on socioemotional quality (i.e., disrespect vs. threat/accusation, as opposed to subtle vs. blatant). Healthy African American and European American premenopausal women (N=54) ages 18-35 completed an interpersonal mistreatment measure and engaged in three 4-min interactions, each preceded by a 10-min rest, with an unacquainted, same ethnicity, and opposite-sex partner. Blood pressure (BP) was measured during all rests and interactions. There were no significant effects for BP reactivity to the social interactions. Analysis revealed significant ethnicity x threat/accusation interactions for both systolic, F(2, 48) = 2.41, p = .02, and diastolic BP levels, F(2, 48) = 3.32, p < .05. For European American women, frequent experiences of threats/accusations were associated with higher BP levels (ps < .03) during initial baseline and throughout all rests and discussions. In light of prior research, these results, including the ethnicity-specific pattern, suggest that physiological correlates of interpersonal mistreatment are context-dependent. Associations were stronger with tonic, but not phasic, BP responses suggesting that prior exposure to threats/accusations may broadly alter psychological processing of social situations and culminate in sustained hyper-reacting, perhaps via vigilant processing of the social environment for potential threats.

Abstract 1227

THE PRESENCE OF SPOUSE/PARTNER DURING ACUTE STRESS TESTING ATTENUATES CARDIOVASCULAR REACTIVITY IN WOMEN.
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Support from others has been shown to reduce cardiovascular reactions to acute stress exposures. This study examined, in a large sample, whether the mere presence of a spouse or partner during stress testing similarly affected cardiovascular reactivity. Blood pressure and pulse rate were measured at resting baseline and during an time-pressured mental arithmetic stress task in 1028 married or partnered men (47%) and women (53%); average age at testing was 46 years (SD = 13.5). Participants were tested in a quiet room in their own homes. For 112 participants, their spouse/partner was present during stress testing. Cardiovascular reactivity was calculated as the arithmetic difference between task and baseline cardiovascular levels. There was no overall effect of spouse/partner presence on reactivity. However, there were significant sex of participant x spousal presence interaction effects for systolic blood pressure (F(1,1024) = 4.59, p = .03, partial eta-squared = .004) and pulse rate (F(1,1024) = 4.67, p = .03, partial eta-squared = .005); those women whose spouse/partner was present showed significantly lower systolic blood pressure (4.4 mmHg versus 11.0 mmHg) and pulse rate (2.3 bpm versus 7.7 bpm) reactions to the task. No such effect was apparent for men (13.4 mmHg versus 13.6 mmHg and 7.7 bpm versus 8.1 bpm, respectively). The effects of spouse/partner presence for women on cardiovascular reactivity withstood adjustment for stress task performance, as well as adjustment for age, occupational status, body mass index, and baseline cardiovascular levels. In conclusion, the mere presence of a significant other attenuated women's cardiovascular reactivity. This result extends previous research showing that supportive others affect acute stress responses, but intimates that spouse/partner presence may be effective only for women.
POSTER SESSION II

Abstract 1438

MINDFULNESS-BASED STRESS REDUCTION AND ACUTE STRESS RESPONSES IN WOMEN WITH CANCER
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We conducted a waitlist trial investigating the impact of an 8-week Mindfulness-Based Stress Reduction (MBSR) program on the acute cardiovascular and neuroendocrine stress responses of cancer patients. Women with a diagnosis of cancer (mostly breast) were recruited from the Tom Baker Cancer Centre. Participants were either registered for immediate MBSR participation, or were waiting for the next program. Physiological responses (cardiovascular and neuroendocrine) to a series of standard laboratory stressors were assessed both before and after participation in the immediate MBSR program, or before and after the 8-week wait period. Perceived mood and stress levels were also assessed, to determine whether psychological benefits resulted, and whether these changes were associated with changes in physiological responses. It was hypothesized that there would be significant changes in the stress response after MBSR group participation, which might reflect increased regulation of HPA axis and autonomic system function. Paired sample t-tests on baseline data for the MBSR group (n = 12) revealed significant increases in blood pressure in response to the math (systolic, t = 3.22, p = .008; diastolic, t = 3.34, p = .007) and public speaking (systolic, t = 6.54, p = .001; diastolic, t = 4.9, p = .001) stressors. Multivariate analyses of covariance will be conducted to assess for significant group differences in terms of post- to pre-intervention change in physiological responses. The present study is the first to evaluate the efficacy of MBSR to reduce acute stress responses associated with both the physiological and psychological symptoms of cancer and its treatment.

Abstract 1595

SOMATIZATION SCORES PREDICT SURVIVAL OF HEMATOLOGIC MALIGNANCY PATIENTS UNDERGOING BLOOD OR MARROW TRANSPLANTATION
Kevin T. Larkin, Angela J. Lowery, Psychology, West Virginia University, Morgantown, WV; Solveig G. Ericson, Hematology/Oncology, WVU Hospitals, Morgantown, WV; Cara F. O'Connell, Andrea K. Shreve-Neiger, Brandie K. Taylor, Andria Doyle, Psychology, West Virginia University, Morgantown, WV

There are several medical factors that influence the likelihood of patient survival in patients that undergo bone marrow transplantation for treatment of hematological malignancies. It is unknown whether psychological factors also predict the likelihood of survival among these patients. In the current study, it was hypothesized that an index of pre-treatment medical risk as well as psychological factors would significantly predict patient survival. The hematological oncology treatment team determined medical risk scores for each patient based upon diagnosis, number of bone marrow transplants, type of transplant, and disease status at transplant. In addition, subscale scores on the Brief Symptom Inventory (BSI-18), a screener for psychological symptoms with oncology norms, obtained at the time of admission were included in the analysis to determine if these scores might predict death in addition to the risk score. The study included a sample of 87 patients who had undergone bone or marrow transplantation. At the time of the study, 40 patients were living and 47 patients had died. A logistic regression analysis revealed that, as expected, medical risk significantly predicted death (Wald = 9.43, p < .01). When scores for BSI-18 were added into the analysis, scores on the Somatization subscale significantly predicted death above and beyond the prediction from the risk score (Wald = 5.48, p < .02), with lower somatization scores predicting survival. The Depression and Anxiety subscales of the BSI-18 were not significant predictors of patient survival. These findings suggest that patient interpretation and reporting of somatic symptoms predicts likelihood of patient survival above and beyond that which is predicted by medical risk factors.

Abstract 1633

EXPANDING RURAL ACCESS: DISTANCE DELIVERY OF BREAST CANCER SUPPORT GROUPS
Cheryl Koopman, Psychiatry & Behavioral Sciences, Stanford University, Stanford, CA; Mary Anne Kreshka, Sierra College, Nevada City, CA; Susan Ferrer, Northern Sierra Rural Health Network, Nevada City, CA, Kate Collie, Psychiatry & Behavioral Sciences, Stanford University, Stanford, CA, Rebecca Parsons, Northern Sierra Rural Health Network, Nevada City, CA, Kathy Graaddy, Graddy Graphic Design, San Francisco, CA, Xin-Hua Chen, Psychiatry & Behavioral Sciences, Stanford University, Stanford, CA, Speranza Avram, Northern Sierra Rural Health Network, Northridge, CA

This community-based project explores the uses of videoconferencing to increase access to psychosocial support for women with breast cancer who reside in rural and isolated areas. Twenty nine women living with breast cancer have been recruited from rural communities of northeastern California to participate in this pilot study to test the feasibility of using videoconferencing to provide support groups across a great distance. Women were assigned to one of four 8-session support groups that were led by an experienced clinical social worker and which were based on Spiegel's principles of Supportive-Expressive Therapy. Up to 4 videoconferencing sites are connected by a bridge and participants view the facilitator and the other sites on a split screen. This project has supported the feasibility of using this modality for providing psychosocial support to women in rural communities. This is striking because with this modality, it is more difficult to use visual cues to augment auditory ones, and it can be challenging to adjust to the time-lag in the sound of speech. Attendance has been excellent, even during severe weather. Participants adapted quickly to the technology and readily turn to the content of discussion. Older as well as younger women are very comfortable using the technology and identifying themselves during video conferencing compared to face-to-face groups, such as facilitating uninterrupted listening. This intervention can tap the potential of already existing technology to provide missing psychosocial support. Our future plans are to further test and refine this intervention and to train health care providers with the hope of establishing psychosocial support delivered via videoconferencing as part of routine care for rural women with breast cancer.

Abstract 1623

PRE-SURGICAL PSYCHOSOCIAL PREDICTORS OF DYSREGULATED DIURNAL CORTISOL AMONG WOMEN WITH SUSPECTED ENDOMETRIAL CANCER

Cortisol dysregulation is associated with psychosocial factors and also has been associated with greater disease severity and earlier mortality among women with breast cancer. No published research has examined these relations among women with endometrial cancer. We examined the feasibility of research on psychosocial factors and cortisol among primarily elderly women with Stage 0-III endometrial cancer, the most common gynecologic cancer in the US. Fifteen Ss (age M = 61.75, SD = 11.29, range: 35-83) scheduled to undergo surgery for suspected endometrial cancer completed a psychosocial interview and provided saliva samples for analysis of diurnal cortisol prior to surgery. Stress was measured with the Perceived Stress Scale and the Life Experiences Survey; sleep quality was measured with the Pittsburgh Sleep Quality Index. Significant relationships emerged between greater perceived stress and poorer sleep latency (r = .65, p < .05), greater number of negative life events and poorer global sleep quality (r = -.92, p < .001), and greater impact of negative life events and poorer global sleep quality (r = -.92, p < .05). Results also revealed that use of sleep medication was associated with greater diurnal cortisol slope dysregulation (r = .78, p < .05), and that both poorer subjective sleep quality (r = -.73, p = .06) and poorer sleep efficiency (r = -.73, p = .07) were marginally associated with greater morning cortisol. These findings are related to research that cortisol, although this may be due to low power. This study supports the feasibility of psychoneuroimmunologic research among elderly women with gynecologic cancer, an understudied population. Preliminary results suggest that there may be significant relations among stress and sleep quality, and sleep quality and cortisol in these women. Future research is warranted.

Abstract 1589

BRIEF SYMPTOM INVENTORY-18 SCORES PREDICT GLOBAL FUNCTIONING AMONG HOSPITALIZED HEMATOLOGIC MALIGNANCY PATIENTS
Angela J. Lowery, Kevin T. Larkin, Psychology, West Virginia University, Morgantown, WV; Solveig G. Ericson, Hematology/Oncology, WVU Hospitals, Morgantown, WV; Cara F. O'Connell, Andrea K. Shreve-Neiger, Brandie K. Taylor, Andria Doyle, Psychology, West Virginia University, Morgantown, WV

Studies have shown that higher Brief Symptom Inventory-18 (BSI-18) scores predict lower global functioning among hospitalized hemato-oncology patients. There is a need for larger studies that can provide more comprehensive data on the relationship between BSI-18 scores and global functioning. This study examines the relationship between BSI-18 scores and global functioning among hospitalized hemato-oncology patients. The study included 100 hospitalized hemato-oncology patients who were admitted to the hospital for treatment of a hematologic malignancy. The patients completed the BSI-18 and the Functional Assessment of Cancer Therapy-General (FACT-G) during their hospitalization. The results showed that higher BSI-18 scores were associated with lower global functioning. This study supports the feasibility of the BSI-18 as a tool for predicting global functioning among hospitalized hemato-oncology patients.
Patients who have been diagnosed with a hematological malignancy often undergo invasive, painful, and stressful treatment for their illness. These treatments in combination with hospitalization can drastically change the patient's quality of life. Since such patients may experience a large amount of stress, many also experience psychological distress and a decrease in their daily functioning. The ability to predict which patients may experience such distress may allow the treatment team the ability to identify which patients are at risk and to provide these patients with the appropriate psychological services. The purpose of the current study was to determine if scores of psychological symptoms at the time of admission for patients with a hematologic malignancy would predict average global assessment of functioning (GAF) scores later on during hospitalization. The psychological assessment measure used was the Brief Symptom Inventory 18 (BSI-18), which is a psychological screener with norms for an oncology population. One hundred seventy-six patients (108 males and 68 females) on an inpatient oncology unit completed the BSI-18. GAF scores were assigned regularly for each patient during hospitalization. A regression analysis indicated that BSI-18 scores accounted for a significant amount of variance in predicting average GAF scores ($R^2 = .102$, $p < .001$). This finding suggests that initial scores on a measure of psychological symptoms predict average daily functioning of oncology patients throughout hospitalization. These results support the use of the BSI-18 as a psychological screening measure during initial patient admission.

Abstract 1480

EFFECTS OF A PSYCHOSOCIAL MULTIMODAL RETREAT PROGRAM ON THE MARITAL RELATIONSHIP AND QUALITY OF LIFE OF PALLIATIVE CANCER PATIENTS AND THEIR PARTNERS
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Distress is a common result of a cancer diagnosis and is highest in patients with untreated cancer. This distress affects not only the Quality of Life (QL) of the patient but also of their partner. This study examines the relationship between marital satisfaction and QL in couples who chose to attend a retreat based psychosocial program compared to non-attenders. Patients completed the Functional Assessment of Cancer Treatment-General and McGill Quality of Life Questionnaires and partners completed the Quality of Life in Life-Threatening Illness-Family Caregiver version and the couple completed the Index of Marital Satisfaction. The following questions were addressed: Are couples that attend the retreat different from those who choose not to on measures of marital satisfaction, QL and psychological and physical symptomatology? To what extent is marital satisfaction related to QL in palliative cancer patients and their partners? Does participation in the retreat have an effect on the marital satisfaction and QL of palliative cancer patients and their partners? Twenty-three couples consented to the study and of these, 10 attended the retreat. Patients were diagnosed with metastatic incurable breast, prostate or colon cancer. Patients who chose to attend the retreat expressed significantly more dissatisfaction with their relationships ($p<.05$) and had a lower QL ($p<.01$) compared to patients who chose not to attend the program. Spouses of patients who attended were also significantly more dissatisfied with their relationships ($p<.05$) and had a lower QL ($p<.05$) compared to partners who did not attend the program. Marital satisfaction was significantly ($p<.01$) related to QL for the patients and partners in both groups. Improvement in marital satisfaction approached significance ($p<.10$) for the partners of patients who attended the retreat. Longitudinal data being collected at 3, 6, 9 and 12-month follow-up will further elucidate the effect of the program and patterns of change over time.

Abstract 1477

RELATIONSHIPS BETWEEN PSYCHOLOGICAL STRESS AND SALIVARY CORTISOL IN WOMEN WITH AND WITHOUT BREAST CANCER
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The distress that often accompanies a diagnosis of breast cancer does not always resolve upon completion of treatment and some forms of distress may increase. This research examined psychological and physiological stress markers in women with breast cancer compared to healthy women of similar demographics. Specifically, the relationships between reported psychological symptomatology and salivary cortisol levels were investigated. Both sets of women in this study completed an identical questionnaire battery (Symptoms of Stress Inventory, Profile of Mood States, State-Trait Anxiety Inventory-Trait, Center for Epidemiological Studies-Depression, and Pittsburgh Sleep Quality Index) and provided salivary cortisol samples at 4 times over a 24 hour period (waking, 12pm, 4pm, before bed). Thirty-three women with breast cancer (M(Age)=51.25, SD=10.19) and 33 women without breast cancer (M(Age)=53.41, SD=5.98) consented to the study. The women in the breast cancer group had received their breast cancer diagnosis an average of 1.36 years prior to the study. No significant differences between the groups were found on any of the demographic variables, in that most of the women in both groups were Caucasian, married and well educated. Women in the breast cancer group reported significantly higher stress levels ($p<.01$), mood disturbance ($p<.05$), anxiety ($p<.05$), depression ($p<.01$), and poorer sleep quality ($p<.05$). Despite differences on psychological measures, there were no significant differences between salivary cortisol levels or diurnal cortisol slopes of the two groups. These results support past research that failed to find relationships between psychological stress and salivary cortisol in women with breast cancer. In conclusion, women who have received treatment for breast cancer report significantly more negative psychological symptomatology than their peer group. Further research is needed to investigate the relationship between cortisol levels and psychological variables.

Abstract 1806

WHICH PSYCHOSOCIAL CHARACTERISTICS INFLUENCE RECEIVING A RECOMMENDATION FOR COLORECTAL CANCER SCREENING?
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Purpose. To determine the relationship between patients’ psychosocial characteristics and receipt of a physician’s recommendation for colorectal cancer screening.

Study sample. Primary care patients, aged 50 to 80, without previous or current colorectal cancer.

Method. This cross-sectional study was conducted in family medicine and internal medicine clinics at three hospitals in Montreal (2004-05). Psychosocial characteristics were assessed by validated self-administered questionnaires and included depression (Center for Epidemiologic Studies Depression Scale), coping styles (Coping Inventory for Stressful Situations), and social support (MOS Social Support Survey). Receipt of a physician’s recommendation for screening was assessed following the office visit by physician questionnaire.

Results. 616 (age=65.7, 60.5% F) patients participated. 284 (46.1%) patients were eligible for screening, of whom 206 (72.5%) received a physician's recommendation for screening. Physicians' recommendations for screening included: 96 (15.6%) fecal occult blood tests, 1 (2.0%) flexible sigmoidoscopy, 1 (2.0%) double contrast barium enema, and 112 (18.2%) colonoscopies. Using multiple generalized estimating equations, increasing age (OR=1.04, 95%CI=1.01-1.06), emotion-oriented coping (OR=1.02, 95%CI=1.00-1.03), and lower emotional social support (OR=0.67, 95%CI=0.52-0.88) were associated with not receiving a physician recommendation for screening. Conclusion. Among screen-eligible patients, increased use of emotional coping (e.g. becoming angry or upset) and decreased emotional support (e.g. reduced caring, love, and empathy) were associated with increased odds of not receiving a physician's recommendation for colorectal cancer screening.

Abstract 1461

PRE-TREATMENT FATIGUE AND CELLULAR IMMUNITY IN CERVICAL CANCER PATIENTS
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Fatigue is a substantial problem among cancer patients following radiation and chemotherapy treatment. Levels of fatigue prior to therapy are less well
understood. We examined relationships between psychosocial and immune factors and fatigue in cervical cancer patients before treatment. Thirty-three stage IIB to IVA cervical cancer patients were assessed for fatigue (FSI), distress (POMS), CD4+ and CD8+ percentages, and percentages of these cells positive for Type-1 (IFNγ) vs. Type-2 (IL-4) cytokines. Cytokine producing T cell percentages were assessed via intracellular stain of PMA/ionomycin stimulated and unstimulated cells. Patient levels of fatigue were elevated compared to published norms for both cancer patients in active treatment and healthy controls. Fatigue was not related to cancer stage, age, BMI, smoking, hemoglobin, hematocrit, or POMS depression (all p > .05). Greater mean fatigue was associated with lower CD4+ percentages (r = -.48, p = .006), higher CD8+ percentages (r = .50, p = .004), and lower CD4/CD8 ratios (r = -.49, p = .005). Significant associations with these 3 immune outcomes were seen for patients' current fatigue, and fatigue interference with daily activities (all p < .05). Contrary to our expectations, fatigue was associated with both greater Type 1 and greater Type 2 responses. Patients with higher greater fatigue had higher levels of stimulated CD8+IFN+ cells (mean fatigue: r = .39, p = .034; fatigue now: r = .39, p = .03, fatigue interference: r = .31, p = .094). Greater fatigue interference was related to significantly higher levels of CD8+IL4+ cells (r = .41, p < .033). These findings suggest altered immunologic profiles of fatigue cancer patients even before surgery. As the CD4/CD8 ratio has prognostic significance in cervical patients, these findings may have clinical implications.

Abstract 1128
A SIMPLE, COST-EFFECTIVE, LEAFLET CAN REDUCE DISTRESS DURING HEALTH RISK ASSESSMENT.
Paul Bennett, Psychology, University of Wales Swansea, Swansea, United Kingdom

The study reports the outcomes of a leaflet designed to reduce distress in participants in a programme assessing their genetic risk for breast cancer and an HIV testing programme. The leaflet encouraged participants to confine any deliberative thinking about any issues raised by the testing process to a single period each day, and to distract from any upsetting or unwanted intrusive thoughts at all other times. Example exercises which were demonstrated included techniques for these tasks although participants were encouraged to develop and use their own. In the cancer genetic study, participants were randomised into intervention or control condition (standard information) and completed questionnaires on referral into the assessment process and four weeks later (before receiving their risk information). One hundred and sixty two participants completed T1 questionnaires and 99 completed T2 questionnaires. Analysis of Co-variance at T2, with baseline scores as co-variate, revealed that participants in the intervention group with high baseline scores on measures of both the frequency of intrusive thoughts and their avoidance (62 percent of the study population) were significantly lower than those in the control condition at this time (F (1,34) = 5.86, p = .02; F (1,34) = 5.07, p = .03). The HIV study, which is still ongoing, has found smaller, but clinically significant differences between those given the intervention and a control group on measures of intrusive thoughts and anxiety. Together, these data suggest that the intervention may prove an effective means of reducing distress in patients waiting for potentially distressing health information.

Abstract 1566
EFFECTS OF CHEMOTHERAPY AND RECENT HORMONE REPLACEMENT THERAPY TERMINATION ON FATIGUE, SLEEP AND MOOD IN BREAST CANCER.
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Fatigue, sleep disruption and depression are reported effects of chemotherapy (CT) for many breast cancer (BC) patients and survivors; but other factors may help explain these findings. BC patients who are taking hormone replacement therapy (HRT) are advised to terminate it upon receiving a cancer diagnosis, resulting in dramatic hormonal changes. In a longitudinal study of psychological and cognitive effects of CT, 27 post-menopausal women (ages 45-70) with early stage BC (DCIS, I, II) completed evaluations post-surgery but before adjuvant therapy (pre-CT; T1) and 6-7 months later (post-CT; T2). A CT group (n=12) received adjuvant CT; a noCT comparison group (n=15) did not. HRT status groups were: terminated HRT within the year before diagnosis (HRT); never took or terminated HRT >= 1 year before diagnosis (noHRT). Outcome measures were: Multidimensional Fatigue Symptom Inventory, Pittsburgh Sleep Quality Index, Beck Depression, Zung Anxiety. Main and interaction effects of CT and recent HRT termination on within-subjects pre-to-post treatment change in the outcomes were analyzed using the General Linear Model. Main effects were not significant, but CTxHRT interaction effects on fatigue (F(1,23)=10.89, p = .003) and sleep (F(1,23)=6.53, p = .02) were observed. Women who underwent chemotherapy and recently terminated HRT reported increased fatigue and worse sleep quality post-chemotherapy; however, women who did not undergo chemotherapy reported increased fatigue and worse sleep 6 months post-surgery if they had never taken HRT or had ended it more than one year before cancer diagnosis. These results are preliminary due to the small sample, yet they suggest that hormonal changes may contribute to the complex psychological sequelae of adjuvant chemotherapy and should be studied further.

Abstract 1626
MALADAPTIVE INTERPERSONAL COPING PREDICTS POORER SURGICAL RECOVERY AMONG WOMEN WITH ENDOMETRIAL CANCER.

Endometrial cancer is the most common gynecologic cancer in the US and is often co-morbid with conditions that confer high risk for post-surgical complications. Maladaptive interpersonal coping has been associated with poorer psychosocial functioning and impaired immunity among individuals with cancer but few studies have examined the relationship between coping and surgical recovery in this context. We examined associations among interpersonal coping and indices of post-surgical recovery, including high WBC count, number of acute post-surgical complications, and length of hospitalization among 19 Ss (M age = 60.47, SD = 9.41) undergoing surgery for endometrial cancer. Ss underwent a psychosocial interview pre-surgically. Interpersonal coping was measured with the Brief COPE and the Sources of Social Support Questionnaire. Measures of surgical recovery were obtained from inpatient medical records. Ss who used venting more frequently to cope had elevated inpatient WBC counts (r = .596, p = .007), and more post-surgical complications (r = .528, p = .02). Receiving less emotional support from one's main source of support predicted more post-surgical complications (r = -.567, p = .014), and receiving less emotional support from one's husband/partner predicted prolonged inpatient hospitalization (r = -.518, p = .027). Greater number of post-surgical complications was associated with prolonged inpatient hospitalization (r = .512, p = .018); however, it did not mediate the relationship between emotional support and prolonged hospitalization. Although tentative, these findings suggest that maladaptive interpersonal coping may be associated with poorer recovery from surgery for endometrial cancer. These findings suggest that a pre-surgical psychosocial intervention may improve surgical outcomes. Future research will examine immune and endocrine mechanisms of this relationship.

Abstract 1322
ETHNIC DISCRIMINATION AS A MODERATOR OF BLOOD PRESSURE REACTIVITY TO INTERPERSONAL STRESS.
Kristen Salomon, Kristi E. White, Nicole E. Jaguszytn, Psychology, University of South Florida, Tampa, Florida

Epidemiological evidence suggests that Blacks are at greater risk for developing hypertension and cardiovascular disease, while Hispanics exhibit risk equal to or less than Whites. One proposed contributor to Blacks' disparities in ethnic discrimination, yet Hispanics also experience discrimination. The purpose of the present study was to investigate the relationship between perceived discrimination and cardiovascular reactivity (CVR) during an interpersonal interaction with a White confederate. Participants included 28 Caucasian, 22 African-American, and 18 Hispanic undergraduate students. Participants completed two measures of perceived discrimination prior to arriving at the laboratory; the Life Experiences Scale (LES; Williams, et al., 1997) and the Perceived Ethnic Discrimination Questionnaire (PEDQ: Contrada, 2001). The laboratory procedure consisted of a resting baseline and an interpersonal interaction with a White confederate who treated participants in a cold, dismissive, and mildly rude manner. Blood pressure and heart rate were recorded throughout the study. CVR was computed by subtracting baseline averages from task averages. Participants endorsed race and/or ethnicity as an attribution for
unfair treatment at the following rates: Whites (25%), Blacks (79%), and Hispanics (59%). Interactions between ethnicity and both measures of perceived discrimination were found for systolic blood pressure (SBP) reactivity (LES: F(6, 61) = 6.76, p < .002, and PEDQ: F(6, 61) = 3.63, p = .032). Hispanics who attributed unfair treatment to race on the LES showed significantly less SBP reactivity to the stressor (M = 1.70, SD = 7.74) than those who did not attribute unfair treatment to race (M = 13.41, SD = 8.38). These differences by discrimination were not found for Whites or Blacks. Our findings suggest that Hispanics who perceive discrimination in their daily lives have developed low expectancies of or coping strategies for dealing with unpleasant interactions with Whites.

Abstract 1504

WHICH PATIENTS ARE PRONE TO SUFFER FROM AMPLIFIED INTRACARDIAC PAIN PERCEPTION? A CART ANALYSIS OF PSYCHO-PHYSIOLOGICAL AND AFFECTIVE CONDITIONS ASSOCIATED WITH CARDIOVERTER DEFIBRILLATOR SHOCK DISCHARGES

Karl Heinz Ludwig, Psychosomatic Department, Technical University of Munich, München, Bavaria, Germany, Jens J. Baumbert, Institute of Epidemiology, GSF Nat. Research Centre for Environment and Health, Neuhberg, Bavaria, Germany, Claus Schmitt, Deutsches Herz-Zentrum Muenchen, Technical University of Munich, Munich, Bavaria, Germany

Pain caused by intracardiac shock discharge of an implanted cardioverter defibrillator (ICD) is an important clinical issue in the treatment of ICD patients. We aimed to examine whether the strength of perceived shock pain is influenced by affective and psychophysiological parameters. Among 204 ICD patients drawn from the German Heart Centre Munich, 95 patients (46.6%) experienced one or more shock discharges. Pain perception (PPC) was measured by a visual analog scale ranged from 0 to 100 points. Standard instruments were administered to measure psychological distress. A startle paradigm was assessed to measure psycho-physiological arousal with skin conductance responses (SCR) and electromyogram (EMG) responses as dependant variables. Classification and regression tree (CART) analysis was applied to assess the effects of psycho-diagnostic and psycho-physiological parameters on pain perception. Mean ICD shock PPC was 53.7 points (SD 31.6) with a median of 59.0 points (IQR 30 to 80). Pain intensity was highly associated with shock discomfort (p<0.001) but was largely uninfluenced by clinical and socio-demographic factors. Time since last shock and shock intensity were not correlated. CART analysis revealed patients with one shock and low EMG magnitude as subclass with the lowest mean PPC (21.9 points, 95% CI 4.6 to 39.1) whereas patients with >1 shock experience and anxiety (SCL-90) expressed the highest mean PPC (76.5 points, 95% CI 59.1 to 93.9).Without heightened anxiety, an increased EMG amplitude and impaired EMG habituation yielded a 75.1 (95% CI 65.9 to 84.1) mean PPC. Sensitisation of central neural structures as measured by heightened levels of EMG magnitude and impaired EMG habituation and promoted by repeated shock delivery and anxiety augments PPC of ICD shock delivery.

Abstract 1311

DEPRESSION IN CONGESTIVE HEART FAILURE: A META-ANALYTIC REVIEW OF PREVALENCE AND ASSOCIATIONS WITH CLINICAL OUTCOMES

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Background: Depression is common among patients with congestive heart failure (CHF), however, the prevalence and prognostic impact of depression in CHF is comparatively understudied relative to post-myocardial infarction samples. This paper presents a quantitative review of the depression and CHF literature with two primary aims: (1) to describe rates of depression in CHF samples using published questionnaire and interview assessments, and (2) to describe relationships between depression and CHF outcomes, including clinical events and incident CHF.

Methods: Using keyword searches from the Medline and PsychInfo databases, along with reference searches from published CHF and depression papers, we identified a total of 43 publications from peer-reviewed journals meeting pre-determined inclusion criteria. We coded identified studies for a variety of methodological and sample characteristics, including NYHA class, sample characteristics and demographics, outcome variables, type of depression measures employed, methodological strength, and study duration, among others.

Results: Clinical depression rates ranged from 15-50% among CHF patients, and the prevalence estimates generally increased across samples with higher NYHA disease classification, greater female sample composition, and in studies identifying depression on the basis of questionnaire symptom thresholds rather than diagnostic interviews. Depression was also associated with incident CHF in several studies of at-risk adults, and predicted an increased risk of premature events and mortality among patients with existing CHF.

Conclusions: Using even the most conservative prevalence estimates, rates of depression are high among patients with CHF, with overall estimates suggesting depression rates greater than among comparable post-myocardial infarction samples. Depression is also consistently linked to a several-fold increase of adverse outcomes and a poorer quality of life. These collective findings reinforce the importance of assessing depression in patients with CHF, and support efforts to assess potential benefits of intervention efforts in this population.

Abstract 1286

ACUTE VERSUS RECURRENT DEPRESSION SYMPTOMS IN THE PREDICTION OF CARDIAC RISK IN WOMEN WITH SUSPECTED MYOCARDIAL ISCHEMIA: THE NHLBI-SPONSORED WISE STUDY

Thomas Rutledge, Psychiatry, VA Medical Center/UC San Diego, San Diego, CA, Marian B. Olson, Epidemiology, University of Pittsburgh, Pittsburgh, PA, C. Noel Bairey Merz, Medicine, Cedars-Sinai Medical Center, Los Angeles, CA, Carol E. Cornell, Health Behavior and Health Education, University of Arkansas for Medical Sciences, Little Rock, AR, William J. Rogers, Medicine, University of Alabama at Birmingham, Birmingham, AL, Sheryl F. Kelsey, Epidemiology, University of Pittsburgh, Pittsburgh, PA

Background: Depression is associated with clinical events and premature mortality among patients with established coronary artery disease (CAD). Typically, however, studies in this area focus only on baseline symptom severity, and lack any data concerning symptom duration or symptom history. This paper describes relationships between depression and major clinical events in a sample of women with suspected myocardial ischemia in which we considered mental health information concerning past and present symptoms. Our aim was to assess the relationship of acute versus recurrent depression symptoms on outcomes.

Methods: 505 women (mean age=53.4) enrolled in WISE completed a diagnostic CAD protocol including cardiac symptoms, coronary angiography, ischemic testing, and assessments of past and present depression symptoms. All were followed for an average of 4.9 yrs for the incidence of cardiac events, including MI, stroke, heart failure, and total mortality. Results: Relative to those with no or less stable depression symptoms, women experiencing recurrent depression showed a higher prevalence of cardiac risk factors, characterized by higher rates of smoking, hypertension, poorer education, and an increased incidence of cardiac events (multivariate-adjusted RR=3.1, 95% CI=1.5-6.3, p<.001).

Conclusions: Among women with suspected myocardial ischemia, recurrent depression was associated with elevated CAD risk profile and an increased risk of cardiac events in comparison to those without depression or with acute symptoms. These findings reinforce the importance of assessing mental health factors in women at elevated CAD risk. Focusing only on baseline depression symptom severity may provide an incomplete picture of cardiac risk.

Abstract 1355

COMPARISON OF ENDOTHELIAL FUNCTION AND THE COMPONENTS OF THE METABOLIC SYNDROME IN THE PREDICTION OF CORONARY ARTERY DISEASE

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Both the metabolic syndrome (MS) and endothelial function (EF) have been shown to be influenced by behavior and are associated with coronary disease (CAD). Few studies have assessed the independent predictive nature of these 2 phenomenon’s for CAD. CAD patients (n=41), who underwent nuclear stress testing, were compared to low risk (LR) participants with no known history of CAD (n=45). EF was measured using a nuclear medicine based derivative of the FMD technique. The hyperemic response to 5 min of arm ischemia (in the right arm) was measured using a planar dynamic one frame
cardiac rehabilitation specialists have long observed that patients who are severely depressed after coronary artery bypass graft (CABG) surgery tend to have a distinctive pattern of symptoms that distinguishes them from mildly depressed post-CABG patients, as well as from other depressed cardiac patients. Its most salient features include perceived changes in personality, anhedonia, inactivity, irritability, emotional lability, poor concentration, and memory impairment. However, there is only anecdotal evidence that this pattern exists; it has not been systematically investigated. We utilized baseline memory impairment. However, there is only anecdotal evidence that this pattern is more common among patients who are severely depressed after CABG surgery tend to have a distinctive pattern of symptoms. Whether this pattern of symptoms is due to CNS effects of surgery remains to be investigated.

Abstract 1369

HEART RATE VARIABILITY AND DAILY LIFE EMOTIONAL CHANGES: DIFFERENTIAL RELATIONSHIPS IN CAD PATIENTS WITH SUDDEN DEATH VULNERABILITY VERSUS STABLE CAD PATIENTS

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Impaired heart rate variability (HRV) is a predictor of sudden cardiac death (SCD) and cardiovascular mortality in coronary artery disease (CAD). We compared relationships of daily life fluctuations in negative emotions to 24 hour HRV in 2 types of CAD patients: patients with implantable cardioverter defibrillators (ICD), previously identified as vulnerable to malignant arrhythmias/SCD (n=26) vs. stable CAD patients without arrhythmic vulnerability (n=11). Patients were monitored via ambulatory ECG and kept diaries of emotions (frustration, tension, stress, & sadness) for 24 hours. These measures were used to calculate frequency domain HRV and emotional variability (EV), respectively. For the stable CAD group, high frequency (HF) HRV was positively correlated with all EV measures (sadness & tension, p<0.05). In the ICD group, HF HRV was negatively correlated with all EV measures (frustration & tension, p<0.05; Table 1). Low ejection fraction*, low exercise workload**, prior MI*, and use of beta blockers* were more common in the ICD group (*p<0.05, **p<0.10). After multivariate adjustment for these measures, EV (frustration & tension) was no longer associated with HF HRV in the ICD group. Low frequency HRV relationships were similar, but not as strong. Conclusion: These data suggest that CAD patients display normal fluctuations in HRV in response to daily changes in various emotional states. In contrast, patients vulnerable to malignant arrhythmias/SCD have impaired HRV that does not allow for compensations in daily emotional changes. Increased functional severity in arrhythmia-vulnerable patients may account for these differential relationships of emotions and HRV.

Table 1: Correlations with HF HRV (* p<0.05,

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Abstract 1432

LONG-TERM COURSE OF DEPRESSION AFTER ACUTE MYOCARDIAL INFARCTION

Kenneth E. Freedland, Psychiatry, Washington University, St. Louis, Missouri, Carlos F. Mendez de Leon, Epidemiology, Rush, Chicago, IL, William B. Howells, Psychiatry, Washington University, St. Louis, Missouri, Gail Ironson, Psychology, University of Miami, Coral Gables, Florida, James A. Blumenthal, Psychiatry, Duke University, Durham, North Carolina

This study examines predictors of post-MI depression in 1217 patients in the...
usual care arm of ENRICHD who completed a Beck Depression Inventory at baseline and every 6 months thereafter (median, 24 months.) A mixed regression model was used to determine the effects of demographic factors, history of major depression, antidepressant use at baseline, and the interactions of these factors with time, on the course of depression. There was significant between-patient variability in initial BDI scores (random intercept p<.001) and in change in scores over time (random slope p<.001). The fixed effects showed a linear decrease in scores over time (change per month=-.015, p<.0001) from the mean at baseline (13.6). Scores were lower at baseline in older patients (.075 lower per year of age, p<.001), 1.245 lower in non-Hispanic whites than minority patients (p<.001), and 1.159 lower in patients without history of major depression (p<.01). They were 1.80 higher in women (p<.001) and 2.845 higher in patients on antidepressants (p<.001). The decrease over time was smaller in older patients (.002 points per month per additional year of age, p<.001) and .036 points per month greater in women than men (p=.03). Other variables were unrelated to change over time. The results suggest that post-MI depressive symptoms decline over time, but that there is also considerable heterogeneity in the extent of decline. Depression levels immediately post-MI are higher in younger, female, and minority patients, and those with a history of major depression or on antidepressants. Age and sex affect decline in depression levels over time, with faster improvement in younger and female patients. Implications for treatment of post-MI depression will be discussed.

Abstract 1386
CARDIOVASCULAR REACTIVITY DURING NICOTINE AND NICOTINE ABSTINENCE CONDITIONS: DO HABITUAL SMOKERS AND TOBACCO “CHIPPERS” DIFFER?
Melissa M. VanderKauw, Stephen M. Patterson, Psychology, Ohio University, Athens, Ohio

Few studies have investigated the combined effects of nicotine and nicotine withdrawal on stress-induced cardiovascular reactivity and the results of these studies have been contradictory. Studying stress-induced cardiovascular responses in casual smokers or “chippers” (<5 cigarettes a day at least twice a week) and habitual smokers (>10 cigarettes a day) may help explain these differences. Seventy five habitual smokers and twenty-seven chippers between 18-30 years of age were tested once while wearing a 21mg transdermal nicotine patch or while wearing a placebo patch for 12 hours. During each session, HR, SBP, DBP, cardiac output (CO), stroke volume (SV), and total peripheral resistance (TPR) were assessed during a 10-min resting baseline, a 6-min math task (PASAT), a second 10-min resting baseline, and a 5-min Mirror Star Tracing Task (MSTT). Using a 2 (chippers, smokers) X 2 (nicotine, placebo) X 2 (baseline, Task) between-subj subjects design, results revealed significant Task effects for all cardiovascular measures during the PASAT and all measures except CO during MSTT (p's < .05). Significant Condition effects (p's < .05) were demonstrated for HR, CO, and SBP during PASAT and for HR during MSTT, with greater values during the nicotine condition as compared to the placebo condition. Significant Group by Condition interactions (p's < .05) were demonstrated for HR in which chippers had greater HR levels while on nicotine and lower HR levels on placebo than habitual smokers across all tasks. Marginal Task by Condition interactions (p's < .08) were demonstrated for HR and CO during PASAT and SV and TPR during MSTT in which greater HR and CO increases during nicotine and greater SV decreases and TPR increases during placebo were shown. Therefore, this study demonstrated that habitual smokers and chippers differ in cardiovascular reactivity to psychological stress during nicotine and nicotine abstinence conditions.

Abstract 1389
CURRENT DEPRESSION BUT NOT HISTORY OF DEPRESSION IS ASSOCIATED WITH IMPAIRED HEALTH STATUS FOLLOWING MYOCARDIAL INFARCTION
Elisabeth Martens, Susanne Pedersen, Johan Denollet, Medical Psychology, Tilburg University, Tilburg, The Netherlands

Little is known about the determinants of impaired health status in patients with myocardial infarction (MI). The objective of this study was to investigate whether a history of major depression (MD) was independently associated with impaired health status 2 months post-MI. A clinical diagnostic interview (Composite International Diagnostic Interview) was administered to 367 patients to evaluate the prevalence of DSM-IV lifetime MD. The Seattle Angina Questionnaire (SAQ) was used to assess disease-specific health status. All assessments were made two months post-MI. Primary endpoints were the physical limitation, angina frequency, angina stability, and quality of life (QOL) scores of the SAQ. Data were analyzed using multivariate logistic regression. A total of 65 post-MI patients (17.7%) had a history of MD. History of MD was significantly associated with more physical limitation (OR 1.6, 95% CI 1.06-2.56, P = .027) and worse QOL (OR 1.9, 95% CI 1.19-3.19, P = .008) at 2 months adjusting for demographic and clinical factors. However, after additional adjustment for current MD this relationship fell short of significance. Further analyses revealed that only patients with a history of MD and current depression had significantly more physical limitation (OR 2.2, 95% CI 1.05-4.76, P = .033) and worse QOL (OR 5.9, 95% CI 2.82-12.68, P < .001) adjusting for demographic and clinical factors. Multiple linear regression with SAQ scores as continuous outcome variables showed similar results. History of MD was associated with significantly more physical limitation and worse QOL two months post-MI. However, further exploration revealed that this effect could be attributed to the influence of current depression. These findings support the importance of depression as a risk marker for adverse outcomes post-MI.

Abstract 1406
COMPARISON OF SYMPTOMS OF DEPRESSION IN INDIVIDUALS WITH DIABETES AT LOW AND HIGH 10-YEAR ABSOLUTE RISK FOR CHD
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The objective was to examine the influence of CHD risk factors on symptoms of depression among subjects diagnosed with diabetes. The sample included 353 diabetics: 169 at Low 10-year absolute CHD risk (<15%), 184 at High absolute risk (>=15%). The mean age was 56 years. Participants were recruited from the Community Outreach and Heart Health Risk Reduction Trial. Psychometric measures included the Beck Depression Inventory-II (BDI); the MOS Social Support Survey; and demographics. The 10-year absolute risk was 21.83% for the High-risk group vs. 9.0% for the Low-risk group. Group differences on symptoms of depression were assessed using ANCOVA, with age and income as co-variates. Independent variables included CHD risk status; gender; and high/low emotional/informational support (EIS). Three significant main effects for symptoms of depression are outlined in the table below. Increased symptoms of depression were found among the High CHD risk group, men, and subjects with low emotional support. These results provide a robust and compelling association between depression and CHD risk status among diabetics, while extending previous findings of increased depressive symptoms among women and individuals with low emotional support.

Mean BDI Scores by CHD Risk, Gender and Emotional Support

<table>
<thead>
<tr>
<th>CHD Risk</th>
<th>Gender</th>
<th>EIS</th>
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</thead>
<tbody>
<tr>
<td>Low</td>
<td>Men</td>
<td>Low</td>
</tr>
<tr>
<td>8.69</td>
<td>Women</td>
<td>High</td>
</tr>
<tr>
<td>9.25</td>
<td>Low EIS</td>
<td></td>
</tr>
<tr>
<td>12.41</td>
<td>High EIS</td>
<td></td>
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</tbody>
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Abstract 1351
DIFFERENTIAL EXHAUSTION OF REPEATED HYPERAEMIC REACTIVITY IN CARDIAC PATIENTS AND NORMAL PARTICIPANTS
Bernard Meloche, Simon L. Bacon, Kim L. Lavioie, Philippe R. Stehenee, Nuclear Medicine, Montreal Heart Institute, Montreal, QC, Canada, Jet Veldhuijzen van Zanten, Sportex, University of Birmingham, Birmingham, W. Mids., UK, Andre Arsenault, Nuclear Medicine, Montreal Heart Institute, Montreal, QC, Canada

Endothelial function (EF) is becoming a widely used measure in behavioral and psychosomatic medicine. However, little is known about the short term (15 min) reproducibility of hyperemic reactivity, or if this reactivity is different between patients with coronary artery disease (CAD) and healthy controls. A total of 34 participants (19 with CAD and 15 controls) underwent EF testing twice during 1 session 15 min apart. EF was assessed using the new
Rate of Uptake (RUR) method. This measure was derived from gamma-camera first-pass activity-time curves (ATC) following 5 min of arm ischemia (in the right arm). RUR compares the ATC in the ischemic arm to the ATC in the non-ischemic arm, with reduced scores indicative of poorer EF. Repeated measures ANOVA revealed that CAD patients had lower RUR than controls (2.7±0.2 vs 4.4±0.3, F=12.6, p<.001), and that RUR was lower on the 2nd test compared to the 1st test (3.1±0.3 vs 4.1±0.3, F=22.4, p<.001). There was a significant disease X time interaction (F=9.5, p=.004) such that controls showed a larger decrease in RUR from test 1 to test 2 (5.2±0.4 to 6.3±0.4) than the CAD patients (2.9±0.3 to 2.6±0.3). Correlational analyses revealed that CAD patients showed a remarkable reproducibility between tests with no significant exhaustion (r=.80, intercept=0.6, t=1.4, p=.19); by contrast, controls had a systematically lower second reading (r=.55, intercept=3.4, t=4.2, p<.001). These results showed that patients with CAD had poorer EF than controls, and that there was a difference in the short-term reproducibility of the test between groups. This differential reproducibility between CAD patients and controls may be caused by exhaustion of NO supplies in controls in response to the initial hyperemia. The lack of exhaustion to a 2nd reactive hyperemia challenge in CAD patients may be a marker of CAD. However, further research is needed to confirm the exact mechanism.

Abstract 1719
PARENTAL EDUCATION AND HOUSEHOLD INCOME RELATE TO CARDIOVASCULAR BIOMARKERS IN YOUTH
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Socioeconomic gradients in cardiovascular health are widely recognized. Whether measured by income, occupation or education, socioeconomic status (SES) is strongly and inversely related to cardiovascular disease (CVD) morbidity and mortality, in addition to traditional CVD risk factors including smoking, obesity and physical inactivity. Regional differences in cardiovascular disease (CVD) morbidity and mortality between SES and CVD risk factors exists during childhood and adolescence, which is important given that the atherosclerotic process begins in early life. The objective of the present study was to evaluate the relationship between SES and cardiovascular biomarkers in children and adolescents using a population based sample. The 1999 Quebec Child and Adolescent Health and Social Survey was a provincially representative cross-sectional survey of Quebec youth aged 9, 13, and 16 years (N=3613). Children's anthropometric measures, resting blood pressure, and biochemical profile (total cholesterol, LDL-C, HDL-C, triglycerides, Apo B, LDL particle size, insulin, glucose) were assessed. Parents (N=3022) provided self-report of education (Mean=11.9yrs) and income (Mean=$25,300). Based on the results of age-, sex-, and BMI-adjusted linear regression analyses, higher parental education and household income were significantly related to lower systolic and diastolic blood pressure, subscapular skinfold thickness, total to HDL cholesterol ratio, and Apo B levels. Higher parental education was also significantly related to larger LDL particle size. No relationship was found between SES and HDL, total cholesterol, triglycerides, insulin, or glucose. These data extend previous findings of a socioeconomic gradient in CVD risk factors in youth, to include Apo B, LDL particle size, and total to HDL cholesterol ratio. Improved understanding of the biological mechanisms underlying the association between SES and CVD risk factors is fundamental to achieving the goal of primary prevention of these risk factors.

Abstract 1332
DIFFERENTIATING DEPRESSION AND VITAL EXHAUSTION IN CARDIAC PATIENTS
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OBJECTIVES: Depression and vital exhaustion are both known as prognostic risk factors for adverse cardiac outcomes. It is however unclear if and how these two concepts differ from each other. Therefore, the aim of this study was to examine depressive symptoms and vital exhaustion in cardiac patients. METHODS: In a sample of 125 chronic heart failure patients principal component analysis (PCA) was used to determine the structure of both depression (BDI) and vital exhaustion (MQ). Next, correlations between components were calculated. Finally, the predictive value of the components was compared by relating them to (1) health care consumption, and (2) quality of life (MLWHQoL) at a 6-month follow-up controlling for demographics and CHF characteristics. RESULTS: PCA revealed a 2-component solution for depression representing (1) cognition/aff ect, and (2) general functioning. A 3-component solution was found for vital exhaustion representing (1) fatigue, (2) negative affect, and (3) sleep problems. Low to moderate positive correlations were found between components of depression and vital exhaustion (<.r=.41; p<.05). Univariate analyses showed that only fatigue was related to health care consumption (r=-.20; p<.05). In multivariate analysis, fatigue remained a significant predictor (OR=1.11; 95%CI=1.02-1.20). All components were related to quality of life in univariate analyses (.29<r<.50; p<.01), whereas in multivariate analysis quality of life was predicted by general functioning (ß=.38; p<.01), fatigue (ß=.29; p<.01) and sleep problems (ß=.16; p<.05). CONCLUSIONS: Depression and vital exhaustion are both conceptually and statistically different in cardiac patients. Future large-scale prospective studies should give a more in-depth insight into the unique contribution of depression and vital exhaustion in predicting cardiac outcomes.

Abstract 1289
MEDICATION NON-ADHERENCE PREDICTS ADVERSE CARDIOVASCULAR OUTCOMES: DATA FROM THE HEART AND SOUL STUDY
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Non-adherence to cardiac treatment recommendations is associated with adverse cardiovascular (CV) events following myocardial infarction (MI). It is not known whether medication adherence predicts CV events in patients with stable coronary heart disease (CHD), or whether this association is independent of traditional CV risk factors. We assessed medication adherence in 1019 outpatients with stable CHD who were enrolled in the Heart and Soul study. Results: In the past month, how often did you take your medications as the doctor prescribed? Possible responses were: all of the time (100%), nearly all of the time (90%), most of the time (75%), about half the time (50%), or less than half the time (<50%). Non-adherence was defined as taking medications as prescribed 75% of the time or less. CHD death, MI, and stroke were determined by review of medical records during 3 years of follow-up. We examined the association of medication non-adherence with CV events using logistic regression, adjusting for potential confounding variables. Among non-adherent participants, 20% (17/84) had an adverse CV event, compared with 11% (105/935) of adherent participants (p=0.02). Medication non-adherence remained associated with adverse CV events after adjusting for traditional CV risk factors (odds ratio (OR) 2.6, 95% confidence interval (CI) 1.3-5.5; p=.009). The increased risk of CV events associated with non-adherence was greater than that associated with hypertension (OR 1.5, 95% CI 0.9-2.7; p= .13) or diabetes (OR 1.8, 95% CI 1.1-2.9; p=.02). In summary, medication non-adherence independently predicts adverse CV events in patients with stable CHD. The risk associated with non-adherence is greater than the risk associated with diabetes or hypertension. Medication adherence may be a critical target for improving cardiovascular outcomes in patients with stable CHD.

Abstract 1342
CABG SURGERY TIME AND NUMBER OF GRAFTS ARE NOT ASSOCIATED WITH POST-CABG MOOD SYMPTOMS
Vinayak A. Hegde, Nosheen Javed, Jamie L. Stern, Internal Medicine, Western Pennsylvania Hospital, Pittsburgh, PA, Bea Herbeck Belnap, Medicine, Fang Zhu, Biostatistics, University of Pittsburgh, Pittsburgh, PA, Charles F. Reynolds III, Bruce L. Rollman, Medicine, University of Pittsburgh, Pittsburgh, PA, Anil Ghei, Zena and Michael A. Wiener Cardiovascular Institute, Mt. Sinai School of Medicine, New York, NY

The aim of our study was to examine whether technical aspects of Coronary Artery Bypass Graft (CABG) surgery are associated with post-CABG mood symptoms. We screened patients for post-operative mood symptoms using the PHQ-2 at 7 Pittsburgh area hospitals participating in an ongoing treatment trial for post-CABG depression. If the patient screened positive, we administered the PHQ-9 via telephone at 2-weeks following hospital discharge to confirm the presence of depression (PHQ-9>9). We also recruited...
randomly sampled non-depressed patients to serve as a control cohort (negative PHQ-2 and PHQ-9<5). We administered the Depression Interview and Structured Hamilton (DISH) at 2-week follow-up to determine mood symptoms and abstracted the operative note to determine surgery time, cross-clamp time, and number of bypass grafts. We plotted the relationship between 2-week mood symptoms and our surgical measures and quantified their relationships using correlation coefficients (R) and p-values. Of the 156 patients enrolled to date (65% depressed), 58% were male, 83% Caucasian, and they had a mean age of 63 years (range 36-85). They had a mean number of bypass grafts of 3.5 (1-6; SD=1.2), that did not differ by baseline depression status. The mean DISH score was 10.6 at 2-weeks posthospitalization, and it did not correlate with either total surgery time (R=0.02; P=0.80), cross-clamp time (0.0003; 0.98), or with the number of grafts performed. Post-CABG mood symptoms are not correlated with surgical measures; further research is necessary to identify the underlying causes of post-CABG depression.

Abstract 1457
SOCIAL SUPPORT AND OTHER PROTECTIVE PSYCHOLOGICAL FACTORS AMONG CARDIAC PATIENTS
Grant Grissom, Psychological Testing, Polaris Health Directions, Fairless Hills, PA, Michael Valan, Psychiatry, California Pacific Medical Center, San Francisco, CA

Psychosocial factors such as depression, loneliness, and will to live adversely impact treatment for patients with cardiovascular disease (CVD). Other psychosocial factors may reduce risk. Social support, loving relationships, purpose for living and low stress are all associated with more favorable outcomes. This study describes an innovative system to screen for both risk and protective psychosocial factors in CVD patients. Our hypothesis is that social support and related psychosocial factors are associated with better outcomes and protective psychosocial factors in CVD patients. Methods: The computerized assessment system is being developed through an NIH grant, consists of a validated questionnaire administered by computer. Items are automatically scored and a comprehensive report generated that is immediately available to the physician. Depression (DS) and Anxiety severity (AS), and Social Support Scale (SSS) scores are calculated. SSS scores were classified as Low, Moderate or High, with one-third of the sample in each group. CVD patients (N=64) receiving treatment from one of five CHC treatment centers were included in the analyses. Results: Most patients have persons that they love (94%) or love them (87%); “friends that really know me” (73%); a purposeful life (88%); a lot to live for (85%) and other protective factors. SSS scores were inversely related to both DS (-.29; p<.001) and AS (-.20; p<.001) scores. One in five Low SSS subjects scored in the High range of DS scores, versus 4.2% of subjects in the High SSS group. One in four of the Low SSS subjects scored in the High range of AS, versus 9.4% of High SSS subjects. Three times as many patients (23.7%) in the Low SSS group report feeling “troubled by feelings of sadness or depression” as in the High SSS group (8.5%). Nearly all patients were “Glad to answer these questions if it helps my doctor” (57.4%) or “Didn’t mind” answering (41.4%). Conclusions: Most CVD patients have elements of social support that may be protective, reducing the risk of adverse medical outcomes. Higher levels of social support are associated with lower levels of depression and anxiety, potentially mitigating the effect of an important risk factor for mortality and morbidity for cardiac patients. Assessment of psychosocial factors is supported: the majority consider it an element of quality care are automatically scored and a comprehensive report is immediately available for the physician. CVD patients (N=640) including 384 males (M) and 256 females (F) treated at one of four cardiac centers were included in the analyses. Results: One-third reported feeling troubled by feelings of sadness or depression, and 9.6% reported depressive symptoms at least as severe as those of mental health patients. One in four reported that they worried too much, and 13.8% reported anxiety symptoms at least as severe as those of mental health patients. One in four had been treated for depression; 8.8% were currently taking psychoactive medications and 3.8% were currently in psychotherapy. Depression severity was inversely related to age among both F (r=-.22; p<.001) and M (r=-.17; p<.001). Depressive symptoms were more severe for F than for M (t=4.45; p<.001). Prevalence of other selected risk factors were: feeling high stress (53.3%); hostility (22.1%); no friends that really know me (12.9%); little purpose/meaning in life (12.5%). Having _people that love me_ and _people I love_ were each more strongly associated with having a lot to live for (.48 and .58) than physical limitations and general health (.14 and .23).

Conclusions: At least 25% of CVD patients across a broad spectrum of diagnoses suffer from psychosocial conditions that adversely effect medical outcomes. There are substantial gender and age differences among patients relating to depression. Screening for depression using an automated detection system is supported.

Abstract 1339
PRE-CABG LEFT VENTRICULAR EJECTION FRACTION IS ASSOCIATED WITH POST-CABG DISEASE-SPECIFIC QUALITY OF LIFE BUT NOT GENERIC QUALITY OF LIFE OR MOOD SYMPTOMS
Noshreen Javed, Vinayak Hegde, Jamie L. Stern, Internal Medicine, Western Pennsylvania Hospital, Pittsburgh, PA; Bea Herbeck Belnap, Medicine, Fang Zhu, Biostatistics, University of Pittsburgh, Pittsburgh, PA, Charles F. Reynolds III, Psychiatry, Bruce L. Rollman, Medicine, University of Pittsburgh, Pittsburgh, PA, United States of America

The purpose of our study was to determine if pre-coronary artery bypass graft (CABG) left ventricular ejection fraction (LVEF) is related to post-CABG mood symptoms and quality of life (QoL). We sampled post-CABG patients. We screened patients for postoperative mood symptoms using the PHQ-2 at 7 Pittsburgh area hospitals participating in an ongoing treatment trial for post-CABG depression. If the patient screened positive, we administered the PHQ-9 via telephone at 2-weeks following hospital discharge to confirm the presence of depression. If present, we administered the Depression Interview and Structured Hamilton (DISH) to determine mood symptoms; the Duke Activity Status Index (DASI) to determine disease-specific QoL; and the SF36 to determine generic mental and physical QoL (MCS and PCS). We determined LVEF via chart abstraction. We plotted the relationship between LVEF and mood and QoL measures and quantified their relationships using correlation coefficients (R) and p-values. Of the 102 depressed patients enrolled to date (2-week PHQ-9 greater than 9), 59% were male, 89% Caucasian, and they had a mean age of 63 years (range 36-85). Their mean LVEF was 50% (SD:15.2), mean DASI 14.9 (7.5), mean DASI 8.9 (8), MCS 44 (10.8), and PCS 29.5 (6.8). LVEF correlated with the DASI score (R=0.21; P=0.03), but not with mood symptoms or the MCS or PCS. We conclude that pre-CABG LVEF is associated with post-CABG disease-specific quality of life but not generic quality of life or mood symptoms.
Social isolation predicts pathogenesis of coronary artery disease, possibly between electronic and self-reported adherence than those with a partner (M=2.0, SD=0.7 vs M=1.9, SD=0.5, p=.13). Scores on the UCLA scale and BD scale were moderately correlated (r=.54, p<.001).

After 3 months, patients without a partner were less likely to participate in cardiac rehabilitation (35% vs. 64%, p=.01) or exercise (46% vs. 57%, p=.03), and were more likely to smoke (15% vs. 8%, p=.01). There were no group differences in self-reported medication adherence and diet change (p=.20). UCLA score was associated with decreased medication adherence (r=-.21, p=.01), lack of exercise (r=.02), and a greater likelihood of smoking (p=.02). Hierarchical regression analyses including age, gender, UCLA score, partner status and depression as predictors showed that both UCLA score and not having a partner, but not depression, were associated with smoking. Depression, but not UCLA score or partner status, was significantly associated with decreased likelihood of cardiac rehabilitation or exercise participation, and decreased medication adherence (all p<.05).

These data suggest that depression is associated with a decreased engagement in physical activity and medication adherence, whereas social isolation is associated generally with health-damaging behavior. Differential treatments may be implicated for socially isolated vs. depressed patients.

Abstract 1407

HEART RATE VARIABILITY, CORONARY HEART DISEASE, AND DEPRESSION: THE ROLE OF ANTIDEPRESSANTS

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Decreased heart rate variability (HRV) is a powerful independent predictor of mortality in patients with coronary heart disease (CHD). Major depression is also associated with a decreased HRV and there is evidence indicating that depression in CHD correlates positively with a higher rate of morbidity and mortality. Prospective studies have shown that depression is related to an increased rate of development of CHD. The ability of decreased HRV to predict mortality probably reflects either increased sympathetic reactivity or decreased vagal tone, both of which may predispose patients to ventricular fibrillation. Antidepressants (ADs) have been found to be associated with HRV. The current study was designed to assess the possible effect of drugs, including antidepressants, on cardiac autonomic nervous system function. The purpose of this study is to briefly outline the measurement of HRV, and to review the data on the relationship between antidepressants and HRV in several groups: healthy volunteers, patients with major depression, and depressed patients with CHD. Methods: A MEDLINE search was performed to identify relevant publications. Results: We found that HRV is decreased by the use of tricyclic antidepressants (TCAs) and to a lesser extent by selective serotonin reuptake inhibitors (SSRIs) in healthy volunteers and in depressed individuals. In patients with CHD, TCA’s strongly decrease HRV while there is little change with SSRIs. This is a small literature, and comparisons between studies are made difficult because there is little consistency in the methodology of determining HRV. Moreover, most of the studies use a small number of participants limiting the power of the statistical analysis. Conclusions: Antidepressants have the effect of decreasing HRV, and TCAs have a larger effect than SSRIs. In patients with CHD the choice of antidepressants may have an impact on morbidity and mortality.

Abstract 1430

ANHEDONIA BUT NOT DEPRESSED MOOD IS RELATED TO HIGHER WAIST-TO-HIP RATIOS IN POST-ACTUE CORONARY SYNDROME PATIENTS

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Depression is a predictor for occurrence and recurrence of cardiovascular disease (CVD). Depression has repeatedly been shown to be associated with abdominal obesity, as estimated by waist-to-hip ratio (WHR), a well-established risk factor for CVD. The nature of the depression-abdominal obesity link is not well understood. Anhedonia (impaired reward function) and depressed mood (mood bias toward negative emotions) are considered generally with health-damaging behavior. Differential treatments may be implicated for socially isolated vs. depressed patients.

Social isolation predicts pathogenesis of coronary artery disease, possibly because of poor health behaviors. We previously reported that depression is associated with poorer health behaviors after an acute coronary syndrome (ACS). Here, we examined whether social isolation is associated with health behaviors independent of depression.

We enrolled 560 patients within 7 days of an ACS. 492 patients (88%) completed follow-up at 3 months. Partner status, the UCLA loneliness scale (6-items), and the Beck Depression Inventory (BDI) were assessed at baseline. Self-reported health behaviors were assessed at 3 months. Patients without a partner (N=174, 35%) scored marginally higher on the UCLA scale than those with a partner (M=2.0, SD=0.7 vs M=1.9, SD=0.5, p=.13). Scores on the UCLA scale and BD scale were moderately correlated (r=.54, p<.001).
individuals and the extensive evidence for associations between impaired reward function and addictions, we hypothesized that anhedonia would be associated with abdominal obesity in post-ACS patients. ACS patients were recruited at 3 major medical centers and depressed mood and anhedonia was assessed with two items each from the Beck Depression Inventory (BDI) within one week of the index hospitalization. 306 post-ACS patients had complete waist and hip measurements obtained at baseline and 3 months later. Repeated Measures ANCOVA with time (baseline and 3-months) as a repeated factor and anhedonia and depressed mood as independent factors controlling for gender, ethnicity, and BMI category revealed that anhedonia (F[1,292]=8.016, p=0.005) but not depressed mood (F[1,292]=0.032, p=0.857) was significantly associated with WHR. These findings provide the first evidence in the literature that anhedonia as one of the core symptoms of depression, and not depressed mood, is related to an unfavorable body fat distribution.

Abstract 1420

PSYCHOLOGICAL DISTRESS AND MORTALITY: A META-ANALYSIS
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The general health questionnaire (GHQ) is probably the most popular instrument for evaluating psychological distress in clinical and community samples. The GHQ is widely used as a unidimensional instrument, but factor analyses have found that it contains two or three factors - depression and anxiety, social dysfunction, and loss of confidence. There is growing evidence that a wide variety of mental disorders is associated with the risk of premature mortality. Furthermore, there is some indication that less specific symptoms of psychological distress, such as those measured by the GHQ, may also be associated with an increased risk of mortality. We systematically assessed the evidence for psychological distress measured by the GHQ and prospective associations with mortality. For this meta-analysis, relevant studies were identified with the use of a sensitive search strategy with a methodological filter (prospective studies) from Medline, CINAHL, Embase, Psyclnfo, and the Web of Science. 101 potentially relevant studies were identified and screened for inclusion by two independent reviewers. 92 studies were excluded during screening due to inappropriate design, outcome, or measurement. 4 studies were added after hand searches of reference lists. For the final analysis, all prospective studies were included with information available on baseline GHQ levels and all-cause mortality during at least 1 year of follow-up, resulting in 4 included studies for the analysis (overall n=17576, GHQ high n=4480, 774 deaths; GHQ low n=13096, 2546 deaths). The OR by meta-analysis (random effects) was 1.448, 95% confidence interval (CI): 1.001-2.065, p=0.049. Analyses by gender included three studies with an OR of 1.575 CI: 0.941-2.637, p=0.084 for men, and an OR of 1.431 CI: 0.821-2.496, p=0.206 for women. To conclude, psychological distress is associated prospectively with mortality. Whether this risk is solely a function of depressive symptoms remains to be explored.

Abstract 1405

COURSE AND PROGNOSIS OF ACUTE TINNITUS AURIUM
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Chronic tinnitus may cause severe impairment on quality of life and working ability. However, the majority of tinnitus sufferers cope quite well with this form of health distress, still research on the prediction of the course of acute tinnitus is thin - rare. Therefore, one of the most important research topics on tinnitus to date addresses the question, why some subjects manage to cope with the lasting hearing impressions more successfully than others. Starting from this objective we set up a 4-measurement panel design monitoring the course of 210 subjects with acute tinnitus over two years. Patients were recruited from local ENT practitioners (age range 21.3 to 76.0yrs., 48.4% women), exclusion criteria were a cumulated tinnitus duration of more than 4 weeks and/or any progressive illness. As yet 125 Ss could be reexamined, 58% of which still presented with tinnitus symptoms after two years. According to the Tinnitus Questionnaire (TQ, Goebel & Hiller 2000) 5.6% of patients suffer from decompensated tinnitus after two years, according to more behavioral assessment 11.1% may be classified as being decompensated. A decreasing proportion of Ss even becomes decompensated at a later stage. Results on prognosis may be summarized with regard to the Vulnerability-Stress-Model of chronic tinnitus: Ss with low coping abilities, low resources in other fields and high burden from every-day life tend to be disabled more strongly by their tinnitus (mult. regr. [df=4]: F=7.71, p=0.001; R²=.37). These subjects also experienced much more burden from tinnitus immediately after onset (mult. regr. [df=5]: F=11.16, p=.001; R²=.51). Depressiveness and somatic complaints tend to increase during the first year of observation, but the assumed influence of psychopathological comorbidity and high work load could not be shown.

Abstract 1141

EFFECTS OF CAFFEINE AND STRESS ON CORTISOL AND SERIAL SUBTRACTION PERFORMANCE IN YOUNG MEN
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Stress appears to degrade cognitive performance, perhaps through its effects on increased cortisol production. The effects of stress and caffeine on cognitive performance and cortisol production were examined in 45 healthy men aged 18-30 years (21.2 +/- 0.4 yrs). Subjects were daily caffeine consumers, were not using tobacco or nicotine products, were not taking over-the-counter or prescription medications, and did not have health conditions that would affect the dependent measures. Subjects arrived at the lab at 1 PM with a three day washout (placebo). 200 mg caffeine (LOW; equivalent to 1-2, 8oz cups of coffee), or 400 mg caffeine (MOD; equivalent to 3-4, 8oz cups of coffee). Subjects were asked to complete the mental arithmetic portion of the Trier Social Stress Task for 20 minutes, which included 4, 4-min blocks of counting backwards by 7s and 13s from 4-digit starting numbers. Saliva samples were collected during baseline (before caffeine and stress) and 15 mins after stress to determine cortisol responses to the challenge. Cognitive performance was determined by calculating accuracy and speed scores. Caffeine increased cortisol levels in a dose-dependent manner (P<0.05). The effects of caffeine on task performance differed by caffeine group. Higher cortisol levels were associated with increased error rates among the placebo and MOD caffeine group (Ps<0.05). However, cortisol levels among men administered a LOW dose of caffeine were not associated with error rates but were associated with the speed at which the task was performed. Specifically, task speed decreased as cortisol levels increased. These results suggest that low amounts of caffeine may improve concentration and protect men from the negative effects of stress on task performance.

Abstract 1039

DIURNAL SALIVARY CORTISOL CYCLE AND COGNITIVE PERFORMANCE IN OLDER ADULTS WITH SUBJECTIVE COMPLAINTS OF MEMORY DEFICITS AND/OR DEPRESSION
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The diurnal cycle of cortisol secretion varies between individuals, with some exhibiting a typical decline throughout the day, some showing a flat cycle and others displaying a typical cycle on one day and a flat cycle on the next. These 3 cortisol subgroups have been reported in both young and older populations, with the typical cycle representing the more frequent diurnal cortisol cycle. It has been suggested that cortisol subgroup representation may be used as a tool in determining health status. Studies in older adults with depression and/or AD have reported elevated cortisol levels in the evening but it has been said that these effects can be due to inappropriate design of studies. The effects of stress and caffeine on increased cortisol production. The effects of stress and caffeine on cognitive performance and cortisol production were examined in 45 healthy men aged 18-30 years (21.2 +/- 0.4 yrs). Subjects were daily caffeine consumers, were not using tobacco or nicotine products, were not taking over-the-counter or prescription medications, and did not have health conditions that would affect the dependent measures. Subjects arrived at the lab at 1 PM with a three day washout (placebo). 200 mg caffeine (LOW; equivalent to 1-2, 8oz cups of coffee), or 400 mg caffeine (MOD; equivalent to 3-4, 8oz cups of coffee). Subjects were asked to complete the mental arithmetic portion of the Trier Social Stress Task for 20 minutes, which included 4, 4-min blocks of counting backwards by 7s and 13s from 4-digit starting numbers. Saliva samples were collected during baseline (before caffeine and stress) and 15 mins after stress to determine cortisol responses to the challenge. Cognitive performance was determined by calculating accuracy and speed scores. Caffeine increased cortisol levels in a dose-dependent manner (P<0.05). The effects of caffeine on task performance differed by caffeine group. Higher cortisol levels were associated with increased error rates among the placebo and MOD caffeine group (Ps<0.05). However, cortisol levels among men administered a LOW dose of caffeine were not associated with error rates but were associated with the speed at which the task was performed. Specifically, task speed decreased as cortisol levels increased. These results suggest that low amounts of caffeine may improve concentration and protect men from the negative effects of stress on task performance.
tended to do more poorly on a declarative memory task. Finally, a relationship was found between diurnal cortisol subgroup and subjective complaint profile (p<0.05). These results validate findings on flattened diurnal cortisol during pathological aging and further show that a flattening of the cortisol cycle is related to lower cognitive performance in older adults.

Abstract 1248

ATTACHMENT & CORTISOL REACTIVITY TO ACUTE STRESS

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Cortisol reactivity is emerging as an important factor for explaining variability in individual susceptibility to stress-induced upper respiratory infection. Due to research with rat pups linking heightened hypothalamic corticotropin-adrenal axis (HPA) reactivity to less attentive maternal care, we turned to attachment as a link to the HPA reactivity equivalent in humans: cortisol. The purpose of this study was to determine if attachment is related to the magnitude of one's cortisol reactivity to acute stressors. We hypothesized that individuals with an insecure attachment profile would have higher stress levels and associated counterparts. 118 undergraduate students from a midwestern university (mean age= 22.7, sd= 5.9; 72% Caucasian; 73% female) completed the Fraley Relationship Structures (www.yourpersonality.net/relstructures) individually for attachment of mother and father; and the Relationship Questionnaire, which assesses attachment for romantic relationships (Bartholomew & Horowitz, 1991). Individuals who scored as securely attached for at least 2 of 3 attachment scales were classified as secure and all others insecure. Because cortisol follows a diurnal pattern, participants visited the lab for baseline and stressor saliva samples at the same time and day, one week apart. The stressor involved an evaluative anger recall task. Of interest, our results indicate that the secure group had higher (raw change) cortisol reactivity than the insecure group (F(1,117) = 3.75, p<0.05), controlling for age, sex, race, and adherence to no-eating 12 hours prior. Overall cortisol levels were higher at baseline than day 2 task (mean raw change = -3.02, SD=6.73). So not surprisingly, the secure group's (-1.91, SE=0.80) and the insecure group's (-4.46, SE=1.03) adjusted average reactivity were also negative. We discuss the possibility of the baseline saliva session as being more stressful than the acute lab task.

Abstract 1037

MENTAL HEALTH, DIURNAL RHYTHM AND AWAKENING CORTISOL RESPONSE IN MIDTERM AND LATE PREGNANT WOMEN

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Growing interest expressed in maternal stress because it has been demonstrated that stress during pregnancy is associated with infant development. Previous studies suggest a stress related hormone, cortisol, is mainly found in evening, however, it has not yet been investigated awakening cortisol response concurrently with diurnal rhythm. In this study, the influence of women's mental health on the hypothalamus-pituitary-adrenal axis was investigated. Cortisol levels were measured at awakening and awakening cortisol response in 10 midterm and 20 late pregnant women (mean 21st and 35th gestational week, mean age 29.1 yrs, 29.5 yrs, respectively). They filled out the General Health Questionnaire (GHQ-12) and a questionnaire to record, time of awakening, sleeping time, quality of sleep, and napping time and collected morning (0, 30, 45 60 minutes after awakening) and diurnal (8:00, 11:00, 15:00, 20:00) sample of saliva. The participants were classified into not-distressed (ND) and distressed (D) groups, according to their GHQ scores (group: ND, 0-2; D, 3+). Only sleeping time and napping time (both, p<0.05) were significantly different in two pregnant stages. As expected, salivary cortisol profiles exhibited a clear diurnal rhythm and a higher level in late than in midterm pregnancy. For awakening response, consistent with non-pregnant, cortisol level was peaking about 30 minutes after awakening and there was no difference in two pregnant stages. Analyses of variance (pregnant stage by group) for repeated measures revealed significant diurnal rhythm by group effect (p<0.01). Simple main effect revealed that the significant cortisol decrease from 8:00 was firstly shown at 20:00 in D group, whereas in ND group the significant decrease was already shown at 11:00.

These data suggest distressed pregnant women show a flatter diurnal rhythm than the not-distressed group for both pregnant stages and diurnal rhythm may better assess the mental health stage than awakening cortisol response.

Abstract 1092

INDIVIDUAL VARIATION IN NEUROENDOCRINE PHENOTYPES

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Objective: Based on cortisol values from various conditions and time points, this study sought to identify distinct neuroendocrine phenotypes using cluster analysis. In addition, cortisol profiles were correlated with indices of emotional reactivity.

Methods: Cortisol levels were assessed repeatedly in 48 juvenile rhesus monkeys focusing on diurnal rhythms, stress reactivity and negative feedback with the Dexamethasone Suppression Test (DST). Behavioral and emotional responses to novel stimuli were scored on two occasions. Results: Unlike humans, no animals were found to have high afternoon values or to be without diurnal rhythms. However, individuals did cluster into four distinct cortisol diurnal subgroups: high, intermediate, low, and flat. Higher acute cortisol responses to relocation stress were associated with delayed acclimation and greater likelihood of breakthrough on the DST. In individuals in this cluster displayed more fear-like behavior in the presence of a novel object (p<0.05) and were rated as highly anxious. In contrast, those with lower cortisol profiles more quickly returned to basal levels after two days in a novel room, showed greater suppression to the DST, and displayed more approach and exploration behaviors. In addition, maintenance of high or low cortisol activity over time would likely be associated with different adaptations to challenge and a differential risk for stress-related illness.

Abstract 1244

THE TEMPORAL SEQUENCE BETWEEN ANGER, ANXIETY, TRYPTOPHAN AND NEOPTERIN DURING AN INFECTIOUS EPISODE IN AN OTHERWISE HEALTHY WOMAN

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Interferon-gamma induces neopterin synthesis in human macrophages and stimulates enzyme indoleamine (2,3)-dioxygenase (IDO), which converts tryptophan (TRP) to kynurenine (KYN). Thus, the KYN to TRP ratio (KYN/TRP) allows estimating IDO activity. There is evidence that decreased TRP activity can be linked to negative emotional reactions and pathogenesis of depression, anxiety or irritability. This case study investigated how emotional irritation, neopterin, and KYN/TRP were interrelated during an infectious episode (i.e. vomiting, weakness) in an otherwise healthy individual. The 27-year-old woman collected her entire urine in 12-hour intervals on 56 days (112 12-h units). Neopterin, TRP and KYN concentrations were determined using HPLC. Emotional irritation was measured in 12-hour intervals using a list of adjectives (i.e., EWLI). To determine psycho-immunological interactions during the infectious episode of the proband, time-series analysis was applied (ARIMA modeling, cross-correlational analysis). Factor analysis revealed that the irritation of the proband during the study period was better represented by two separate factors designated as anger and anxiety. Cross-correlational analyses (p<0.05) showed a temporal order of events during the infectious episode: increases in anger predicted increases in urinary KYN/TRP after 48 h. Increases in KYN/TRP, in turn, were followed by increases in anxiety after
another 24 h. These increases in anxiety, then, predicted increases in urinary neopterin after 12 h and ultimate decreases in KYN/TRP after 24 h. This study provided insight into the complex psycho-immunological mechanisms driving an infectious episode in an otherwise healthy woman. Further studies are necessary to investigate whether these specific interactions are generalizable across individuals.

Abstract 1354
AN FMRI INVESTIGATION OF MINDFULNESS AND AFFECT REGULATION
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An emerging literature suggests that mindfulness and mindfulness meditation reduce stress and negative affect, although the underlying neural and behavioral mechanisms for these effects remain unknown. The present study examined how individual differences in mindfulness relate to the neural and behavioral mechanisms underlying affect regulation. Twenty-nine undergraduates completed individual difference measures, including the trait version of the Mindfulness Attention Awareness Scale (MAAS), and then participated in an affective task while undergoing functional MRI. During this task, participants matched pictures of facial expressions with comparable affective words. Greater mindfulness was associated with enhanced right ventrolateral prefrontal cortex (RVLpFC) activation, typically associated with regulating negative affect, and attenuated amygdala responses, typically associated with detecting negative stimuli. Findings suggest that mindfulness enhances prefrontal inhibition of amygdala responses, suggesting a role for mindfulness in regulating negative experiences through conscious labeling of affective states.

Abstract 1256
FEELINGS OF USEFULNESS TO OTHERS AND INDICATORS OF SUBCLINICAL INFLAMMATION IN OLDER ADULTS
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Feelings of usefulness to others have been found to predict disability and mortality outcomes in older adults. The purpose of the present study was to assess associations between older adults’ feelings of usefulness to others and elevations in biomarkers indicative of subclinical inflammation (C-reactive protein (CRP), fibrinogen, interleukin-6 (IL-6)), as we have found these estimates to be associated with levels of social integration, and these biomarkers have been found to predict the development of disability and mortality in studies of older adults. Participants (N = 836; n = 388 males; n = 448 females) were from the MacArthur Study of Successful Aging (MSSA), a prospective cohort study of high-functioning older adults (aged 70–79). Participants’ perceptions of their usefulness to others, peripheral blood levels of CRP, fibrinogen, and IL-6, and sociodemographic, behavioral and health status variables were assessed at a baseline exam. Statistical analyses examined feelings of usefulness as predictors of the likelihood of having elevated levels of each biomarker (defined as values in the top quartile; CRP > 3.17 mg/L, IL-6 > 4.60 pg/mL, fibrinogen > 335.75 mg/dL). Compared to older adults who frequently felt useful to others, those who never or rarely felt useful were more likely to have elevated levels of CRP (OR = 3.06, 95% CI = 1.65, 5.69), fibrinogen (OR = 2.23, 95% CI = 1.15), and IL-6 (OR = 2.35, 95% CI = 1.65); these estimates were not significantly affected when including sociodemographic, behavioral, and health status covariates into analytic models. Feelings of usefulness did not affect the likelihood of having elevated levels of IL-6. In this cohort of relatively high functioning older adults, those who did not feel useful to others were more likely to have elevated levels of CRP and fibrinogen, than those who frequently felt useful. Elevated inflammatory activity may represent one pathway through which low feelings of usefulness impact disability and mortality outcomes in older adults.

Abstract 1261
BIOLOGICAL AND NEUROCOGNITIVE CORRELATES OF EMOTIONAL-APPROACH COPING
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Emotional-approach coping (EAC), characterized by intentional efforts to identify, process, and express emotions surrounding stressors, has been found to promote psychological and physical health in specific contexts, yet the biological and neurocognitive mechanisms underlying these effects remain unspecified. The present study investigated possible biological and neurocognitive correlates of EAC. Participants were 21 UCLA students and staff members who completed a questionnaire assessing the two components of EAC: emotional processing and emotional expression. To assess proinflammatory cytokine reactivity to stress, participants’ levels of the soluble receptor for tumor necrosis factor alpha (sTNFαRII) were measured before and after performing a laboratory stress task (the Trier Social Stress Test, TSST). In a separate session, participants’ resting baseline frontal cortical asymmetry was measured using electroencephalography (EEG) as a neurocognitive indicator of trait approach/avoidance motivational orientation. We predicted that participants who reported using higher levels of EAC would show lower peak sTNFαRII responses to the TSST and would also have greater relative left-sided frontal cortical asymmetry, corresponding to greater approach motivation. Consistent with predictions, higher levels of EAC were associated with lower peak sTNFαRII reactivity to the TSST (in a partial correlation in which baseline levels of sTNFαRII were covaried), r(18) = –.56, p = .02, and there was a greater relative left-sided frontal cortical asymmetry, r(19) = .56, p = .01. These results suggest that the salubrious effects associated with EAC strategies may be linked to lower proinflammatory cytokine responses to stress and a more approach-oriented neurocognitive profile.

Abstract 1276
PERITONEAL CYTOKINES ARE ASSOCIATED WITH REPORTS OF FATIGUE FOLLOWING MAJOR ABDOMINAL SURGERY
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This study provides novel examination of the psychophysiology of postsurgical fatigue in humans. Innovative aspects include both the site of cytokine measurement and the analytic method used to examine temporal aspects of fatigue resolution. Twenty-three patients provided samples of fluid drained from the abdominal cavity following colectomy or rectal excision. Fluid was assayed for IL-6, IL-10, IL-8, IL-1β and TNF-α concentrations using multiplexed biomarker immunoassays. Fatigue was measured using the Identity-Consequences Fatigue Scale. This scale results in two fatigue scores. One score relates to Feelings of Fatigue, the other to Consequences that Fatigue has on Energy Levels and Daily Activities. Fatigue was assessed on 5 occasions during the first 2 months following surgery. In order to consider these fatigue reports with respect to time, analysis was undertaken using linear mixed modelling. The analysis showed that, on average, Feelings of Fatigue had returned to baseline by 30 days after surgery, while the Impacts of Fatigue on Energy and Activities did not return to baseline until day 60. For the outcome, Feelings of Fatigue, significant interactions were identified between IL-6 and time (p = .003) and between IL-10 and time (p = .05). Similarly, for the outcome, Impacts of Fatigue on Energy and Daily Activities, significant IL-6 by time (p = .003) and IL-10 by time (p = .0001) interactions were identified. These results show, reports of fatigue are influenced by concentrations of IL-6 and IL-10 in the abdominal cavity during the first 24 hours after surgery. Recent experimental evidence has identified mechanisms by which local cytokines may mediate sickness behaviors in animals. Uniting our human results and animal evidence provides impetus for developing innovative methods to investigate further the extent to which inflammatory processes in peripheral tissues influence subjective human experiences.

Abstract 1411
PLASMA FATTY ACIDS ARE ASSOCIATED WITH NORMATIVE VARIATION IN MOOD, PERSONALITY AND BEHAVIOR
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Low levels of polyunsaturated fatty acids, which are obtained in diet and
concentrated in the brain, have been linked to several neurobehavioral disorders. Preliminary trials of omega-3 fatty acid supplementation [Linolenic (LNA), eicosapentaenoic (EPA) and docosahexaenoic (DHA)] for clinical depression and other disorders have reported benefit. Here, we examine relationships of these lipids to normative variability of mood and personality in a non-patient community sample. Participants were 106 (age = 54.24 [SD = 8.72], 50.9% female) hypercholesterolemic, but otherwise healthy adults. None smoked, took fish oil supplements or psychotropic drugs. Participants completed the Beck Depression Inventory (BDI-II), the Barratt Impulsiveness Scale (BIS) and the NEO-FFI. Fasting serum fatty acids were assayed with gas chromatography. Fatty acids were quantified as a percentage of the total fatty acid pool. Covariates were age, gender and race. Logistic regression showed increased EPA % and DHA % were associated with lower odds for scoring in the mild-to-moderate range (c = -10 [n = 117] of the BDI (EPA: OR = .51 per 1 SD increase [CI: .27 - .97, p = .038]; DHA: OR = .42 [21-84, p = .015]). Linear regression showed lower % of EPA (β = -.223, R² change = .078, p = .005) and DHA (β = -.2127, R² change = .102, p = .001) to be associated with higher NEO-Neuroticism scores, whereas DHA was positively associated with NEO-Agreeableness (β = .199, R² change = .037, p = .044). LNA % was negatively associated with BIS Total (β = -.263, R² change = .068, p = .008). In conjunction with published research, these data suggest that dietary intake of omega-3 fatty acids may be a determinant of normative variability in affect regulation, impulse control and personality.

Abstract 1228

STRESSFUL LIFE EVENTS EXPOSURE IS ASSOCIATED WITH 10-YEAR MORTALITY, BUT IT IS HEALTH-RELATED EVENTS THAT PROVE MOST STRONGLY PREDICTIVE

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Stressful life events have been shown to be a risk factor for both infectious and cardiovascular disease. However, a direct association between stressful life events and mortality has yet to be demonstrated. Participants indicated from a list of stressful life events, in 8 domains (health, marriage, relationship, work, bereavement, work, service, genetic) how frequently they had experienced in the previous 2 years. They were asked to rate how disruptive and stressful they were, at the time and now. Four exposure scores were derived as the product of the number of events experienced times each of the impact measures in turn. Mortality data were collected over the subsequent 10 years. Of the 1063 participants, 76 died during follow up. All 4 life events scores significantly predicted mortality following adjustment for age, sex, body mass index, occupational status, smoking, and systolic blood pressure: for how disruptive the events were at the time (OR = 1.08, 95%CI = 1.02 - 1.13, p = .004), and now (OR = 1.12, 95%CI = 1.06 - 1.19, p < .001), how stressful the events were at the time (OR = 1.05, 95%CI = 1.00 - 1.10, p = .05), and now (OR = 1.10, 95%CI = 1.03 - 1.17, p = .003). However, these associations largely reflected variations in health-related life event scores. Only scores in this domain significantly predicted mortality. Events unrelated to health did not hold consequences for prospective mortality. Health-related events were the most common exposure, accounting for 26% of all events experienced, followed by bereavement (17%) and work-related events (14%). Thus, the failure of non-health events to predict mortality may reflect the relative infrequency of such events and the modest numbers of deaths that had occurred. Longer follow up should prove informative.

Abstract 1488

RESEARCH ON LIFE EVENTS AND COPING WAY OF HAN AND ZHUANG NATIONALITY STUDENTS IN JUNIOR HIGH SCHOOL IN CHINA

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This paper discussed life events and coping differences of Han and Zhuang students in junior high school. Researchful results show: (1) The frequencies of life events Both that Han and Zhuang nationality students had experienced were in the same orders: pressure of learning, interpersonal interaction, punishment, brave, healthiness and adaption. The frequencies of coping way that Both Han and Zhuang nationality students frequently used were also in the same orders: problem-resolving, help-seeking, fantasy, retreat, rationalization, self-accusation. (2) Of six kinds of life events, Zhuang nationality students had experienced much more pressure of learning, brave, ealthiness and adaption than Han. The other life events and all six kinds of coping way showed no difference between two nationalities. (3) Boys had experienced much more punishment and used less help-seeking than girls. The other life events and copings way showed no difference between two genders. Key words Han nationality; Zhuang nationality; Students in junior high school; Stress; Life events

Abstract 1534

SINGLE ITEMS FROM A QUALITY OF LIFE QUESTIONNAIRE AND THEIR ASSOCIATION WITH PSYCHOLOGICAL DISTRESS IN OUTPATIENTS WITH VITILIGO

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The aim of our study was to describe the frequency of symptoms, emotional and social problems experienced by patients with vitiligo using a dermatology-specific quality of life (QoL) questionnaire, and to evaluate the association of each single item with psychological distress in these patients. All the adults attending a vitiligo outpatient clinic of our Institute, during Nov 2004-Feb.2005 were given the Skindex-29 and the 12-item General Health Questionnaire (GHQ-12). The Skindex-29 is a dermatology-specific QoL questionnaire, with possible responses ranging from never to all the time. We have classified as people suffering from a particular problem those answering "often" or "all the time" to the corresponding item. The GHQ-12 is a self-administered instrument designed to detect minor, non-psychotic psychiatric disorders. People scoring 4 or more with the dichotomous scoring system were defined as GHQ-cases. Frequencies of QoL problems were compared in GHQ non-cases and GHQ-cases. A total of 94 patients (65 women, 69%) completed the questionnaires. The QoL problems more frequently experienced often or all the time were: worry of the disease getting worse (59.6%), anger (33%), embarrassment (31.9%), feeling depressed (26.6%), having social life affected (26.6%), and shame (22.3%). Problems were always more frequent in women than in men, particularly for psychological and social problems. 34 patients (37%) were identified as GHQ-cases, 46% among females and 14% in males [p<0.01]. GHQ-cases were significantly more frequent among those experiencing the QoL problems. It was particularly so for embarrassment (70.0 vs 20.6%), difficulties in interaction with others (71.4 vs 26.4%), and "to do things by myself" (70.6 vs 28.0). Vitiligo affects specific aspects of QoL, in particular inducing frequent presence of anger, worry, shame, depression, etc., and impairing social life. A higher frequency of such problems is constantly associated with psychological distress. Both QoL impairment and psychological distress are much more frequent in women than in men.

Abstract 1521

EFFECTS OF INTRanasAL OXYTOCIN ON STRESS RESPONSES DURING COUple CONFLICT

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There is evidence that marital interaction has health-promoting effects in humans. Studies investigating marital conflict suggest this effect to be mediated by attenuated psychophysiological stress responses. However, the underlying physiological mechanism has yet to be determined. Initial studies in humans suggest a possible role of the peptide hormone oxytocin in social interaction and stress reducing social attachment behavior (1,2). In a double-blind placebo-controlled design, fifty couples received oxytocin intranasal spray vs. placebo fifty minutes before a standardized relationship conflict. Heart rate, salivary cortisol, mood, and the subjective evaluation of the conflict situation were assessed repeatedly in the course of the study. Conflict behavior was coded via the SPAFF-coding system (3, 1. General stress level, personality traits, and partnership quality were measured using questionnaires.
Oxytocin significantly attenuated cortisol levels compared to placebo. Furthermore, the analyses suggest an association between the subjective evaluation of the conflict and the biological stress markers. The final results concerning heart rate responses and conflict behavior will be presented at the conference. This is the first study to directly investigate intranasal oxytocin in couple interaction in a double-blind controlled setting. The results are in line with data from animal research and suggest a mediating role of this hormone in the health protective mechanisms of stable relationships. 1) Heinrichs, M. et al. (2003). Biological Psychiatry, 54, 1389-1398. 2) Ditzen, B. (2004). Effects of Romantic Partner Interaction on Psychological and Endocrine Stress Protection in Women. Goettingen: Cuviller. 3) Gottman, J. et al. (1996). The Specific Affect Coding System. Hillsdale, NJ: Erlbaum.

Abstract 1507

SENSE OF CONTROL AND EMOTIONAL COMPLEXITY Elin B. Strand, Behavioural Sciences in Medicine, University of Oslo, Oslo, Norway, John W. Reich, Alex J. Zautra, Psychology, Arizona State University, Tempe, Arizona

The purpose of the study was to explore the bi dimensional aspect of the Dynamic Model of Affect (DMA) in examining the role of positive events in the relationship between positive (PA) and negative affect (NA). The DMA posits a bi dimensional functioning during states of lower levels of stress. Positive events were differentiated according to categories of personal control and causation, and examined in relation to PA and NA as well as in the relationship between the affects. A total of 282 female arthritis patients and healthy controls were interviewed weekly for 12 to 20 weeks on frequency of small life events, PA and NA measured by ISLE and PANAS, respectively. The participants also filled in NEO-P-I-R on extraversion and neuroticism. Multilevel modeling was applied allowing within-person, between-person analyses. Both Weekly Positive controllable and internally caused events (PCI) and Positive uncontrollable externally caused events (PUE) increased PA. PUE were related to increased NA while PCI events were related to reduced NA. As predicted there was a significant interaction of PCI events on the PA-NA relationship relating to a reduced inverse correlation between the affects. The results suggest the value of distinguishing between the causal sources of positive events and that sense of control in positive events is a significant factor in emotional complexity.

Abstract 1174

DOES PERSONALITY PREDICT BLOOD PRESSURE OVER A TEN YEAR PERIOD? Joseyline A. Leclerc, Michelle Rahn, Wolfgang Linden, Psychology, University of British Columbia, Vancouver, BC Canada

We posited that if personality traits were to have an influence on disease development, then there has to be a stable link between personality and health indicators. This hypothesis was evaluated by measuring the stability of blood pressure-personality associations over a ten-year interval. The particular personality measures for this study were selected because previous epidemiological research had revealed significant associations with blood pressure. A total of 112 initially healthy participants completed ambulatory blood pressure monitoring (ABPM) and personality questionnaires twice, with a 10-year time interval. Stability coefficients for measures of depression, hostility, self-deception and impression management were r = 0.35, 0.55, 0.26 and 0.41. Blood pressure was also fairly stable (r = .44 and r = .59). Associations between personality and blood pressure were noted for depression and hostility, self-deception and impression management and blood pressure at baseline. Hostility correlated with diastolic pressure 10-years later. Further analyses revealed differential results for men and women, and more pronounced linkages in individuals with a positive family history of hypertension. Tests of multiple regression models revealed that in men only self-deception predicted significant variance in 10-year blood pressure. In women, age and hostility were independent predictors of 10-year blood pressure. These results support the prediction that personality traits can play a role in disease development.

Abstract 1268

HYPERTENSION LABELING IS ASSOCIATED WITH ANXIETY AND THE WHITE COAT EFFECT Tanya M. Goyal, Thomas G. Pickering, Medicine, Columbia University, New York, NY, Joseph E. Schwartz, Psychiatry, SUNY Stony Brook, Stony Brook, NY, Gbang Ogedegbe, Juhee Jhaliani, Lynn Clemow, William Gerin, Medicine, Columbia University, New York, NY

The accurate diagnosis of hypertension depends on the measurement of blood pressure, which is subject to bias when assessed in the physician's office. The white coat effect, defined as the elevation in clinic blood pressure compared with mean daytime ambulatory pressure, represents a source of measurement error that can lead to over-diagnosis of hypertension and unnecessary pharmacologic treatment. The purpose of this study was to determine whether patients who have been previously diagnosed as hypertensive by a physician (i.e., labeled) report greater anxiety during the clinic visit and show a larger white coat effect. The sample included 214 normotensive and hypertensive patients aged 18-80 years, without a cardiac history, and willing to come off antihypertensive medications for 8 weeks. Patients underwent 36-hour ambulatory blood pressure monitoring, and also had their blood pressure measured by a physician using a mercury-column sphygmomanometer. Anxiety was measured during the clinic visit, and the white coat effect was computed as the difference between clinic and daytime ambulatory blood pressure. Results of ANCOVAs indicated that patients who had previously been labeled as hypertensive, whether or not they were actually hypertensive based on ambulatory monitoring, showed greater anxiety (p<.001) and a larger white coat effect (difference of 7.8 mmHg systolic, 3.6 mmHg diastolic, p<.01) compared with unlabeled patients. Actual hypertensive status based on ambulatory blood pressure was unrelated to either of these results, which indicate that perceived, but not actual, hypertensive status is associated with greater anxiety and a larger white coat effect. Furthermore, anxiety accounted for approximately 19% of the association between labeling and the white coat effect, and significantly mediated this association (p<.05). These findings have implications for the delivery of diagnostic information to newly identified hypertensive patients.

Abstract 1526

DAILY STRESS, COPING, AND NOCTURNAL BLOOD PRESSURE DIPPING Sean R. O'Quinn, Kevin T. Larkin, Psychology, West Virginia University, Morgantown, WV

Healthy adults typically experience a dip in blood pressure (BP) while sleeping. Those who do not exhibit a dip in sleeping blood pressures may be at increased risk for various cardiovascular and cerebrovascular pathologies. The purpose of this study was to investigate the relation between blood pressure dipping and daily stress. Additionally the possible moderating effects of coping on the BP dipping-stress relation were examined. Thirty-five participants were ambulatory blood pressure monitors for 24 hours to assess BP dipping in terms of systolic (SBP), diastolic (DBP), and mean arterial pressure (MAP). To examine the relation between stress and dipping the seven-day Daily Stress Inventory was used. Coping was assessed using the COPE Inventory. Among demographic variables, gender (r = -.45, p < .05), minutes of exercise per week (r = .48, p < .05), and resting clinic BP (r = .54, p < .05), were related to BP dipping, and were used as covariates in subsequent regression analyses. A series of regression analyses were conducted to assess whether measures of daily stress (both frequency and perceived intensity) predicted BP dipping and whether this relation was moderated by emotion-focused or problem-focused coping strategies. While no significant main effects were found for any measures of coping or daily stress, significant moderation effects were found for problem-focused coping and daily stress in predicting BP dipping status. Specifically, the relation between both number of stressful events and perceived intensity and dipping status was moderated by problem focused coping (MAP dipping; p < .05; SBP dipping: p < .05). Among individuals with fewer stressful events or low perceived stress, problem-focused coping was associated with greater BP dipping. Problem-focused coping was not related to BP dipping among persons with high levels of stress. These results indicate that problem focused coping is associated with healthy BP dipping, but only among individuals with lesser daily stress in their lives.

Abstract 1487

CYTOKINE RESPONSE TO EXERCISE & LIPOPOLYSACCHARIDE (LPS) IN NORMAL AND HIGH BLOOD PRESSURE (BP) Meredith A. Fung, Sazi Hong, Psychiatry, University of California, San Diego, CA, Frank P. Zaldvir, Pediatrics, University of California, Irvine, CA, Steven Carter, Medicine, University of California, San Diego, CA, Dan
Cynical hostility, as measured by the Cook-Medley Hostility (Ho) Inventory, is associated with elevated ambulatory blood pressure (ABP) in healthy adults. Posture is an important determinant of acute ABP changes, but its role in associations between Ho and acute ABP has not received extensive study.

The purpose of the current study was to examine the influence of posture in the relationship between the Ho scale, the Barefoot et al. (1989) Ho subscales, and ABP and heart rate (HR) changes in daily life. Participants included 52 community-residing adult males who completed the Ho scale at baseline followed by 2 days of ambulatory BP monitoring with the Accutracker II. Diastolic blood pressure (DBP), systolic blood pressure (SBP), and HR were recorded every 20 minutes during waking hours; participants recorded their posture at each cuff inflation (standing, sitting, walking, or reclining). Results of multi-level modeling analyses indicated that total Ho was associated with higher HR in the context of standing (Beta = 2.5, t = 1.9, p = .06) and sitting (Beta = 2.9, t = 2.7, p = .01). Similar results were found for the Cynicism subscale (Beta = 3.1, t = 2.5, p = .02) and Beta = 3.2, t = 3.4, p = .002, respectively). Higher scores on the Aggressive Responding subscale were associated with increased DBP (Beta = 5.5, t = 2.9, p = .006), SBP (Beta = 8.4, t = 2.3, p = .03), and HR (Beta = 5.6, t = 2.5, p = .02) when the participant was reclining. The Hostile Attributions subscale predicted higher HR in the context of sitting (Beta = 3.6, t = 2.4, p = .05) and the Hostility subscale was associated with higher DBP when standing (Beta = 1.8, t = 2.6, p = .01) or sitting (Beta = 1.5, t = 2.3, p = .03). These results suggest that hostility may differentially influence ambulatory blood pressure depending on posture, and that subscales of the Ho scale may be associated with higher ABP and HR under different conditions.

Abstract 1186

THE CONTRIBUTION OF STRESS HORMONES TO THE HYPERCOAGULABLE STATE IN SYSTEMIC HYPERTENSION
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Systemic hypertension confers a hypercoagulable state though the mechanisms involved in this relationship are elusive. We hypothesized that hypertension would interact with sympathetic nervous system (SNS) activity on the one hand and with hypothalamic pituitary adrenal (HPA) axis activity on the other in predicting procoagulant changes. We measured coagulation factors, catecholamines, and salivary free cortisol at rest, immediately after acute mental stress (i.e. the Trier Social Stress Test), and during 60-min recovery from stress in 42 otherwise healthy men (mean age 43±14 years) of whom 17 had systemic hypertension (systolic and/or diastolic blood pressure >140/90 mmHg). In all subjects independent relationships at rest emerged between epinephrine and clotting factor VIII activity (FVII:C) (dr2=0.10, p=0.04) and between norepinephrine and fibrinogen (dr2=0.11, p=0.01). Moreover, an independent inverse relationship emerged between change scores in cortisol and FVII:C from rest to immediately post-stress (dr2=0.08, p=0.045), respective change scores in norepinephrine and in the hypercoagulability marker D-dimer were positively correlated (dr2=0.093, p=0.050). At rest, epinephrine (dr2=0.076, p=0.03) and cortisol (dr2=0.068, p=0.042) both emerged as independent and positive predictors of plasma D-dimer in hypertensives, whereas epinephrine was an independent and positive predictor of FVII:C in normotensives (dr2=0.083, p=0.049). In hypertensives, although the relationship was not significant between rest, immediately post-stress, and 20 min and 60 min after stress was an independent and positive predictor of FVII:C area under the curve (dr2=0.110, p=0.032). In systemic hypertension, overactivity of the SNS and of the HPA axis may contribute to hypercoagulability both at rest and in response to acute mental stress providing one explanation for the increased atherothrombotic risk in hypertensive patients.

Abstract 1262

SALT SENSITIVE NORMOTENSIVE MALES SHOW ENHANCED CORTISOL AND REDUCED HEART RATE VARIABILITY DURING MENTAL STRESS
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Salt sensitivity (SS) represents a risk factor for essential hypertension which has been related to enhanced cardiovascular stress reactivity. We wanted to further elucidate this mechanism and therefore investigated cardiovascular and hormone responses to acute mental stress in salt sensitive (SS) and salt resistant (SR) subjects. We hypothesized lower heart rate variability (HRV) and higher cortisol levels in the SS.

48 healthy normotensive Caucasian males (age: 25.6(2.6), BMI 22.9(2.3) kg/m²), were phenotyped for SS by a 2-week high versus low salt diet. SS was defined as a significant drop in mean arterial pressure (MAP) >3 mmHg under the low salt diet. Subjects underwent a standardized mental stress task (manometer test) with continuous monitoring of SBP, DBP, HR and HRV before, during and after the test (Finapres). Means of each 5-minute phase were calculated. Before, after and 20 minutes after stress blood samples were drawn to check for cortisol, norepinephrine (NE) and epinephrine (EPI).

14 subjects were SS. The manometer task elicited significant stress-associated increases of SBP, DBP and HR, and a decrease of HRV (all time effects p<0.0001). In the SS, HR increased and HRV decreased more under the stress, indicated by significant time by group interaction effects (p=0.045 and p=0.003, respectively). They showed lower NE and higher cortisol levels, indicated by significant group effects (p=0.009 and p=0.025, respectively). The observation of a more pronounced HR rise coupled by a greater decrease of HRV in healthy young SS males under the influence of a brief mental stressor suggests their enhanced physiological stress reactivity, including greater susceptibility to development of stress-mediated cardiovascular disease. The higher cortisol levels observed in the SS reinforce the concept of their greater biological proneness to detrimental vascular effects.

Abstract 1080
MARRIAGE, JOB AND SUSTAINED BLOOD PRESSURE: THE ROLE OF CONSISTENT ENVIRONMENT
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We wished to clarify the role of consistent environment and gender in a sample of normotensives and mild hypertensives where marital cohesion moderated the elevation of systolic blood pressure (SBP) associated with job strain (JS) over one year, controlling for usual predictors including gender at baseline and antihypertensives at one year. A secondary analysis was performed on those men and women who underwent 24 hr ambulatory BP monitoring and completed the Job Content Questionnaire and the Dyadic Adjustment Scale at baseline and one year and who reported both having the same spouse and maintaining the same job with no major changes over the one year follow up. 167 of the original 229 subjects (72.9%) reported both having the same spouse and job as defined. There were no significant demographic differences between the original cohort and this group of which 51% were male, 76% Caucasian and 90.5% had post-secondary education. Controlling for usual predictors at baseline and antihypertensives at followup, compared to the original cohort and despite the smaller number of subjects, JS was more significant in relation to SBP (p<.008 vs. p<.011) and DBP (p<.018 vs. p=.052) and the aforementioned interaction of JS and marital cohesion was more significant in relation to DBP (p=.005 vs. p=.018) and DBP (p=.035 vs. p=.06). A gender effect was found such that the interaction of marital cohesion and JS remained significant for women only (for SBP, p=.003; DBP, p=.063), but not for men (for SBP, p=.653; DBP, p=.654). Examining consistent environment is useful to clarify the impact of marriage and job on sustained BP.

Abstract 1460
HOSTILITY, FORGIVENESS, AND CARDIOVASCULAR REACTIVITY IN RESPONSE TO ANGER PROVOCATION
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The current study examined the relation between hostility, forgiveness, and cardiovascular reactivity to anger eliciting stressor tasks. Forty-two male undergraduate students were categorized into high and low hostile groups based on responses to the Cook Medley Hostility Scale. Participants engaged in two anger-provoking tasks: mental arithmetic with harassment and a social confrontation role-play. Heart rate and blood pressure measures were obtained throughout rest, task, and recovery periods and participants provided ratings of state anger, empathy, and forgiveness following the tasks. Results revealed that high hostile males exhibited lower levels of both state and trait forgiveness than low hostile males. Higher levels of state forgiveness were associated with less trait and state anger and more empathy during the provocations. Although high hostile participants endorsed greater state anger than low hostile participants prior to tasks, there were no differences between groups on state anger responses to the two tasks. Low hostile participants had higher systolic blood pressure reactivity than high hostile participants (p<.001), but no significant group differences were observed for heart rate or diastolic blood pressure.

Abstract 1361
PERCEIVED STRESS AND LOW EDUCATION ARE ASSOCIATED WITH HEIGHTENED SYMPATHETIC NERVOUS SYSTEM ACTIVITY
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This study examines whether education, perceived stress, and social support relate to sympathetic nervous system activity in 66 African-Americans (mean age=36.1, SEM=.85) and 83 Caucasian-Americans (mean age=37.9, SEM=.98). We measured 24-hour norepinephrine (NE) excretion, mean arterial pressure (MAP) responses to 100 mg iv phenylephrine (PE) and 24-hour ambulatory MAP. Questionnaires assessed perceived stress (Cook-Medley Stress Scale) and social support (Interpersonal Support Evaluation List-Social Support Appraisal), Multivariate ANCOVA's examined relationships among the variables, controlling for age, BMI, and baseline MAP. There was a significant interaction between education and perceived stress on MAP responses to PE, such that individuals who had less than a high school education and reported more stress had the greatest increase in MAP in response to PE (p<.01). There was also a three-way interaction between perceived stress, education, and ethnicity on all three measures. African-Americans with less than a high school education and more stress had the greatest increase in MAP in response to PE, higher ambulatory MAP, and elevated NE levels (p's<.01). Social support served as a protective factor against NE excretion and pressor responses. Among individuals with greater reports of stress, those with more social support had the lowest MAP when given PE (24.4mmHg vs. 32.1mmHg), lower waking (90.4mmHg vs. 96.0mmHg) and sleeping (75.7mmHg vs. 87.4mmHg) ambulatory MAP, and lower NE excretion (23.4ng/hr vs. 31.0ng/hr) than those with less social support (p's<.05). These findings suggest that individuals with less than a high school education and low social support are especially susceptible to the adverse effects of stress on blood pressure. Further, it appears that among African-Americans, low education and perceived stress interact to predict heightened sympathetic nervous system activity.

Abstract 1424
EMOTIONAL RESPONSIBILITY AND AMBULATORY BLOOD PRESSURE IN WOMEN WITH HISTORIES OF ABUSE AND VICTIMIZATION
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Interpersonal abuse and victimization (IAV) has been linked to poorer cardiovascular health among women. The present study examined a trio of factors (emotional responsibility, posttraumatic stress disorder (PTSD) symptoms, and ambulatory blood pressure (ABP)) that, collectively, could contribute to this association. Although classified as an anxiety disorder, PTSD is characterized by difficulties managing a range of emotions. Lability of emotions (i.e., emotional responsibility) has been associated with indicators of transient myocardial ischemia and elevated ABP. The present study examined emotional responsibility in 35 healthy, post-menopausal women who endorsed lifetime IAV. Women completed an average of 18-hrs of ambulatory cardiovascular monitoring, including typical waking (10 a.m. to 8 p.m.) and sleeping (midnight to 6 a.m.) phases. Women recorded their moods upon every ABP reading during the waking phase. PTSD symptom severity was associated with greater emotional responsibility (assessed by the standard
deviation of mood ratings) for anger, anxiety, sadness, tension, worry, and joy (rs from .34 to .54, ps < .04). Associations held after partitilling scores for global distress and depression, suggesting that this pattern of pervasive emotional responsivity may be specific to PTSD. Worry responsivity was positively associated with 18-hr diastolic ABP (r = .34, p < .05), and with both systolic (r = .35, p < .04) and diastolic ABP (r = .39, p < .03) during sleep, suggesting physiological carry-over of daytime worry. These data must be interpreted cautiously given the small sample size, and pending replication. However, they indicate fruitful directions for examining the intersection of traumatic stress, emotion regulation, and health.

Abstract 1082

EARLY SOCIOECONOMIC STATUS IS ASSOCIATED WITH ADULTHOOD NIGHTTIME BLOOD PRESSURE DIPPING

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Socioeconomic status (SES) has been related to poor health outcomes, in particular cardiovascular morbidity and mortality. Recent cross-sectional research has also linked low levels of SES with several cardiovascular risk factors including poor nighttime blood pressure (BP) dipping. This study examined the prognostic significance of early SES on 24-hour blood pressure during early adulthood. One hundred and seventy four undergraduate university students whose childhood SES was assessed by highest level of education completed by their parents underwent 24-hour ambulatory blood pressure monitoring. Initial correlation analyses revealed positive associations between parental education and BP dipping, indicating that lower levels of parental education were associated with less systolic blood pressure (SBP) (r = .29, p < .01) and diastolic blood pressure (DBP) dipping (r = .42, p < .01). A stepwise multiple regression analyses indicated that childhood SES explained 6.9% of the variance in SBP dipping and 11.5% of the variance in DBP dipping above and beyond other lifestyle factors including body mass index, alcohol use, smoking, and current socioeconomic status. These findings suggest that irrespective of adult achievement, childhood socioeconomic status may have lasting health implications.

Abstract 1456

AFRICAN AMERICAN/CAUCASIAN DIFFERENCES IN PREDICTORS OF FATIGUE

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Though ethnic differences have been linked to certain pathological conditions, such as high blood pressure and stress, relatively little is known regarding how these differences affect the relationship between sleep and fatigue. The objective of this study was to examine the correlative differences between anger and sleep as predictors of fatigue in 66 African Americans and 83 Caucasians who were medically healthy or else had mild hypertension that was not currently being treated. Sleep monitoring using polysomnography was conducted at an inpatient clinical research center. Fatigue was assessed using the Multidimensional Fatigue Symptoms Inventory. Anger was assessed using the State Trait Anger Expression Inventory and the anger expression subscale of the State Trait Anger Expression Inventory. Greater anger demonstrated significant increased emotional fatigue (r = .291, p < .028) and mental fatigue (r = .314, p < .016), while Caucasians with greater trait anger demonstrated significantly greater physical fatigue (r = .290, p < .010). Greater expression of anger was significantly associated with greater emotional fatigue (r = .337, p < .009) and mental fatigue (r = .357, p < .005), while in Caucasians there were no significant correlations. Greater nocturnal oxygen saturation was associated with decreased physiological fatigue (r = .306, p < .036) and mental fatigue (r = .311, p < .033) among Caucasians. There were no significant correlations between sleep variables and fatigue in African Americans. These findings indicate that anger and hostility differentially influence the report of fatigue in African Americans and Caucasians. Further, these findings suggest that in African Americans, psychosocial factors may play a greater role than sleep quality in the report of fatigue symptoms.

Abstract 1421

COGNITIVE PERFORMANCE IN MIDDLE-AGED HYPERTENSIVE PATIENTS WITHOUT WHITE MATTER BRAIN LESIONS OR LACUNAR INFARCTIONS: EFFECTS OF GENDER

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Cognitive decline in essential hypertension (EH) may result from lesions in the cerebral white matter detected as hyperintensities on MRI, and/or cognitive impairments in hypertension may result from small subcortical infarcts. We examined cognitive function in 190 middle-aged Chinese participants with and without EH. To rule out white matter lesions and subcortical infarcts, those with detectable lacunar infarction (silent stroke) and/or white matter lesions on MRI were excluded from all analyses, leaving 112 subjects (age=56.56, sd=4.9yrs) in the study. Demographic, behavioral, medical history, and medical data were collected. A computerized neuropsychological battery and the Mini-Mental State Examination (MMSE) were administered. Univariate analyses using both genders (EH group, n=42 vs. Control group) showed a trend toward EH vs. Control differences (p<.08) on BMI, serum glucose, HDL, smoking status, and family history of hypertension and CHD. Multivariate analyses, controlling for these medical/risk factors, revealed no relationship between hypertensive status and cognitive function. Two-factor ANOVAs revealed significant EH x Gender interactions for MMSE performance (p=.05) and digit discrimination response time (p=.08). There was no main effect for gender on performance (p=.05). Among males alone, after controlling for medical/risk factor differences, there were no EH vs. Control group differences in cognitive function. Among females, after controlling for medical/risk factors, EH patients performed worse than controls on the MMSE (p=.001), digit discrimination response time (p=.05), and Chinese character rotation task total time (p=.09). Even in the absence of MRI-measured brain abnormalities, cognitive deficits are present in middle-aged females with EH. Females appear to be especially vulnerable to cognitive deficits in general cognitive ability, simple motor speed, and speed of information processing.

Abstract 1663

BRAINSTEM VOLUMETRIC ALTERATIONS IN CHILDREN AND ADOLESCENTS WITH PERSISITVE DEVELOPMENTAL DISORDER

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PURPOSE: Although several studies have examined brainstem volume in pervasive developmental disorder (PDD), results have been mixed and no investigation has specifically measured gray and white matter. The current study tested the hypothesis that gray and white matter brainstem volumes are abnormal in PDD. METHODS: Subjects included 22 right-handed, non-mentally retarded, child and adolescent males with PDD and 22 controls, group-matched for gender, handedness, age, and total brain volume (TBV). Diagnosis was based on clinical evaluation, the Autism Diagnostic Interview-Revised, and the Autism Diagnostic Observation Schedule. MRI scans were obtained on a 1.5-T scanner and volumetric measurements were performed using the BRAINS2 software package. White and gray matter volumes were measured using a semi-automated segmentation program and the segmentation subpackage of the Buss-Durkee Hostility Inventory. African Americans with greater trait anger demonstrated significant increased emotional fatigue (r = .291, p < .028) and mental fatigue (r = .314, p < .016), while Caucasians with greater trait anger demonstrated significantly greater physical fatigue (r = .290, p < .010). Greater expression of anger was significantly associated with greater emotional fatigue (r = .337, p < .009) and mental fatigue (r = .357, p < .005), while in Caucasians there were no significant correlations. Greater nocturnal oxygen saturation was associated with decreased physiological fatigue (r = .306, p < .036) and mental fatigue (r = .311, p < .033) among Caucasians. There were no significant correlations between sleep variables and fatigue in African Americans. These findings indicate that anger and hostility differentially influence the report of fatigue in African Americans and Caucasians. Further, these findings suggest that in African Americans, psychosocial factors may play a greater role than sleep quality in the report of fatigue symptoms.
Objective. A ten-year review in 1993 revealed only 8 randomized controlled trials in major depression, with marginal evidence suggesting efficacy. This report presents an up-to-date comprehensive review from 1994-2004 of studies testing the efficacy of antidepressant medication for depression in 9 common physical illnesses (cancer, HIV, diabetes, epilepsy, Alzheimer’s disease, Parkinson’s disease, multiple sclerosis, coronary artery disease, and stroke). Method. Formal meta-analysis was not possible because of divergent methodologies, tools, diagnostic approaches, etc. In lieu of meta-analysis, a scorecard approach was utilized. That is, did the study demonstrate a statistically significant difference (or not) between treatment group and control subjects? Studies were included in this scorecard review if they met a priori criteria for a category A study (randomized, prospective, placebo-controlled study of patients with diagnoses of major depression) or a category B study (randomized, prospective, placebo-controlled study of patients with symptoms of depression). Results. Thirty-four category A and category B studies were located in 9 illnesses. 6 studies in cancer, 9 in HIV, 3 in diabetes, 9 in Alzheimer’s disease, 2 in coronary artery disease, and 6 in stroke. No studies meeting these criteria were found for epilepsy, Parkinson’s disease, or multiple sclerosis. Overall, 24/34 (71%) A and B studies showed a statistically significant difference between antidepressant and placebo (5/9 in cancer, 6/9 in Alzheimer’s disease, 3/3 in diabetes, 6/9 in stroke, 2/4 in coronary artery disease, and 5/6 in stroke). Efficacy rates were similar for category A studies (16/23 = 70%) and category B studies (8/11=73%). Conclusion. This review suggests positive efficacy of antidepressant medications in diverse medical illnesses, though the numbers of studies and patients for each illness are small. More controlled trials are needed.

Abstract 1668
Differential pattern of acute biological response to trauma in children with disruptive behavior
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It is generally accepted that exposure to trauma has been shown to be associated with disruptive behavior possibly leading to post-traumatic stress symptoms (PTSS) predicted by biological factors. The current study examined the degree to which disruptive behavior moderates the relationship between initial post-traumatic physiological arousal and subsequent child PTSD symptoms. Participants consisted of 82 children (56 boys, 26 girls) aged 8-18 who were admitted to Akron Children's Emergency Department for a variety of injuries. Twenty minutes of HR data were collected during EMS transport and averaged to provide an estimate of initial physiological arousal. Interviews were conducted at 6-weeks and 6-months post-trauma. At both interviews, children completed the Child Behavior Checklist (CBCL) to provide a measure of disruptive behavior, operationalized as externalizing behaviors. They were assessed for post-traumatic stress symptoms (PTSS) using the clinician administered post-traumatic stress disorder (PTSD) scale for children and adolescents (CAPS-CA). Hierarchical linear regression analyses were conducted to determine whether acute disruptive behavior at 6-weeks interacted with initial HR to predict child PTSS at 6-months. Analyses revealed a significant contribution beyond the main effects of HR and disruptive behavior for the interaction (R2 Change = .097, p<.05). The current findings support a differential pattern of acute biological response to trauma and subsequent development of PTSS in children with disruptive behavior.

Abstract 1697
Longitudinal assessment of plasma cortisol in repatriated prisoners of war
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Some, though not all, cross-sectional studies of cortisol levels in plasma and urine have shown lower concentrations in veterans with posttraumatic stress disorder (PTSD). The purpose of this study was to longitudinally assess morning plasma cortisol in repatriated prisoners of war (RPWs) with high (HIGH, N=5) and low (LOW N=7) impact of Events Scale-Revised (IES) scores, a measure of PTSD symptom severity. Subjects were US personnel who were held as prisoners of war during the Vietnam conflict and were cast into HIGH and LOW groups based on a median split of the IES. Basal morning plasma cortisol levels were assessed in 1978 and a second time in 2003-2005. HIGH RPWs evidenced captivity length (5.3 Yrs, SD=2.6), torture scale scores (29.2, SD=13.1) and ages at repatriation (42.4 Yrs, SD=4.3) that were similar to LOW RPWs (4.6 Yrs, SD=2.5; 31.9, SD=7.4; 42.0 Yrs, SD=4.2), (t(9) <.05, p=.01). Cortisol for the entire sample decreased from 19.7 mcg/dl (SD=5.6) to 13.9 mcg/dl (SD=3.1), (t(11)=2.7, p=.02). HIGH RPWs showed a significantly greater decline over the intervening period (11.66 mcg/dl, SD=5.2) relative to LOW RPWs (1.71 mcg/dl, SD=3.2), (t(10)=3.0, p=.01). This pattern resulted from the HIGH RPWs exhibiting a trend for slightly higher cortisol levels in 1978, and significantly lower levels in 2003-05 relative to LOW (Group X TIME F(1,10)= 9.17, p=.013). These findings suggest that aging and posttraumatic stress disorder symptoms may interact to affect cortisol concentrations over time; initial high levels of cortisol in PTSD declines with time, suggesting adrenal exhaustion or dysregulation.
evaluate clinical course and medical treatment in depressed patients. The aim of this study was to investigate the associations between subjective symptoms measured by EMA in natural setting and Hamilton Rating Scale for Depression (HAM-D) scores in depressed patients. Subjects were 16 outpatients with major depressive disorder diagnosed according to DSM-IV. Mean HAM-D score at the baseline was 14.5 (SD 3.6). Patients were watched-type computers for consecutive four weeks, with which subjective symptoms were collected four or five times per day. HAM-D was conducted by well-trained psychiatrists every hospital visit. Although the average levels of last one-week mood including depression and anxiety showed significant positive correlation with HAM-D scores, correlation coefficients between HAM-D scores and EMA measures were not high (correlation coefficient, 0.35-0.60, p<.01). In conclusion, real-time assessment of subjective symptoms using EMA may be necessary for evaluation of clinical state and treatment effect in depressed patients.

Abstract 1557

A MULTISITE COMMUNITY-BASED STUDY OF SUICIDALITY AND PSYCHOSIS IN BIPOLAR SCHOOL-AGE CHILDREN
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Objective: To compare suicidality (thoughts about death, wishing to be dead, thoughts of suicide, and suicide plans) and psychosis (Psychotic Phenomena: Hallucinations and Delusions) in three children community samples with and without bipolar disorder (BPD).

Methods: A total of 614 children, 8-18 y.o. (female, 52.0%; male, 48.0%; mean age 12 years, SD=3), from a stratified random sample of schools in community. The including Colombia (N=293), Argentina (N=106), and Mexico (N=215) were interviewed using the School Age Schedule for Schizophrenia and Affective Disorders (K-SADS). Results: BPD children were significantly more likely than non-BP to have higher rates of psychosis (70.00% vs 1.00%; 95% CI=35.84,102.83, P< 0.0001) and suicidality (60 vs. 1%; 95% CI=23.88,94.79, P<0.0001). Depressive symptoms were found in 90% of BPD patients, with mixed/cycling episodes associated with more severe depressive symptomatology. Increased energy and elated mood differentiated patients diagnosed with BPD. Rates of bipolarity, suicidality, and psychosis were similar in the three sites.

Conclusions: Children with BPD usually have significant suicidality and psychotic symptoms. Need prompt identification and treatment of BPD is emphasized. Depression (HAM-D) scores in depressed patients. Need prompt identification and treatment of BPD is emphasized.

Background stress has been associated with altered HPA responses to acute stressors; however, previous research has been inconsistent and few studies have investigated these relationships in children or adolescents. In the present study, children were recruited based on the presence of stress and mood symptoms, and those whose cortisol responses to laboratory challenges in 39 children and adolescents (19 females) who were part of a larger study of physiological responses to stress over development. Participants ranged in age from 8 to 17 (M = 12) and were recruited through community postings and the National Collaborative Perinatal Project. Perceived stress was assessed with Cohen's 14-item Perceived Stress Scale (PSS) during a rest session in which participants had been physiologically to the laboratory. Saliva samples were collected 7 to 9 times over the course of a 2-hour stress session including an academic speech, mental arithmetic, and mirror tracing stress tasks. Participants were divided into high and low background stress groups based on a median split of PSS scores; associations with the continuous PSS scale were also examined. Although high and low stress participants showed similar cortisol levels baseline, a significant group by time interaction emerged (β = 0.35, p < .05), with high stress participants higher in perceived stress showing attenuated cortisol responses to the stress tasks compared to those with low background stress. We also found significant dose response associations between perceived stress scores and attenuated cortisol reactivity (β = -.48, p < .01). Results suggest that background perceived stress may exert important influences on cortisol responses to acute stress in children and adolescents. Effects of background stress on attenuated reactivity are consistent with HPA hyporeactivity seen in disorders associated with chronic stress in adults and suggest that these effects are evident over development. Results have methodological implications for stress reactivity studies as well as implications for elucidating mechanisms underlying links between background stress and disease.

Abstract 1638

BACKGROUND PERCEIVED STRESS IS ASSOCIATED WITH ATTENUATED ADRENOCORTICAL REACTIVITY TO LABORATORY STRESSORS IN CHILDREN AND ADOLESCENTS
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Social injustice is often equated to unfairness in relation to treatment, distribution of resources and opportunities that inhibits individuals from having fair chances in life. Thus social injustice prevents individuals from fully participating in social and psychological disorders. The aim of this study was to analyse the impact of social injustice on psychological distress among men and women in Sweden, and to evaluate the contribution of socioeconomic disadvantage (SED) to this impact. The Swedish National Public Health Survey, March to June of 2005, comprising 18,558 men (median age =51 years) and 21,444 women (median age =51 years) was used for analyses. Data was collected based on a self-administered questionnaire and registry data from Statistics Sweden. The response rate was 63%. Psychological distress was described if respondents had GHQ above 2 scores or had severe anxiety in combination with either taking antidepressants or tranquilisers. The intensity of social injustice was measured based on the question; ‘Have you during the past 3 months been unfairly treated that you felt humiliated? Experience of social injustice was categorised as none, mild or severe. An index of socioeconomic disadvantage was constructed based on the following conditions being a social welfare beneficiary, unemployed, experiences of financial crisis, or
 VALIDATION OF THE HOSPITAL ANXIETY AND DEPRESSION SCALE AGAINST THE MINI INTERNATIONAL NEUropsychiatric INTERVIEW IN POPULATION OF PRIMARY CARE PATIENTS

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The Hospital Anxiety and Depression Scale (HADS) is a self rating instrument developed for screening of depression (HADS-D) and anxiety (HADS-A) disorders in non psychiatric populations. In this study we assessed the performance of the HADS against the diagnoses of depression and anxiety disorders made by the Mini International Neuropsychiatric Interview (MINI). A total of 504 primary care patients consecutively admitted to the primary care medical center in Kaunas, Lithuania completed the study. The mean age of study population was 52 years; 136 were men and 368 were women. We found that sensitivity and specificity of the HADS-D (cut-off point >8) for detecting MINI diagnosis of Major Depression were 66% and 83%, respectively; positive predictive value and negative predictive value were 53% and 90% respectively. Correlation coefficient between MINI scores of depressive symptoms and the HADS-D scores was 0.51 (p = 0.01). The HADS-A (cut-off point >8) sensitivity and specificity for detecting MINI diagnosis of Panic Disorder or Generalized Anxiety Disorder were 82% and 63%, respectively; positive predictive values and negative predictive values were 91% and 45% respectively. For detecting Major Depression with HADS-D the area under the ROC curve was 0.73 and for detecting diagnoses of Social Phobia or Panic Disorder or Generalized Anxiety Disorder with HADS-A the area under the ROC curve was 0.73. The Hospital Anxiety and Depression Scale is an adequate screening instrument for the Mini International Neuropsychiatric Interview diagnoses for depression and anxiety disorders in primary care patients.

Abstract 1640

RELATIONSHIP BETWEEN PATTERNS OF BRAIN ORGANIZATION AND MIGRAINE WITH AND WITHOUT AURA

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The author has hypothesized that patterns of brain organization are related, along with genetic and environmental factors, to health outcomes. This study investigated the relationships between patterns of brain organization, family history of migraine, and prevalence of migraine with and without aura. The subjects were 434 female patients who had a lifetime diagnosis of DSM-IV major depressive disorder. They were evaluated by the author in his private psychiatric practice in New York City between 1961 and 2002. They include all non-bipolar I mood disorder patients seen during this period on which the data had been obtained. Anomalous brain conditions or phenomena (ABCP) are behavioral phenomena that deviate from the statistical norm of the general population (e.g., speech disorders, left or mixed handedness, left-right differentiation difficulties). Eighteen ABCP were used as "markers" designating the patterns of brain organization with which they are associated. Since considerable evidence indicates that each ABCP is associated with the activation of different brain systems, the number of ABCP reported by each individual defined different patterns of brain organization. The prevalence of migraine with and without aura and with and without a family history of migraine was calculated for different frequencies of ABCPin the patient group. The Pearson correlation between the number of ABCP and the prevalence of migraine with aura was .26 (p<.001) and that for migraine without aura was .14 (p=.004). Logistic regression analysis indicated that, controlling for the number of different brain systems, the number of ABCP made a significant contribution to the prevalence of migraine with aura (odds ratio=1.35, p=.001) and migraine without aura (odds ratio=1.17, p=.004). Controlling for the number of ABCP, the contribution of family history of migraine to the prevalence of migraine with aura was significant (odds ratio=4.20, p=.01) as was that for migraine without aura (odds ratio=1.79, p=.05).

Abstract 1068

PATTERNS OF BRAIN ORGANIZATION, MIGRAINE HEADACHES, AND SUICIDE ATTEMPTS

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A significant relationship has been reported between migraine with aura (MA) and suicide attempts (SA). The current author has hypothesized that patterns of brain organization are related to health outcomes. This hypothesis posits that the relationship between MA and SA is, in part, due to the prevalence of both conditions being associated with similar patterns of brain organization. The present study attempts to test this prediction in a group of 434 females with a lifetime diagnosis of major depression from the author's private psychiatric practice (1961-2002). Anomalous brain conditions or phenomena (ABCP) are behavioral phenomena that deviate from the statistical norm of the general population (e.g., speech disorders, left or mixed handedness, left-right differentiation difficulties). Eighteen ABCP were used as "markers" designating the patterns of brain organization with which they are associated. Since considerable evidence indicates that each ABCP is associated with the activation of different brain systems, the number of ABCP reported by each individual define different patterns of brain organization. The Pearson correlations between SA and all migraine was .22 (p<.001); between SA and MA .17 (P=.005); number of ABCP and MA .26 (p=.001); and number of ABCP and SA .25 (p=.0001). A logistic regression procedure employing those factors having significant correlations with SA (i.e.,"bipolarity", anxiety disorders, post traumatic stress disorder, obsessive compulsive disorder, alcohol abuse, drug abuse, ever psychiatric inpatient, age of onset of primary diagnosis, sexual abuse before age 15, number of ABCP,and migraine with and without aura) found an adjusted odds ratio of 2.2 (CL 1.14,1.46) with MA and 1.18 (CL 1.02,1.4) with number of ABCP, each making significant
independent contributions to the prevalence of suicide attempts. These data lend support to the hypothesis.

Abstract 1160

ASSOCIATION OF MATERNAL MAJOR DEPRESSION AND OVERCONTROL WITH A FAILURE TO SHOW A CORTISOL BUFFERED RESPONSE IN FOUR-MONTH-OLD INFANTS OF TEENAGE MOTHERS

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Infants of teen mothers are exposed to adverse factors even prenatally, which may result in heightened risk for maturation of their stress system. Major depression (MD), conduct disorder (CD) and maternal overcontrol are among these factors. Between 2 and 4 months, a normal shift occurs in the HPA axis (Gunnar, 1996): There is a marked decrease in cortisol response to mild stressors, which would protect the developing brain. Factors associated with a failure to show a cortisol buffered response may be highly informative (Larson, 1998). This study explored whether CD, overcontrol and MD were associated with increased salivary cortisol reactivity in four-month-old infants of teenage mothers. With the arm-restraint procedure as a stressor, mid-morning salivary cortisol was taken twice (pre- and post-stressor) in 214 infants (4.3 months, mother's age at delivery=16.9 years) at the laboratory. MD and CD were diagnosed using the NIMH-DIS. Overcontrol was observed with the CARE-Index. Independent of predictors, there was a dampened cortisol response [cort T1-cort T2 = -2.04, t-test(197)= -1.01, p>.05]. As predicted, infants of MD and overcontrolling mothers showed increased cortisol response [from .20 to .28 mg/dL, T(62)= -2.70, p<.01 and from .21 to .26 mg/dL, T(142)= -2.33, p <.05 respectively], despite the dampened cortisol response period. CD and cortisol levels were not associated [F(1,187)=2.22, p>.05]. Although correlational, our findings provide evidence that, in a sample of four-month-old infants of teen mothers, maternal lifetime MD and overcontrol are associated with a failure to show a dampened cortisol response.

Abstract 1656

FUNCTIONAL MAGNETIC RESONANCE IMAGING STUDY OF COGNITIVE FLEXIBILITY IN ANOREXIA NERVOSA USING THE WISCONSIN CARD SORTING TEST: A PRELIMINARY STUDY

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Cognitive rigidity in anorexia nervosa (AN) causes clinical problems, but its mechanism in the brain is not elucidated. The purposes of this study were two folds; Firstly, to evaluate cognitive function using the Wisconsin Card Sorting Test (WCST), which is a neuropsychological task for testing cognitive flexibility; Secondly, to evaluate the brain function with functional magnetic resonance imaging (fMRI) under WCST. Four female restrict-type AN patients and 6 healthy control women (HC) participated in this study. Their age was almost same (AN 21 ± 2; mean ± SD, HC 22 ± 4, n. s.). Their body mass index was lower in AN (15.7 ± 2.0) than in HC (20.9 ± 1.3) (p < 0.05, Mann-Whitney U test). Computerized WCST containing 128 trials was loaded to the subjects, and calculated the correct response rate, the number of category achievement and Milner's perseverative errors (PEM: an index of perseveration). During the task, brain activity was recorded with event-related fMRI. AN showed significantly poorer performance in the number of category achievement (AN 12.3 ± 4.2 vs. HC 16.5 ± 1.0, p < 0.05). PEM (AN 12.8 ± 9.9 vs. HC 4.3 ± 2.0, p = 0.67) tended to be higher in AN. The correct response rate (AN 68.6 ± 8.4 % vs. HC 75.3 ± 2.0 %) was not different. The activity in the left superior frontal gyrus (Brodmann Area 10) increased in AN when the negative feedback was presented, whereas that decreased in HC. The difference was significant (p = 0.002, one-sided t-test).AN patients have low cognitive flexibility. Abnormal prefrontal cortical activity may be responsible for such impaired flexibility.

Abstract 1447

PHYSIOLOGICAL ABNORMALITIES IN CHRONIC FATIGUE SYNDROME DURING ORTHOSTATIC CHALLENGE

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Patients with CFS often complain of feeling worse when they stand. This symptom is called orthostatic intolerance (OI). One well known physiological correlate of OI is orthostatic tachycardia (TACH). But rates of TACH and other physiological markers of orthostatic sensitivity such as orthostatic hypo or hypertension (HYPO or HYPER, respectively) in CFS are not known. We evaluated 62 CFS patients and 35 healthy controls of similar ages for each of these abnormalities during supine posture and 8 min in the upright posture, while standing still leaning against a wall. We also measured end tidal CO2. Physiological abnormalities were more common in CFS than controls (45% vs 17%; p < .01). The major difference was in rates of orthostatic hypotension (OHT): (CAP: 16% vs 3%; p = .04, one tail). Those with CAP had more than one eTcCO2 value ≥ 30 mmHg during the 8 recordings done upright. Rates of TACH, HYPO, or HYPER did not differ between patients and controls: 10% vs 6%; 7% vs 3%; 19% vs 9%, respectively. CFS patients with CAP had more depressed mood than CFS patients without CAP (CES-D: 30.0 ± 4.7 [se] vs 26.3 ± 2.9). State anxiety supine and leaning in the upright posture did not differ among CFS and healthy groups. Respiratory rates did not differ among groups in the supine position, but averaged rates while leaning in the upright posture were significantly lower in CAP patients than in either patients or healthy subjects without CAP (p < .01). This study is important for two reasons: (1) rates of TACH, HYPO and HYPER do not differ between patients and controls and so cannot explain OI in CFS; and (2) we have identified a new physiological abnormality in CFS during orthostatic challenge - orthostatic hypopnea. We believe this abnormal physiological response to standing may explain - at least in part - the patient's symptom worsening when standing. Supported by NIH AI-54478

Abstract 1464

THE CHALLENGE OF ACHIEVING OPTIMAL LEVELS OF ASTHMA CONTROL: THE IMPACT OF ASTHMA SELF-EFFICACY

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The availability of effective treatments suggests asthma can be well controlled in most patients. However, current trends in asthma prevalence rates and morbidity indicate asthma remains poorly controlled in the vast majority (>50%) of patients. Achieving optimal asthma control relies upon several psychological and behavioral factors (e.g., appropriate self-monitoring and implementation of action plans) that may be influenced by asthma self-efficacy (the belief in one's ability to control asthma symptoms). This study assessed associations between asthma-related self-efficacy and asthma control and asthma-related quality of life in 550 patients with documented asthma. All patients completed a battery of questionnaires (Asthma Self-Efficacy Scale, ASES; Asthma Control Questionnaire, ACQ; Asthma Quality of Life Questionnaire, AQLQ) and underwent standard spirometry on the day of their asthma visit. Patients also underwent a sociodemographic and medical history interview. General Linear Model's were conducted to assess associations between ASES scores and ACQ and AQLQ scores. Results indicated that ASES scores were negatively correlated with ACQ total score (r= -.47, indicating worse asthma control), and positively correlated with AQLQ scores (r= .66) (p<.0001). Moreover, except for %FEV1, ASES scores were negatively correlated with all individual items of the ACQ (r's = -.25 to -.48), and positively correlated with all subscales (activity limitation, symptoms, emotional distress, environmental stimuli) of the AQLQ (r's = .56 to .63) (p's<.0001). Findings were independent of age, sex, and asthma severity. Results suggest that patients' confidence in their ability to control asthma symptoms may be crucial to achieving optimal asthma control, over and above education and/or action plans alone. Future studies should assess the impact of interventions designed to improve asthma self-efficacy on asthma control and quality of life.
DOES HARBORING HOSTILITY HURT? ASSOCIATIONS BETWEEN HOSTILITY AND PULMONARY FUNCTION IN THE CARDIA STUDY.


We examined the cross-sectional association between hostility and pulmonary function (PF), and its consistency across race/ethnicity-gender groups. Participants were from the Coronary Artery Risk Development in Young Adults (CARDIA) study (N = 5,115): ages 18-30 at baseline in 1985-86, approximately balanced across race/ethnicity (Black, White) and gender. Hostility was ascertained using the Cook Medley Questionnaire. PF was measured using forced expiratory volume in one second (FEV1) and forced vital capacity (FVC). Measures for these analyses were from baseline, scored as continuous variables. Hostility score was scaled in units of 1 standard deviation (SD), separately for Black women, White women, Black men, and White men. Overall, FEV1 and FVC were 16-35 ml lower per 1-SD increase in hostility score. For example, a 1-SD increase in hostility was associated with a 30-ml decrease in FEV1 for Black women (p < .01); a 22-ml decrease for White women (p < .05); a 35-ml decrease for Black men (p < .05); and a 22-ml decrease for White men (p > .10). This association persisted independent of age, height, current SES, and smoking. Findings were generally similar for FVC. This study is the first to make a detailed examination of the inverse link between hostility and pulmonary function. The meaning and implications of these findings are discussed, particularly in relation to disparities by social status markers such as race/ethnicity and gender.

Abstract 1713

NEUROTROPHIN EXPRESSION IN RESPONSE TO ACADEMIC STRESS IN ASTHMATIC AND HEALTHY STUDENTS

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We aimed to investigate levels of neurotrophins, e.g. nerve growth factor (NGF), brain derived neurotrophic factor (BDNF) and neurotrophin-3 (NT-3), in asthmatic and healthy students in response to an academic examination. 19 healthy and 16 asthmatic students were evaluated during a calm and a stressful (examination) period of academic studies. Perceived stress was recorded and levels of NGF, BDNF and NT-3 were analyzed by ELISA in supernatants from unstimulated as well as mitogen stimulated peripheral blood mononuclear cells (PBMC), in serum and in nasal lavage (NAL). Cortisol levels were determined from overnight urine samples. In response to examination, perceived stress increased strongly in both asthmatics and controls (<p>.01). At both assessments, asthmatics had higher levels of NT-3 in serum compared to healthy subjects (<p>.05). BDNF levels in unstimulated supernatants from PBMC were higher in healthy subjects during stress (29.0±1.8 pg/mL) compared to the calm period (20.2±4.3 pg/mL, <p>.05). We did not observe any changes in the levels of NGF and NT-3 in NAL in response to academic stress. The level of BDNF released from PBMC in all individuals correlated negatively to the airway hyperreactivity (logPD15 for methacholine) at both periods (<p>.01). During the stress phase only, serum levels of BDNF correlated positively with cortisol levels (<p>.05). In sum, increased levels of BDNF were observed in supernatants from PBMC from healthy subjects in response to stress, a feature not evident in the group of asthmatics. In addition, higher levels of NT-3 were observed in serum from asthmatics compared to healthy individuals.

Abstract 1577

THE IMPACT OF SARS STUDY: LONG-TERM PSYCHOLOGICAL CONSEQUENCES FOR HEALTHCARE WORKERS

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The specific goals of the study were (i) to determine the prevalence of chronic posttraumatic stress and other psychiatric diagnoses resulting from SARS in hospital based healthcare workers (HCWs), (ii) to determine the impact of SARS on professional burnout, job satisfaction, career planning and sleep disturbance in hospital based HCWs and senior administrators, and (iii) to determine the individual and institutional factors that increase or reduce adverse stress responses in hospital based HCWs. The survey included 8 Toronto and 4 Hamilton hospitals. The Hamilton hospitals were used for comparison since they did not have SARS patients but were geographically close to Toronto (45 miles) and were required to follow the same infection precautions as the Toronto hospitals. The sample to date consists of 706 HCWs: (1) 168 Hamilton HCWs; (2) 145 Toronto HCWs with no SARS contact; and (3) 393 Toronto HCWs with SARS contact. The 1st phase of the study was a self-administered battery of scales. A subgroup of participants then returned for a SCID interview to assess the presence of DSM-IV disorders. Results: Even 1 to 2.5 years after the event, Toronto HCWs (with or without direct SARS patient contact) had significantly higher scores (<p>.001) on distress scales (Kessler K10, IES, MOS-SF12) than Hamilton HCWs. Professional burnout was also greater in the Toronto group (Maslach Emotional Exhaustion, <p>.001, controlling for age & job type), with a higher than expected number of HCWs seeking a career change away from direct patient care (31% vs. 18%, <p>.001). The Pittsburgh Sleep Quality Index scores showed continued disturbed sleep patterns in the Toronto group (<p>.001). The SCID interviews showed that despite the continued psychological impact, the rate of DSM-IV disorders developed since the SARS outbreak was very low in the sample (<2%). Implications for the management of emerging infectious diseases will be discussed, with attention to personnel management and staff support.

Abstract 1113

THE EFFECTS OF CHRONIC STRESS AND SLEEP ON PULMONARY FUNCTIONING IN CHILDREN WITH ASTHMA

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Asthma is a chronic disease characterized by airway inflammation and is often associated with sleep disturbances due to nighttime wheezing. Both airway inflammation and poor sleep have been related to chronic psychological stress. In this study, we aim to assess both the independent and overlapping contributions of chronic stress and sleep to asthma outcomes. In particular we will test: 1) whether poor sleep acts as a pathway through which stress affects asthma outcomes, or 2) whether stress and sleep operate as independent factors affecting asthma-related outcomes. 29 children, ages 8 to 18, with asthma completed 14 days of diaries on their rating of sleep quality and quantity (hours of sleep per night). Hours of sleep and quality of sleep were each averaged over 14 days. Children and parents completed life stress interviews in the lab to measure chronic stress. Asthma-related outcome measures included pulmonary function and immune measures. Children performed a lung test using a spirometer to measure peak expiratory flow (PEF). A blood sample was taken from the child to measure immune variables. Data collection is ongoing, and full results will be available at the time of the meeting. Child-reported family stress was marginally associated with PEF (r = -.34, p < .10). Sleep quality was significantly related to children's PEF value (r = .56, p < .01), while sleep quantity was marginally related (r = -.35, p < .10). However, chronic stress was not significantly related to sleep quality (r = -.17, n.s.) or quantity (r = .14, n.s.), and the association between sleep quantity and quality was not significant (r = -.37, n.s.). Blood samples are currently being assayed for immune markers. Chronic family stress was related to poorer lung function in children with asthma, but was not related to sleep. Children who slept longer, but whose sleep was of lesser quality, demonstrated poorer lung function. These preliminary findings suggest that stress and sleep are both linked to lung functioning in children with asthma, however the pathways through which they operate may be independent. We will soon test whether stress and sleep are related to immune variables that may have implications for asthma symptoms.
**Abstract 1674**

**EFFECT OF STRESS ON EOTAXIN AND EXPRESSION OF ADHESION MOLECULES IN A MURINE MODEL OF ALLERGIC AIRWAY INFLAMMATION**

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Airway asthma is defined by airway inflammation, reversible airway obstruction and airway hyperresponsiveness. Although immunological, endocrinological and neuronal pathways have been proposed through which stress may impact on the pathophysiology of asthma, underlying mechanisms remain to be identified. Recently we have shown that stress enhances allergic airway inflammation in a combined murine model of stress and airway inflammation. Aim of the current study was to investigate mediating factors and early kinetics of stress exacerbated allergic airway inflammation. Mice were sensitized to ovalbumin (OVA) followed by exposure to OVA aerosol. Additionally, mice were exposed to stress. BAL fluid, blood and lung tissue were obtained at 6h and 24h after stress. The number of total leukocytes, eosinophils, the cytokines interleukin (IL)-4, IL-5 and the chemokine eotaxin in bronchoalveolar lavage (BAL) fluid were determined. The expression of adhesion molecules PSGL-1 and VLA-4 on eosinophils from BAL, lung tissue and blood was assessed by flow cytometry; endothelial P-selectin and VCAM-1 were detected by immunohistochemistry. Stress significantly increased allergen induced airway inflammation as identified by leukocyte numbers in BAL fluids 24h after stress (mean 324 +/- 61 x 10^³/ml compared to non-stressed mice 160 +/- 20 x 10^³/ml, p < 0.05). Eotaxin levels from stressed mice (mean 18.6 +/- 2.7 pg/ml) were significantly higher than non-stressed mice (mean 0.7 +/- 0.2 pg/ml, p < 0.05). No differences were found for vascular or cellular adhesion molecule expression or cytokine levels. Our data indicate that the effect of stress on allergic airway inflammation is mediated by the chemokine eotaxin, while Th2 cytokines and expression of adhesion molecules seem not to be differentially regulated in stressed and non-stressed mice.

Abstract 1306

**TRAIT ANXIETY, CORTISOL REACTIVITY TO ACUTE STRESS & UPPER RESPIRATORY INFECTION**

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Not all people under high levels of stress are at high risk for upper respiratory infection (URI). Two past studies in our lab have yielded support to the concept that the magnitude of one’s cortisol reactivity to acute stress helps identify who is more susceptible to stress-induced URI. We sought to further replicate this finding that individuals exhibiting larger cortisol reactivity are more likely to respond to higher levels of chronic stress by contracting an URI, whereas the risk for URI remains equally low for lower cortisol reactors. Reed et al (2007) studied the association between neuroticism and URI in a large sample of US adults. Psychological measures (i.e., neuroticism) were positively associated with the frequency of URI, with higher neuroticism associated with more frequent URI. In the current study, 421 undergraduates were asked to complete the NEO 5-facet scale and to self-report their URI frequency. Participants were also given daily salivary cortisol samples for 7 days. Data analyses were conducted using linear regressions. Findings revealed that both neuroticism and reactivity to acute stress were positively associated with URI frequency. These findings add to the growing literature that suggests that stress reactions are important in understanding the common cold and other infections.

Abstract 1669

**PSYCHOSOCIAL REGULATION OF IMMUNE SUSCEPTIBILITY IN CHILDHOOD: THE ROLE OF CHILD TEMPERAMENT AND EXPERIENCE OF TRANSITION TO SCHOOL**

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The purpose of this study was to investigate psychosocial influences on hypothalamic-pituitary-adrenal (HPA) axis activity and immune susceptibility to upper respiratory infection (URI) in young children transitioning to primary school. Children (53 boys and 52 girls, mean age 4.23 years) due to start school. Measures of salivary cortisol were taken over two consecutive days immediately after awakening and at 5-6:pm in the evening. Parents completed questionnaires measuring health status, child temperament and a health diary detailing the onset, duration and severity of URI. Reception teachers provided measures of children’s adaptive behaviour in the classroom. Cortisol responses to school transition indicated an increase from preschool baseline measures (P = 0.015), followed by a decline six months post transition (P = 0.001). Temperament was associated with a change in evening cortisol (P = 0.013), specifically higher urgency/extroversion (P = 0.005) and higher effortful control (P = 0.024) related to higher evening cortisol. Temperament was predictive of a change in awakening post transition cortisol (P = 0.005), with higher urgency/extroversion predicting higher awakening cortisol (P = 0.004). Teacher reports of adaptive behaviour typified by social rejection (P = 0.006) and social isolation (P = 0.01) related to total and evening cortisol respectively. Lower evening cortisol (P = 0.018) and a greater diurnal change (P = 0.027) were associated with URI onset, and lower total (P = 0.025) and evening cortisol (P = 0.044) were associated with longer illness duration. We conclude from these results that child temperament and transition to school

**Abstract 1162**

**EFFECTIVENESS OF A BEHAVIORAL SELF-MANAGEMENT INTERVENTION TO IMPROVE HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

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Background: Chronic obstructive pulmonary disease (COPD) is the 4th leading cause of death in North America and is associated with significant morbidity and reduced health-related quality of life (HRQoL). Preventing exacerbations, the leading cause of COPD morbidity, involves extensive self-management, including learning how to carry out daily activities optimally despite physiological impairments, and implementing lifestyle modifications. However, few studies have assessed the effectiveness of behavioral self-management interventions in COPD patients. This study investigated the effectiveness of a behavioral self-management program (BSMP) on HRQoL in patients with COPD. Method: 51 patients (29 women; M age 70 yrs) with documented, stable COPD were enrolled in an open-label effectiveness trial. Patients underwent a 4-week BSMP (3hrs/wk) in groups of 8-10. The program aimed to educate patients about their disease and taught participants on how to apply appropriate behavioral responses (e.g., timely and appropriate use of actions plans) for self-management of exacerbations. Patients were assessed at baseline and 3 months post-intervention. Main outcome measures included general quality of life (SF-36 Quality of Life Questionnaire, SF-36) and COPD-specific quality of life (St-George's Respiratory Questionnaire, SGRQ). Results: SGRQ total and domain scores were all significantly lower (indicating improved HRQoL) at 3 months compared to baseline (P < 0.05). Scores on the "impact" domain at 3 months were significantly lower (P = 0.001). Though scores on the physical activity subscale of the SF-36 did not increase post-intervention, scores on the psychological subscale were significantly greater at 3 months (P = 0.03) compared to baseline (P = 0.01). Conclusion: A brief, behavioral self-management program significantly improved HRQoL in patients with COPD. Future studies are needed to determine whether this intervention can also impact exacerbation rates and prolong survival.
The Impact of SARS study was designed to measure the long-term psychological and occupational consequences of healthcare work during the SARS outbreak. From August 2004 to September 2005 healthcare workers (HCWs) were surveyed at 8 Toronto hospitals that treated SARS patients in 2003 (n = 538). A comparison group of HCWs (n = 166) was recruited from 4 hospitals in the nearby city of Hamilton, in which no SARS cases were reported. We examined occupational changes that HCWs were planning over the next 1 to 2 years. Emotional burden was measured with the emotional exhaustion (EE) scale of the Maslach Burnout Inventory. Most Toronto HCWs (55%) reported an initial emotional exhaustion. Emotional exhaustion was somewhat higher in Toronto HCWs (20.7 +/- 12.8 vs 18.4 +/- 11.1, p = .04), showing a significant difference (EE > 25), the prevalence of high EE was higher in Toronto than Hamilton (20.3% vs 20.2%, p = .013). More Toronto HCWs than Hamilton HCWs reported plans to reduce work hours (16.7% vs 9.5%, p = .05), to reduce face-to-face patient contact (10.6% vs 5.4%, p = .05) and to find work outside of healthcare (8.9% vs 1.8%, p = .03). Among HCWs who planned at least one of these changes, the proportion who attributed the plan to their experience with SARS was greater in Toronto than Hamilton (55.3% vs 15.0%, p = .001). In Toronto, HCWs who were planning at least one of these changes reported higher EE (24.8 +/- 13.3 vs 19.2 +/- 12.3, p < .001). In Hamilton, planned changes were not associated with EE (p = .45). The survey results suggest that 1 - 2.5 years after the SARS experience, HCWs directly exposed to the SARS treatment milieu reported higher EE than HCWs not directly exposed. EE was also correlated negatively with %FEV1 (r=-.58) and PC20 (r= -.58) (p's<.05). Among individuals taking asthma medication, JSS total scores were inversely related to self-reported past-week adherence (r = -.42, p < .05). Past-week adherence also correlated negatively with %FEV1 (r=-.58) and PC20 (r = -.59) (p's<.05). Results show higher job stress may be associated with poorer mental health.

Experimental induction of emotion, in particular of a negative quality, typically leads to increases of airway resistance. It is assumed that vagal excitation is the primary mechanism of these changes, but little evidence is available to support this view. Therefore, we used cholinergic blockade by intrapulmonary bromide inhaler to explore the role of this pathway in asthma exacerbation. To this end, we used an initial emotional exhaustion. This aspect of burnout is shown by the example of URI.

The IMPACT of SARS STUDY. LONG-TERM OCCUPATIONAL CONSEQUENCES OF PROVIDING CARE FOR SEVERE ACUTE RESPIRATORY SYNDROME PATIENTS: BURNOUT AND PLANNED CAREER CHANGES

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The Impact of SARS study was designed to measure the long-term psychological and occupational consequences of healthcare work during the SARS outbreak. From August 2004 to September 2005 healthcare workers (HCWs) who planned over the next 1 to 2 years. Emotional burden was measured with the emotional exhaustion (EE) scale of the Maslach Burnout Inventory. Most Toronto HCWs (55%) reported an initial emotional exhaustion. Emotional exhaustion was somewhat higher in Toronto HCWs (20.7 +/- 12.8 vs 18.4 +/- 11.1, p = .04). Using a standard cut-off (EE > 25), the prevalence of high EE was higher in Toronto than Hamilton (30.3% vs 20.2%, p = .013). More Toronto HCWs than Hamilton HCWs reported plans to reduce work hours (16.7% vs 9.5%, p = .05), to reduce face-to-face patient contact (10.6% vs 5.4%, p = .05) and to find work outside of healthcare (8.9% vs 1.8%, p = .03). Among HCWs who planned at least one of these changes, the proportion who attributed the plan to their experience with SARS was greater in Toronto than Hamilton (55.3% vs 15.0%, p = .001). In Toronto, HCWs who were planning at least one of these changes reported higher EE (24.8 +/- 13.3 vs 19.2 +/- 12.3, p < .001). In Hamilton, planned changes were not associated with EE (p = .45). The survey results suggest that 1 - 2.5 years after the SARS experience, HCWs directly exposed to the SARS treatment milieu reported higher EE than HCWs not directly exposed. EE was also correlated negatively with %FEV1 (r=-.58) and PC20 (r= -.58) (p's<.05). Among individuals taking asthma medication, JSS total scores were inversely related to self-reported past-week adherence (r = -.42, p < .05). Past-week adherence also correlated negatively with %FEV1 (r=-.58) and PC20 (r = -.59) (p's<.05). Results show higher job stress may be associated with poorer mental health.

Abstract 1597

AIRWAY RESPONSE TO BLOOD AND INJURY STIMULI AND VASOVAGAL DYSREGULATION: A COMPARISON OF ASTHMATICS, BLOOD PHOBICS, AND HEALTHY CONTROLS

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Vagal excitation is thought to be the major pathway for emotion-induced airway constriction in asthma, but evidence supporting this assumption is scarce. Strong vagal excitation is also observed in blood phobia patients during confrontation with blood injury and injection stimuli; sometimes an ensuing vasovagal syncope leads to fainting. We used blood and injury stimuli for studying the effects of emotion-induced vagal excitation on the airways in asthmatics, blood phobics, and healthy controls. Participants from these three groups viewed 10 films, two in each of 5 categories: pleasant, unpleasant, neutral, blood phobia-related (surgery), and asthma-related (portraying labored breathing). For one subset of films (one film from each category) the instruction was to simply view the film, and for the other subset, to view the film while tensing the leg muscles. Because skeletal muscle contraction dilates the airways, we sought to examine the effect of muscle tension on airways during emotional film viewing. Oscillatory resistance of the respiratory tract (Ros), ventilation, and cardiovascular and electrophysiological activity were measured throughout the films. Respiratory resistance was higher during emotional than neutral films, with surgery films eliciting the highest values for all three groups. One blood phobia patient and one control were close to fainting during or following one of the surgery films. Their individual response patterns did not indicate a close association between vagal cardiac slowing and change in respiratory resistance. Thus, although the airways show greater constriction during blood and injury stimuli than during other affective stimuli, cardiac vagal excitation is not substantially associated with this response.

Abstract 1607

TESTING THE VAGAL PATHWAY FOR EMOTION-INDUCED AIRWAY OBSTRUCTION IN ASTHMA: FINDINGS WITH PHARMACOLOGIC BLOCKADE

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Experimental induction of emotion, in particular of a negative quality, typically leads to increases of airway resistance. It is assumed that vagal excitation is the primary mechanism of these changes, but little evidence is available to support this view. Therefore, we used cholinergic blockade by intrapulmonary bromide inhaler to explore the role of this pathway in asthma exacerbation. To this end, we used an initial emotional exhaustion. This aspect of burnout is shown by the example of URI.
and self-reported asthma exacerbations during stress. Results suggest job stress may influence respiratory health by increasing vulnerability to asthma symptoms during periods of stress and/or by reducing asthma medication adherence. The psycho-behavioral implications of job stress (e.g., greater mood disturbance; poorer asthma self-management) may be of clinical relevance among patients referred for OA diagnosis.

**POSTER SESSION III**

**Abstract 1686**

**CHILDHOOD SEXUAL TRAUMA & DISTRESS DURING COLOPSONOMIC EXAMINATION AMONG HIV+ WOMEN AT RISK FOR CERVICAL CANCER**


Sexual trauma (ST), especially in childhood, is associated with risk for sexually transmitted infections, such as HIV and human papillomavirus infections, which in turn are risk factors for cervical dysplasia and cancer. Thus, women with HIV, HPV, and ST history may have especially high risk for cervical cancer. Although this population may have many barriers to initiating cervical cancer screening, no research has examined emotional responses to cervical cancer screening, one potential barrier, in this group. This study assessed ST in HIV+/HPV+ women, relations between ST history and emotional distress during colposcopy (colposcopic distress [CD]), and acceptance coping as a moderator of this relationship. Participants were 54 HIV+/HPV+ women with a mean age of 30 yrs (SD=8.6 yrs). 32% reported a lifetime history of ST, 19% reported ST exposure in childhood/adolescence, and 20% reported ST exposure in adulthood. Using the Psychosocial Effects of Abnormal Pap Smears Questionnaire (PEAPS-Q), 90% reported some CD; 30% reported clinically significant CD. Neither lifetime ST history nor ST in adulthood was correlated with CD. However, ST in childhood/adolescence was correlated with greater CD, r=.42, p=.002. Using the Brief COPE, greater use of acceptance coping was associated with lower CD, r=-.34, p=.02. Using multiple linear hierarchical regression, the interaction between ST in childhood/adolescence and acceptance accounted for significant variance in CD after partialling out relevant control variables and main effects of ST and acceptance, R^2=.07, F of R^2=.07=5.66, B=1.80,g=0.03. Women without ST in childhood/adolescence who used acceptance coping had the lowest CD. However, women with ST in childhood/adolescence had elevated CD regardless of acceptance use. In summary, ST in childhood/adolescence is a significant correlate of CD in HIV+/HPV+ women; acceptance buffers distress only among those without this history. Future research should examine whether ST and CD are associated with poorer adherence to cervical cancer screening in HIV+/HPV+ women.

**Abstract 1762**

**PSYCHOSOCIAL CORRELATES OF PSA LEVELS IN MEN ATTENDING PROSTATE CANCER SCREENING CLINICS.**

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Relationships between psychological factors (PSFs) and physical symptoms are often studied, but findings have been inconclusive. As recent research has linked stress to prostate specific antigen (PSA) levels, our goal was to examine relative contributions of PSFs to PSA levels. Psychological processes might influence biological systems in two ways: indirectly, by interfering with health-protective behaviors (cancer screening; smoking avoidance); and directly, via systems such as the endocrine, immune, or cardiovascular systems. We expected stress and/or anger to correlate with higher PSA levels, and PSFs such as emotion regulation to predict PSA level. We studied 253 African-, European-, and Hispanic-American men (mean age = 61). They completed measures of trait anger, anger-expression/inhibition (anger-in/out), stress, and coping style. We conducted a hierarchical multiple regression analysis, regressing family history of prostate problems, BMI, 4 emotion variables (stress; trait anger; anger-in; anger-out), and 2 coping strategies (monitoring; blunting). The model was significant, F(13, 234)= 5.08, p < .01, multiple R = .47, accounting for 22% of the variance in PSA level, and representing significant change in R^2, F(8, 234) = 2.50, p = .01. Family history of prostate problems, greater trait anger, and lower monitoring were associated with higher PSA levels. Thus, of the two PSFs (stress & anger) previously shown to be pre-diagnostic predictors of PSA level, only anger showed a positive association. Low levels of threat-monitoring coping predicted higher PSA levels, and the PSFs were of equal effect size magnitude with the traditional risk factor of family history. We concluded that to the extent that elevated PSA levels are diagnostic of prostate cancer in some men, these findings suggest that PSFs, typically amenable to intervention, merit greater attention in the prostate cancer literature.

**Abstract 1720**

**COPIING WITH LOSS OF CONTROL RELATED TO LUNG CANCER: ENDOCRINE AND IMMUNE ASSOCIATIONS**

Sandra Sephton, Inka Weissbecker, Eric Dedert, Andrea Floyd, Psychological and Brain Sciences, Jamie Studts, Dept. of Medicine, University of Louisville, Louisville, KY

Lung cancer patients are often confronted with rapid disease progression and a complex array of treatment options (O) including both physical and psychological aspects. The Shapiro Control Inventory (SCI) is a multidimensional assessment of responses to loss of control. Responses are characterized on two dimensions: positive-negative and yielding-assertive. Prior data suggest cancer patients who balance positive yielding and positive assertive control efforts experience better psychosocial adjustment and quality of life. Few studies have examined potential biological mediators of these effects. We investigated modes of control in relation to endocrine and immune function among 56 patients with non-small cell lung cancer. Questionnaires assessed four distinct modes of control: Positive assertive, positive yielding, negative assertive and negative yielding. Overnight urinary catecholamines, diurnal cortisol profiles, serum cortisol and lymphocyte counts were assessed. Pro-inflammatory cytokines (IL-6, IL-1B, TNFα) were measured after phytomaglutatin stimulation. Bivariate correlations exist between endocrine and immune function during periods of stress and/or by reducing asthma medication responses to loss of control. Responses are characterized on two dimensions: positive-negative and yielding-assertive. Prior data suggest cancer patients who balance positive yielding and positive assertive control efforts experience better psychosocial adjustment and quality of life. Few studies have examined potential biological mediators of these effects. We investigated modes of control in relation to endocrine and immune function among 56 patients with non-small cell lung cancer.

**Abstract 1662**

**BREAST CANCER-RELATED TRAUMA PREDICTS FAILURE TO FIND AT FOLLOW-UP IN LONGITUDINAL RECURRENCE STUDY: PERCEIVED PARTNER SUPPORT MODERATES TRAUMA AND REDUCES ODDS OF ATTRITION.**

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We conducted this study to evaluate breast cancer-related trauma as a predictor of recurrence. Failure to find at follow-up adversely affected statistical power. Since attrition may introduce systematic bias into analyses, we wanted to understand possible contributors to attrition in this sample. Original participants were 242 non-Hispanic white (n=127), Hispanic (n=71), and African American (n=44), newly diagnosed, early stage breast cancer patients. Seventy-one percent (n=171) were in partnered relationships. At 5 to 8 year follow-up, 101 participants returned. Mortality was confirmed for 12 individuals, but most lost to follow-up appeared unresponsive to the invitation. Eighty-one former participants were classified as non-responders.
analyses included data only from responders and non-responders (N=182). Breast cancer-related trauma was measured with the Impact of Events Scale. Social support was assessed with the Social Network Scale. Interpersonal Support Evaluation List, 3 face valid items probing partner support, 1 item probing relationship satisfaction, and 4 items from the Brief COPE. Women reporting higher levels breast cancer-related trauma at baseline were 2.17 times less likely to respond at follow-up (B=-.77, u=p<.03, Wald=5.87, 95% C.I.: -.25-.86). Among partnered individuals a one unit increase in perceived partner support decreased odds of non-response to .54 (95% C.I.: 1.02-3.39, u=p <.05, Wald=4.12, -2LL=192.58, X2(8)=8.45,p< .39 ). We concluded higher levels of breast cancer-related trauma, and inadequate support, may increase attrition risk, in this case among participants reporting elevations in the very psychological phenomenon of interest. Attrition jeopardized statistical power, but provided insight into longitudinal study behavior of those most affected by breast cancer.

Abstract 1671

EFFECT OF SUDARSHAN KRIYA AND PRANAYAM ON IMMUNE STATUS, QUALITY OF LIFE AND CHEMOTHERAPY SIDE EFFECTS IN CANCER PATIENTS
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Mind body medicine has shown the effect of stress on various system and organs. Stress has been correlated with development and progression of cancer by reducing the immunity (decrease in Natural Killer cells). The diagnosis and treatment of cancer is associated with stress resulting into a vicious cycle. Therefore relaxation techniques may help in preventing the occurrence and progression of cancer and treatment related side effects by ameliorating the stress. We have studied the effect of Sudarshan Kriya and Pranayam (SK&P) (a breathing technique) on cancer patients to improve the quality of life, immune status and in preventing the side effect of chemotherapy. A total of 12 patients (breast cancer 6, lung cancer 4, ovarian cancer 1, Non Hodgkin lymphoma 1) were included in the study. All of them were assessed for immune parameters (CD4, CD8, CD 16 & CD 56 by two color flow cytometry) at baseline. The quality of life assessment was done with the EORTC-QLQ-C30 version 3 questionnaire. All these patients underwent SK &P for 6 days. All these parameters were reassessed after the SK&P and with each course of chemotherapy. The patients were followed up for 6 months. For patients with breast cancer the results were compared with matched controls. There has been an improvement in global quality of life scores and the cases experienced lower grade of nausea, vomiting and mucositis with chemotherapy. There has been a trend towards improvement in NK cells although number is too small for statistical analysis. The study is ongoing and the follow-up is not yet complete for rest of the patients.

Abstract 1769

DISTRESS AND PHYSICAL IMPAIRMENT IN LUNG CANCER: A TEST OF MEDIATION BY ENDOCRINE AND IMMUNE FACTORS
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Patients with lung cancer suffer from more psychological distress than patients with other cancers and distress can contribute to fatigue and physical impairment. The Objective of this study was to investigate whether effects of distress on impairment in lung cancer would be mediated by endocrine and immune factors. Fifty-six non-small cell lung cancer patients provided demographic and medical information and self-report measures of cancer-specific distress (IES), physical impairment (FACT-L) and fatigue (FSI). Endocrine measures included 15-hour urinary catecholamines, diurnal cortisol profiles, and serum cortisol. Immune data included white blood cell (WBC), total lymphocytes and counts of total and activated CTL and NK cells. Bivariate correlations explored relationships between variables of interest. Subsequent hierarchical regressions controlled for cancer stage, age at diagnosis and relevant medical variables. Mediation was tested using methods outlined by Baron and Kenny (1986). The IES intrusion and avoidance subscales predicted poor physical functioning, lower functional well-being, greater fatigue intensity, duration, and interference (all p<.05). Only the avoidance scale was associated with physiological variables including lower serum cortisol, WBC, and activated NK cell counts (all p<.05).

In tests of mediation, both avoidance and serum cortisol were predictors of functional well-being. Avoidance and WBC both predicted fatigue intensity and duration. Both avoidance and counts of activated NK cells predicted fatigue intensity (all p<.05). Effects of avoidance on fatigue and physical impairment largely persisted and were not mediated by endocrine or immune factors. Although avoidance was associated with serum cortisol, WBC and activated NK cells, results suggest that avoidance, neuroendocrine variables and immunity may independently contribute to functional well-being and fatigue in lung cancer.

Abstract 1691

SLEEP DIFFICULTIES IN ENDOMETRIAL CANCER PATIENTS: SYMPTOMS AND COMORBIDITIES

Sleep disturbance and mood disorders are frequently comorbid among individuals with cancer. Previous research has investigated relations among sleep and mood states among people with breast and lung cancers, however, no published research has examined these relations among women with endometrial cancer, the most common gynecologic cancer in the U.S. This represents an important and under researched area of study due to the high incidence of sleep disturbances and mood disorders among women in general. Additionally, poor sleep quality and depression may be associated with poorer cancer health outcomes via neuroendocrine dysregulation and immune decrements. The purpose of this study was to examine relations among sleep quality, mood, and affect in 20 women undergoing total abdominal hysterectomy with bilateral salpingo oophorectomy (TAH-BSO) for suspected endometrial cancer. Sleep quality was measured with the Pittsburgh Sleep Quality Index (PSQI); depressive symptoms were measured using a modified version of the Structured Interview Guide for the Hamilton Anxiety and Depression Scales (SIGH-AD), and positive affect was measured using the Affect Balance Scale (ABS). Results indicated a mean overall sleep quality score of 6.79 (SD = 3.71) with 52.6 % of SIs above the clinically significant cut-off score of 5. A significant positive correlation (r = .49, p < .05) emerged between a greater number of depressive symptoms and longer sleep latency (SL). Furthermore, a greater number of depressive symptoms was associated with both shorter total sleep time (TST; r = .66, p < .01) and poorer global sleep quality (r = .57, p < .05). Less positive affect was associated with poorer global sleep quality (r = .51, p < .05). These preliminary findings suggest that a significant percentage of newly diagnosed endometrial cancer patients have poor sleep quality prior to surgical resection, that specific sleep disturbances, (e.g., increased SL and decreased TST) are co-morbid with indices of distress, and that endometrial cancer patients may benefit from psychosocial interventions during the perioperative period.

Abstract 1726

INCREASES IN DEPRESSION ARE ASSOCIATED WITH POORER ADHERENCE TO RADIOTHERAPY TREATMENT
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Research has confirmed that adherence to medical treatment is a major problem. Missed cancer treatments (chemotherapy and/or radiotherapy) can lead to poorer outcome and increased risk of recurrence or disease progression. This study examined 211 mixed diagnosis cancer patients (mean age 60; 94% Caucasian, 72% married, 59% male) who underwent radiotherapy (RT). Participants completed the Psycho-Oncology Screening Tool (POST) prior to beginning RT and after completing RT. Adherence was defined as the number of days of missed RT sessions. The mean number of missed days was .52 (SD=1.50); with 77% of the patients completing all treatments, 13% missing one day, 4% missing two days, and 6% missing three or more days. Pre-treatment psychosocial factors, demographic variables and cancer site were not associated with adherence. Post-treatment levels of anxiety (r=.18,p<.05), depression (r=.26,p<.01), and pain (r=.19,p<.01) were associated with poorer adherence. Pre-to-post-treatment change scores for self-reported depression (r=.15,p<.05) and the number of depressive symptoms
(r=.22, p<0.01) were significantly associated with adherence such that increases in depression over the course of RT was associated with a greater number of missed treatments. Regression analyses found that the number of pre-treatment concerns (Beta = .17, p < .05) and the change in the number of depressive symptoms (Beta = -.23, p<0.005) were significant predictors of the number of missed treatments. Our study suggests that psychosocial factors play an important role in a adherence to RT. These findings emphasize the importance of monitoring and treating psychosocial symptoms throughout RT as a means of improving adherence and long-term medical outcome.

Abstract 1722

METABOLIC SYNDROME AND CARDIOVASCULAR FITNESS
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Metabolic Syndrome (MetS) is associated with development of Type 2 Diabetes Mellitus (DM) and Coronary Heart Disease (CHD). Physical activity may be an important therapeutic intervention, as it has been associated with reductions in hypertension and obesity, as well as improved lipid profiles and glucose metabolism. We therefore examined the cross-sectional association between cardiovascular fitness, body composition, and MetS. Study participants included 226 adults between 18 and 25 who participated during 2004. MetS was defined according to the National Cholesterol Education Program’s Adult Treatment Panel III (NCEP ATP III) guidelines. Cardiovascular fitness was determined via a multi-stage submaximal exercise test to estimate maximal oxygen uptake. Body composition was assessed via bioelectrical impedance. Structural equation modeling (SEM) was used to analyze the partial mediating role of body composition in the relationship between cardiovascular fitness and MetS. Ten (4.4%) of 226 participants met MetS criteria; low HDL was the most prevalent MetS factor. Among 126 (56%) participants who had at least one MetS factor, elevated HDL and triglycerides were the most prevalent components. Cardiovascular fitness correlated with waist circumference (r=-0.226), HDL (r=0.184), and MetS (r=0.208), all ps <0.05; however, when we adjusted for body fat percentage, the correlation between fitness and MetS was not significant (r=0.042, p=0.533). Body fat percentage was correlated with cardiovascular fitness (r=0.461) and MetS (r=0.004), both ps <0.05. SEM analyses revealed that body composition mediated the relationship between cardiovascular fitness and MetS (Chi Sq= 0.036, df=1, P=0.849, GFI=1.000, AGFI=0.999, CFI=1.000, RMSEA=0.000). Cardiovascular fitness may reduce risk for MetS through reduced body fat, suggesting endurance exercise may be a therapeutic option in the college population. Early identification of MetS could allow for early intervention, thus reducing onset of chronic disease.

Abstract 1693

CARDIOVASCULAR DISEASE RISK FACTORS AND EXERCISE IN THE COLLEGE POPULATION
Timothy S. Freson, Bruce R. Wright, Christina M. Chapman, Health and Wellness Services, Washington State University, Pullman, WA

Cardiovascular disease (CVD) is the number one killer of men and women within the United States. New research has begun to analyze the impact of traditional (e.g., fasting blood glucose, insulin levels, percent body fat, and cardiovascular fitness) and nontraditional CVD risk factors (e.g., inflammatory markers like C-reactive protein (CRP), interleukin-6 (IL-6), and tumor necrosis factor-alpha (TNF-a)) on the initiation and development of this disease in younger populations. The purpose of the study was to evaluate the relationship between cardiovascular fitness to traditional and non-traditional risk factors in CVD. Two hundred and twenty six individuals (83 men, 143 women) between 18 and 25 years of age participated in the study. Measures of cardiovascular fitness, body composition, CRP, IL-6, TNF-a, insulin, glucose, and cortisol were analyzed using structural equation modeling (SEM). Data was evaluated to determine the support for several existing models delineating the relationship between traditional and non-traditional risk factors for CVD. Cardiovascular fitness levels were predictors of CVD risk. In SEM analysis, CRP, and IL-6 mediated the relationship between fitness and TNF-a (Chi Sq=2.405, df3=3, P= 0.493, GFI=0.995, AGFI=0.982, CFI=1.000, RMSEA=0.000). Body composition, in conjunction with CRP and IL-6, also mediated the relationship between fitness and TNF-a, but this relationship was not as strong as CRP and IL-6 alone (Chi Sq=7.620, df6, P= 0.267, GFI=0.987, AGFI=0.967, CFI=0.992, RMSEA=0.035). Finally, insulin and glucose were found to mediate the relationship between cardiovascular fitness and IL-6 (Chi Sq=1.689, df3=3, P= 0.639, GFI=0.996, AGFI=0.988, CFI=1.000, RMSEA=0.000). In summary, cardiovascular fitness was negatively correlated with markers of inflammation and were partially mediated by insulin resistance. Therefore, endurance exercise interventions may be effective in reducing risk of CVD.

Abstract 1768

PRECLINICAL DIFFERENCES IN METABOLIC SYNDROME MEASURES OF CARDIOVASCULAR DISEASE RISK IN HYPER- AND NORMO-COLD PRESSOR REACTORS.
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Although measures of metabolic syndrome, cardiac structure and function, and cold pressor reactivity have been independently linked to cardiovascular risk in preclinical cohorts, there has been no evaluation of these measures as a function of cold pressor reactivity magnitude. The 339 healthy normotensive (175 men, 164 women, 18-55 yr) participated in two cold pressor tests separated by 2-4 wks. Measures included: metabolic syndrome [insulin sensitivity, fasting glucose and insulin, glucose tolerance, triglycerides, cholesterol ratio, HDL, LDL, oxidative stress (8-isoprostaglandinF2a), central obesity (waist-hip ratio), mean ± SD mmHg values for SBP <25 or DBP >/=20 and normo-reactors (n =119) displayed a mmHg increase in SBP <19 and DBP <20 and 0-15 on both cold pressor tests; mean ± SD mmHg values for SBP =39±12, DBP =25±8; and for normo-reactors were: SBP = 8.6±5, DBP = 6.6±4. No significant group differences were observed in age, body mass or ethnic composition. There were more men than women in the hyper-reactor group (hyper = 35% women; norm = 54% women). Analyses of reactor groups, with sex as a covariate, yielded a trend for LV mass index (p =0.08), where the hyper- relative to normo-reactors had greater mass. There were no reactor group differences on any of the other metabolic syndrome or cardiac measures. Regression analysis of the entire sample revealed that only two variables, resting DBP and LV mass index, significantly predicted SBP reactivity (p <0.001), which together accounted for 4.5% of the variance; no measures predicted DBP reactivity significantly. Therefore, cold pressor blood pressure reactivity is not linked to preclinical metabolic syndrome and cardiovascular risk but may be associated with a cardiac hypertrophic process.

Abstract 1608

SEROTONIN TRANSPORTER POLYMORPHISM AND DEPRESSION AMONG ACUTE CORONARY SYNDROME PATIENTS
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Recent studies indicate that the s, or short, allele of a genetic polymorphism in the promoter region of the serotonin transporter gene interacts with life events, including medical illness, to promote depressive symptoms. In this study, we evaluated whether this serotonin transporter variant predicts depression among patients who recently experienced an acute coronary syndrome. Participants were 577 persons of French-Canadian descent with documented acute myocardial infarction or high risk unstable angina. Depression was defined by a score of 14 or greater on the Beck Depression Inventory II or use of antidepressant medication (N=171). Genotype frequencies were s/s = 121, s/l = 282; l/l = 174. Results indicated that there were no significant effects of genotype on depression (p=.17). The lack of association persisted with statistical adjustment for age, sex, current smoking and left ventricular ejection fraction. Overall, these results suggest that the length polymorphism in the promoter region of the serotonin transporter gene is not associated with the likelihood of depression following one type of stressful life event, acute coronary syndrome.
Ischemic segments were assessed by a Nuclear Medicine physician blinded to DSM-IV. This resulted in 11 with a PTSD diagnosis and 23 without a diagnosis of PTSD. This study wanted to find if Type D personality (distress personality with two main domains: Negative Affectivity and Social Inhibition; tendency to experience negative emotions and Social Inhibition; tendency to related psychiatric disorders or stressed individuals without psychiatric disorder.

TYPE D PERSONALITY AND PREMATURE MYOCARDIAL INFARCTION: A CASE-CONTROL STUDY IN IRAN

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Purpose of study: Premature myocardial infarction (PMI) is a growing major public health problem in Iran. Currently PMI is the main cause of years of life lost (YLL) in Iranian population. Little is known about the association between chronic stress and PMI. This study wanted to find if Type D personality (distress personality with two main domains: Negative Affectivity; tendency to experience negative emotions and Social Inhibition; tendency to inhibit self expression in social interactions) as a measure of chronic stress is more prevalent among patients with PMI than patient with first MI at older age. Subject sample and statement of methods: As a case-control study with matching criteria, we measured chronic stress among 50 patients (Mean +/- SD: 62.11 +/- 7.80) as controls. Cases and controls were matched by sex. Risk factors for PMI including smoking, hyperlipidemia, hypertension, positive family history, diabetes and obesity were compared between case and control. Summary of results: 87.5% of cases and 68.8% of controls had Type D personality (odd's ratio = 3.18, 95%CI: 1.11-9.09, P = 0.025). Non of mentioned risk factors for PMI had significant association with PMI. This is the first study illustrates association between Type D personality and premature myocardial infarction. A cohort study is planned for confirming the results of this study. Screening for type D personality among young adults and psychological interventions for affected persons may be recommended based on results of cohort study.

Over the last 10 years, there has been a surge of publications documenting an increased risk of mortality associated with depression in CAD patients and general medical inpatients. One consequence is an increasing acceptance for the prompt use of antidepressant medications in medical practice. Antidepressant medications, especially the newer generation of serotonin selective reuptake inhibitors (SSRIs), are considered to be relatively free of adverse effects; however, there is little information available describing the effects of SSRIs on mortality in CAD patients. The VAGUS study is a prospective study designed to evaluate the effects of anxiety and depression on risk in CAD patients. As part of this study, depressive symptomatology and antidepressant medication use was monitored during hospitalization for diagnostic cardiac catheterization. The objective of the current analysis was to examine whether overall antidepressant use in CAD patients undergoing coronary angiography predicts increased risk of mortality. Torsos (n=189) of the patients were taking antidepressant medications. Serotonin reuptake inhibitors were the most common class of antidepressants prescribed (66%), followed by antidepressants with mixed norepinephrine and serotonin reuptake inhibiting effects (21.5%), drugs such as bupropion, with weak inhibitory effects on norepinephrine as well as dopamine reuptake (9%), and drugs which work primarily by inhibiting norepinephrine reuptake (4%). Overall, antidepressant use was independently associated with increased risk of mortality this risk was attenuated, but still present after adjusting for depression severity (BDI score), medical comorbidity (Charlson comorbidity index), and for age, left ventricular ejection fraction, gender, minority status, and smoking (HR = 1.62; p = 0.029). These preliminary findings suggest that commonly used antidepressants may contribute to increased risk for mortality in CAD patients.

COMBINED INFLUENCE OF DEPRESSIVE SYMPTOMS AND HOSTILITY ON PSYCHOSOCIAL STRESS AND SOCIAL INTERACTIONS IN DAILY LIFE

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Individuals high in both depressive symptoms and hostility may be at substantially increased risk for coronary artery disease (CAD). To gain insight into why this subpopulation may be at increased risk, we used ecological momentary assessment methods to examine whether depressive symptoms and hostility exert a combined influence on psychosocial stress and social interactions in daily life among 346 healthy, older adults (49% male, 84% white, mean age=61 years) enrolled in the Pittsburgh Healthy Heart Project. Participants were administered the Beck Depression Inventory-II (BDI-II) and the Cook-Medley Hostility (Ho) Scale. Every 45 minutes during two 3-day periods, they also completed a questionnaire comprised of 5 psychosocial stress scales and 4 social interaction scales. Scale scores were averaged across observations. Regarding the psychosocial stress scales, regression analyses adjusted for age, sex, race, and education indicated that higher BDI-II and Ho scores were independently associated with higher Negative Affect ratings (BDI-II: p<0.01; Ho: p<0.01) and lower Decisional Control ratings (BDI-II: p<0.01; Ho: p<0.01).
p<.01; Ho: p<.05). Only the BDI-II score was related to Arousal ratings (p<.01), and only the Ho score was related to Task Demand (p<.01) and Social Conflict (p<.01) ratings. Concerning the social interaction scales, higher BDI-II and Ho scores were independently associated with lower Interaction Positivity ratings (BDI-II: p<.01; Ho: p<.01). Only the BDI-II score was related to Intimacy ratings (p<.05), and neither score was related to Instrumental Support or Emotional Support ratings. Significant BDI-II by Ho interactions were not observed for any scale. Our findings suggest that persons high in both depressive symptoms and hostility may experience a greater degree of psychosocial stress and unpleasant social interactions than those high in only one or neither of these factors, which may partially explain the increased CAD risk of this subpopulation.

Abstract 1618

DEPRESSIVE SYMPTOMS AND HOSTILITY EXERT A SYNERGISTIC EFFECT ON SERUM INTERLEUKIN-6 AND C-REACTIVE PROTEIN

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Recent research suggests that depressive symptoms and hostility may interact and exert a joint influence on circulating levels of inflammatory markers associated with an increased risk of cardiovascular disease (CVD). Though the nature of this interaction, however, is unclear due to inconsistent findings across previous studies. Accordingly, we examined whether depressive symptoms and hostility interact to predict serum interleukin-6 (IL-6) and C-reactive protein (CRP) among 341 healthy, older adults (49% male, 85% white, mean age = 61 years) enrolled in the Pittsburgh Healthy Heart Project. Participants underwent a blood draw and completed the Beck Depression Inventory-II (BDI-II) and the Cook-Medley Hostility (Ho) Scale. Serum IL-6 was measured by ultra-sensitive enzyme-linked immunosorbent assay, and serum CRP was measured by a particle enhanced immunonephelometric assay. Regression analyses indicated that the BDI-II by Ho interaction was a significant predictor of both serum IL-6 (R Square Change = .014, F Change = 5.65, p < .05) and serum CRP (R Square Change = .011, F Change = 4.67, p < .05) after accounting for various potentially confounding factors (e.g., demographics, cardiovascular risk factors, social interaction scales, and behaviors). Analyses of simple slopes revealed that, among individuals with higher BDI-II scores, Ho score was positively associated with both IL-6 levels (B = .003, SEB = .001, p < .05) and CRP levels (B = .005, SEB = .003, p = .08). In contrast, Ho score was not related to IL-6 or CRP levels among those with moderate or lower BDI-II scores (all p > .15). Our findings are consistent with previous research and provide further support for the notion that depressive symptoms and hostility may interact and exert a synergistic effect on circulating levels of inflammatory markers linked with CAD risk.

Abstract 1688

STRESS RESPONSE IN OLDER ADULT CAREGIVERS: EVIDENCE FOR LOWER HEART RATE REACTIVITY

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While chronic stress has been linked to elevated cardiovascular reactivity (a hypothesized mediator between stress and cardiovascular disease) little is known about the role of aging in this relationship. We examined whether age was associated with cardiovascular reactivity (CVR) in older adult caregivers, accounting for perceived stress (Perceived Stress Scale), anger (Anger Expression Inventory), body mass index (BMI) and relationshipship to the care recipient (wife or daughter). Participants were 100 sedentary women, between 50-82 years of age (mean=63) caring for a relative with dementia. Cardiovascular Reactivity (mean task - mean baseline value) was measured by heart rate (HR), diastolic (DBP) and systolic (SBP) blood pressure in response to a laboratory based-stress induction task (discussion of caregiving challenges). Simultaneous regression analysis demonstrated older age was related to lower scores on HR Reactivity (F=16.55, p<.001) but not DBP or SBP Reactivity. Relationship status was also related to HR Reactivity, with daughters demonstrating lower scores on HR Reactivity than wives (F=4.77, p<.05). The relationship between age and lower HR Reactivity persisted when mean baseline HR was included in the model (F=14.40, p<.001), however, the association between HR Reactivity and daughters did not (F=2.16, n.s.). Perceived stress and anger were not associated with CVR. This may be due in part to limited variance in scores on the perceived stress and anger measures within this caregiver population. BMI was included in the regression models to account for the linear relationship between BMI and age, however, it was not associated with CVR in this sample. Results suggest that chronically stressed older women may have lower heart rate reactivity in response to an emotional stressor than their younger counterparts. Further research is warranted to investigate the potential blunted relationship between chronic stress and aging on heart rate reactivity and its implications for cardiovascular disease.

Abstract 1702

EATING DISORDER SYMPTOMS ARE ASSOCIATED WITH BIOLOGICAL AND PSYCHOLOGICAL CARDIOVASCULAR RISK FACTORS IN ADOLESCENTS

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Eating disorder patients exhibit alterations in psychological and physiological functioning, including depressive and anxiety symptoms, low self-esteem, and hypothalamic and metabolic aberrations; data from research with non-clinical samples suggest that eating disorder symptoms may be associated with similar psychological and biological risk factors. Our objective was to examine the association between eating disorder symptoms (measured by the SCOFF questionnaire) and psychological and biological markers in adolescents. Participants consisted of 158 female participants (approximately 50% White and 50% Black; mean age: 17.78) who were enrolled in Project Pressure, a study examining psychosocial and behavioral predictors of cardiovascular disease risk. Regression analyses, controlling for age, sex, and race, showed that SCOFF scores were positively associated with waist circumference (WC) (b = 4.05 (0.97); p < .001), percent body fat (b = 2.50 (0.78); p < .01), and resting diastolic blood pressure (DBP) (b = 1.80 (0.88); p < .05). Associations with percent body fat and resting DBP were no longer significant after adjusting for WC or body mass index (BMI). SCOFF scores also were associated with increased depressive (b = 2.81 (0.87); p < .01) and anxiety symptoms (b = 1.77 (0.44); p < .001) and higher self-esteem (b = 1.42 (0.40); p < .01), and were associated with increased odds of meeting the clinical threshold for depressive symptoms, as measured by the CES-D > 16 (OR = 2.06, p < .01). We conclude that adolescents who report more eating disorder symptoms exhibit disordered eating behaviors and depressive and anxiety symptoms, and higher self-esteem, suggesting that aberrant eating may adversely affect metabolic and psychological functioning in adolescence. Although causality cannot be determined from this study, it is plausible that targeting disordered eating in adolescents may decrease long-term risk for disease. Research supported by HL25767

Abstract 1630

DEPRESSED MOOD, TH1/TH2 RATIOS, AND HEART FAILURE

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Congestive heart failure (CHF) patients are at greater risk for depression, which predicts poorer CHF prognosis. Mechanisms are unclear, but immunity may be a mediating factor. Depression symptoms are linked with increased inflammation and reduced cellular immunity, which influences CHF severity. TH1 cells promote cellular immunity and regulate inflammation, and TH2 cells secrete TH1 inhibitory cytokines. IFN-gamma is a known marker of TH1 activity and its deficiency is linked with cardiac inflammation-associated dilated cardiomyopathy and CHF. IL-10 is a common TH2 marker. This study evaluated TH1/TH2 cytokine ratios, CHF severity, depressive symptoms (Hamilton Depression Interview), CHF severity (B-type natriuretic peptide (BNP) and physical function via six minute walk test) and stimulated intracellular IFN-gamma/IL-10 cytokine ratios (flow cytometry). Cardiac related hospital admissions or deaths (CA/Ds) were measured for two years after the baseline visit. BNP levels, a known marker of CHF severity were used as covariates in analyses. BNP levels in this study were higher in patients having CA/Ds (p < 0.05) but not correlated with depression scores. Eight subjects had cardiac admissions, of which four died from cardiac related causes. While controlling for BNP, depression scores were negatively associated with IFN/IL-10 (r = -0.56, p < 0.05) and physical function (r = -0.59, p<0.05). TH1/TH2 ratios were lower in those with higher depression scores (t = 2.2, p < 0.05) and those with CA/Ds (Chi square = 3.9, p < 0.05). Depression scores, while covarying for BNP predicted CA/Ds (R2=0.07, p = 0.716). These data suggest that elevated depressive symptoms in CHF
patients may increase risk for CA/Ds within two years and that reduced Th1/Th2 ratios are related to this effect. More studies are needed to uncover causal relationships and mechanisms between depression and morbidity and mortality in CHF, e.g., inflammation and/or reduced cardiac repair.

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**Abstract 1637**

**SYMPTOM PROFILES AND ASSOCIATIONS WITH ADVERSE OUTCOMES IN POST-MI PATIENTS**

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Depression is a risk factor for adverse outcomes in patients with myocardial infarction (MI). The objectives of this study were to 1- explore the degree to which the essential features of self-reported depression and distress in post-MI patients represent one or more underlying dimensions and 2- to examine whether psychological symptom profiles that are based on these dimensions are differently associated with the risk of adverse outcomes. Two months post-MI, the BDI, STAI, and GMS were used to measure symptoms of depression, anxiety and mood status in 327 post-MI patients. A diagnostic interview (CIDI) was administered to assess DSM-IV major depression (MD). Health-status was assessed by the SAQ. Principal component analysis was used to identify the latent psychological distress measures, and cluster analysis to identify groups with different symptom profiles. MANOVA was used to compare group means on psychological distress measures. Associations between group membership and MD and health status were examined by computing odds ratios. The low risk group (LR) was used as reference. PCA revealed a 4-component solution: depressive affect, anxiety, positive affect, and fatigue. Cluster analysis using these 4 components identified 3 groups: A LR-group that scored low on all components, a high-risk group (HR1) that was characterized by elevated scores on all components (all \( p < .001 \)) and a second high-risk group (HR2) that was characterized by elevated anxiety, positive affect, and fatigue scores (all \( p < .001 \)), but low depressive affect scores (\( p = .56 \)). Both HR-groups were at increased risk of having MD compared to the LR-group: \( OR = 15.3; 95\% CI = 5.4-45.6; \) \( HR1 \) and \( OR = 14.5; 95\% CI = 5.5-39.9; \) \( HR2 \). Moreover, both the HR1 group (\( 2.1-OR-3.4 \)) and the HR2 group (\( 2.0-OR-6.8 \)) were significantly associated with worse health status.

In addition to depressive affect, other psychological distress components seem important in understanding adverse outcomes in post-MI patients.

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**Abstract 1660**

**ANALYSES OF ASSOCIATION OF SF-36 WITH CORONARY ARTERY DISEASE (CAD) RISK FACTORS, CAD PREVALENCE AND MORTALITY IN A HIGH RISK POPULATION: A PRECIS DATABASE STUDY**

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This study was to examine the relationships among health-related quality of life (HRQOL), components of the metabolic syndrome, markers of inflammation, increased CAD prevalence and mortality. HRQOL has been studied after coronary artery by-pass surgery, but it has rarely been analyzed for relationships with novel CAD risk factors or mortality. Furthermore, relationships among psychosocial factors and CAD have been determined by correlates of self-reported health, but not by latent structures. The study sample consisted of 1609 patients (age \( 53.4 +/- 13.4 \)) seen in the Cardiology Prevention Clinic at the Cleveland Clinic. 520 (32.3%) patients had a history of CAD and 955 (59.4%) patients were men. At the study entry, all patients had baseline history, physical exam, laboratory tests and completed the Medical Outcomes Study Short-Form 36-Item Health Survey (SF-36). Social Security Death Index identified 14 patients who died subsequently. Analyses were conducted on relationships among SF-36 scales, CAD risk factors, CAD prevalence and mortality. Among the SF-36 scales, worsened scores on three scales (Physical Functioning, Role Limitations due to Physical Health, and Social Functioning) were significantly associated with higher mortality (\( p' s < .01 \)). All eight SF-36 scales differentiated between patients with CAD and without CAD at baseline, with CAD patients having lower scores (\( p' s < .001 \)). Patients with lower SF-36 scale scores tended to have higher C-reactive protein, fibrinogen, fasting glucose, triglyceride levels, and higher BMI and systolic blood pressure (\( p' s < .01 \)). We concluded that HRQOL was associated with components of the metabolic syndrome, markers of inflammation, increased CAD prevalence and mortality. More detailed analysis will be conducted to refine our understanding of these relationships.

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**ANXIETY SYMPTOMS AND AUTONOMIC FUNCTION IN PATIENTS WITH IMPLANTABLE CARDIOVERTER DEFIBRILLATORS**

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Anxiety is associated with increased risk of life-threatening cardiac events. Autonomic nervous system dysregulation is a potential mechanism accounting for this association. This study examines whether anxiety is related to cardiac demand and sympathovagal balance in implantable cardioverter defibrillator (ICD) patients vulnerable to arrhythmia. Anxiety was assessed in 57 ICD patients (91% male; age=61(10) and 25 healthy controls (68% male; \( \text{standard deviations} \) 5.4) using the State-Trait Anxiety Inventory (STAI). Digitized electrocardiograms were used to document heart rate (HR) and heart rate variability (HRV) during laboratory tasks and daily life. HRV was calculated using spectral analyses, examining low (0.04-0.15Hz) and high frequency domains (0.15-0.40 Hz). Laboratory tasks involved mental challenge (anger recall, math) and exercise. HRV in daily life was assessed using 48-hour ambulatory monitoring. Anxiety was associated with higher peak HR (\( \text{r} = 0.33 \)) and reduced high frequency HRV (\( \text{r} = -0.41; \text{p} = 0.02 \)) during daily life activities among ICD patients. Laboratory findings indicated that higher anxiety levels were related to elevated peak HR during mental challenge (\( \text{r} = 0.33, \text{p} = 0.04 \)) and exercise (\( \text{r} = 0.33, \text{p} = 0.02 \)) but not during rest (\( \text{r} = 0.14, \text{p} = 0.36 \)). Mental challenge resulted in vagal withdrawal (\( \text{ln(f/f0)} = 1.8+/-0.05 \) to 1.44 +/- 0.07, \( p = 0.004 \)). No differences between patients versus controls were observed in the magnitude of HRV responses (\( p = 0.25 \)). Anxiety was associated with lower vagal tone during daily life activities. These findings suggest that anxiety is associated with increased heart rate responsiveness during laboratory tasks and daily life in ICD patients. Dysregulation of the autonomic nervous system may explain the elevated risk for life-threatening arrhythmias in vulnerable patients with anxiety.

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**ESSENTIAL ELEMENTS OF BEHAVIORAL INTERVENTIONS TO PREVENT PROGRESSION OF HEART FAILURE: A META-ANALYSIS**

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Purpose: Behavioral interventions to improve survival and decrease hospitalizations in patients with heart failure (HF) have been successful but little is known about essential elements that contribute to this success. This review focused on three questions: did the duration of the intervention, the type of contact (face-to-face vs. other), or the number of contacts influence success in lowering death and/or rehospitalization rates. It was hypothesized that interventions with face-to-face contact, 10 or more contacts, and longer than 12 months, would result in greater success in outcomes. Methods: An electronic search of English language randomized controlled trials (RCT's) was conducted using Medline and PsychLit to identify those aimed at lifestyle changes in HF patients. RCT's were excluded if they included 1) a pharmacological intervention, 2) other diseases besides HF, 3) a crossover design, or 4) poor quality judged by failure of randomization. Trial elements were independently reviewed by two authors in an unblinded, standardized manner.

Results: Eighteen behavioral RCT's for HF met criteria. Interventions that had a history of CAD and 955 (59.4%) patients were men. At the study entry, all patients had baseline history, physical exam, laboratory tests and completed the Medical Outcomes Study Short-Form 36-Item Health Survey (SF-36). Social Security Death Index identified 14 patients who died subsequently. Analyses were conducted on relationships among SF-36 scales, CAD risk factors, CAD prevalence and mortality. Among the SF-36 scales, worsened scores on three scales (Physical Functioning, Role Limitations due to Physical Health, and Social Functioning) were significantly associated with higher mortality (\( p' s < .01 \)). All eight SF-36 scales differentiated between patients with CAD and without CAD at baseline, with CAD patients having lower scores (\( p' s < .001 \)). Patients with lower SF-36 scale scores tended to have higher C-reactive protein, fibrinogen, fasting glucose, triglyceride levels, and higher BMI and systolic blood pressure (\( p' s < .01 \)). We concluded that HRQOL was associated with components of the metabolic syndrome, markers of inflammation, increased CAD prevalence and mortality. More detailed analysis will be conducted to refine our understanding of these relationships.

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longer than 1 year, includes more than 10 patient contacts, and is conducted on a face-to-face basis. This suggests that a clinic-based, acute care model for the treatment of a chronic illness like HF is suboptimal in its effectiveness on important clinical endpoints.

Abstract 1542

ROLE OF DEPRESSION AND NEUROTICISM IN OPEN- AND CLOSE-ENDED SYMPTOM REPORTS AMONG MYOCARDIAL INFARCTION PATIENTS

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The associations among depression, neuroticism, and symptom complaints were investigated in subsidiary analyses in a sample of myocardial infarction (MI) patients (N = 391). As part of a broader study of treatment-seeking behavior, MI patients were asked to respond to an open-ended item regarding the symptoms experienced; this question was followed by a closed-ended review of common cardiac symptoms. Depression was measured with the PRIME-MD PHQ; neuroticism was measured with the Big Five Inventory. Symptom reports in response to each type of question were subjected to content analysis by independent raters, with excellent interrater reliability observed. Regression analyses indicated that severity of depressive symptoms was positively related to the number of cardiac symptoms endorsed in response to closed-ended (β = .092, SE = .017, p<.01), but not open-ended, symptom complaints. Neuroticism was not a significant predictor of open- or closed-ended symptom complaints after controlling for depression. Results suggest that the complex cardiac symptom presentation experienced by MI patients may go undetected—by both researchers and practitioners—unless the symptom assessment process is thorough and uses multiple formulations of key questions.

Abstract 1592

HIGH LEVELS OF ANGER OUT ARE ASSOCIATED WITH CORONARY ARTERY CALCIFICATION

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Anger is increasingly recognized as a risk factor for coronary heart disease (CHD). One marker which is useful in measuring the extent of CHD is coronary artery calcification (CAC). The objective of this study was to determine whether high levels of anger are associated with more extensive CHD as measured by higher total CAC. We performed a prospective study of 105 predominantly Caucasian men and women, aged 30-60 years of age, over an average period of 9 years. All participants completed a psychosocial battery at study entry. Anger was measured by the Spielberger Anger Expression Scale (AX), composed of 2 distinct components _ Anger Expression-in and Anger Expression-out. CAC was assessed as the total score of all measurements. Linear regression was used to examine the relationship between the Anger Expression subscales at study entry and CAC at study entry and at follow-up. Age, smoking history and gender were entered in the first step, with Anger Expression-in and Anger Expression-out entered in the second step of separate equations. Higher Anger Expression-Out was predictive of higher CAC at study entry (β = .31, p<.001) and at follow-up (β = .29, p<.001). Interestingly, the only other significant predictor of CAC at either time point was smoking status. These findings suggest that a higher level of Anger Expression-out may be an important risk factor for CHD. Correspondence: Joni T. Howard, Department of Psychology, Washington State University, P.O Box 644820, Pullman, WA, 99163-4820. jhoward424@yahoo.com.

Abstract 1605

MALADAPTIVE SOCIAL BEHAVIORS AND BELIEFS INFLUENCE SELF-REPORTED CARDIOVASCULAR HEALTH

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Social support has been found to be an influential factor regarding health and treatment outcome. Presumably, a pattern of maladaptive social behaviors and cognitions would reduce social support and thereby affect health. In order to evaluate this idea, 231 participants who completed a number of survey measures (Fear of Negative Evaluation, Interpersonal Support Evaluation List, Social Avoidance and Distress) were separated into two groups by a two step cluster analysis based on their scores on these measures. Mean scores on these measures were found to be significantly different between the two groups (All p's<.001). The two clusters were labeled "Maladaptive" and "Adaptive" social functioning. Individuals in the Maladaptive group, for example, had a tendency to perceive less social support available in their environment (lower Interpersonal Support Evaluation List scores), worried more about others thinking negatively of them (higher Fear of Negative Evaluation scores), and more frequently avoided other people when they felt anxious or distressed (higher Social Avoidance and Distress scores). A MANOVA demonstrates that these two clusters differ significantly on self-reported cardiovascular health as measured by Cornell Medical Index Health Questionnaire, F(1, 211) = 6.297, p < .05. The clusters did not differ on self report of other specific physical health problems such as digestive, joint, urinary, and upper respiratory problems, all p's > .05. These data support the hypothesis that a pattern of maladaptive interpersonal behaviors and perceptions influence health, but effects are specific to cardiovascular health.

Abstract 1745

ACCULTURATION PREDICTS C-REACTIVE PROTEIN LEVELS IN MEXICAN IMMIGRANTS

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Mexican immigrants have been shown to have better health as compared to European Americans, and as Mexican immigrants acculturate their health tends to become worse. No studies to date, however, have examined how acculturation in Mexican immigrants is related to C-reactive protein (CRP), an inflammatory marker that is a significant predictor of heart disease. It was hypothesized that as Mexican immigrants become more acculturated that CRP would increase. Blood samples were obtained from 72 Mexican immigrants (average age 30, 56% female, average of 8 years living in the United States) and the Acculturation Rating Scale for Mexican Americans II was administered. It was found that as Mexican immigrants decrease in Mexican cultural orientation, their hs-CRP levels increase (F = 3.60, p = .06). Acculturation and age interacted such that low Mexican cultural orientation had a stronger effect in those over 30 (F = 6.03, p < .05). In conclusion, hs-CRP appears to be affected by cultural change, and hs-CRP may represent an important pathway through which cultural change affects health.

Abstract 1247

ANXIETY, STRESS, VITAL EXHAUSTION AND CYLICAL HOSTILITY IN IRITRABLE BOWEL SYNDROME

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Introduction Studies of psychosocial distress in IBS typically focus on anxiety, depression and somatization. Recent studies in FGID pts suggest that other potentially important constructs such visceral specific anxiety (VSA)(distinct from generalized anxiety), vital exhaustion(VE)(shown to be predictive of heartburn severity), perceived stress and cyclical hostility. We evaluated these constructs in IBS pts and determined their relationship to condition-specific QOL.

Methods. Ctrls were recruited by advertisement. Rome II IBS pts were recruited from a university GI clinic that sees pts mainly at a secondary level of care. VSA was measured using the Visceral Sensitivity Index (VSI). Anxiety and depression were measured using HADS. VE was measured with the Maastricht Questionnaire (MQ). Perceived stress was measured with the Perceived Stress Scale (PSS). Cyclical hostility was measured using the Cyclic Disturb Scale (CDS). Condition-specific QOL was measured using the IBS-QOL.

Results. 43 ctrls and 51 IBS pts were studied. Ctrls were younger (28±7 vs 35±13; p=0.003) and more likely to be male (44% vs. 12%; p=0.001) than pts. IBS pts scored higher than ctrls on all measures except CDS (Table). All measures except CDS correlated signif. with IBS-QOL and were entered into multivariate regression. The final regression equation included only VSI and MQ (r²=49%; p<0.001): IBS-QOL = 29.412 + 0.7550(VSI) + 1.123(MQ)

Conclusions. IBS and ctrls do not differ on measures of cyclical hostility. While scores for other general measures of psychosocial functioning including
perceived stress, anxiety and depression were increased in IBS, they were not independently predictive of IBS-QOL. However, VSA and VE accounted for almost 50% of the variance in IBS-QOL and are therefore highly relevant constructs deserving further study.

<table>
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<th>VSI</th>
<th>HADS-A</th>
<th>HADS-D</th>
<th>PSS</th>
<th>MQ</th>
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<td>7±11</td>
<td>5±4</td>
<td>2±2</td>
<td>9±5</td>
<td>5±5</td>
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<td>IBS 38±16</td>
<td>7±4</td>
<td>5±4</td>
<td>16±7</td>
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<td>b</td>
<td>-0.001</td>
<td>0.005</td>
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Abstract 1294
PERSONALITY FACTORS PREDICT QUALITY OF LIFE IN DISTRESSED PATIENTS WITH INFLAMMATORY BOWEL DISEASE (IBD). THE INSPIRE STUDY


We assessed the association between personality factors and the Inflammatory Bowel Disease Questionnaire (IBDQ) scores in 61 distressed (perceived stress, anxiety and depression were increased in IBS, they were not independently predictive of IBS-QOL. However, VSA and VE accounted for almost 50% of the variance in IBS-QOL and are therefore highly relevant constructs deserving further study.

of these 2122 subjects, 255 (12.0%) fulfilled the Rome II criteria for IBS, and 175 (8.2%) had a psychiatric disorder (depressive, panic or generalized anxiety).

Concordance rates for IBS were significantly greater for monozygotic twins (42 out of 132, or 31.8%) than for dizygotic twins (22 out of 123, or 17.9%), X² = 5.9, p=0.016, supporting a genetic contribution to IBS. The proportion of twins with a psychological disorder who had IBS (42 out of 175, or 24.0%) was significantly greater than the proportion without a psychological illness (213 out of 1947, or 10.9%), p<0.001, supporting a psychological contribution to IBS.

Logistic regression analysis showed that for monozygotic twins, having a twin with IBS is a significant predictor of IBS in the index twin (Odds ratio = 3.32, 95% CI: 2.12 to 5.19, p<0.0005), after accounting for age, gender, neuroticism score and psychiatric disorder. Neuroticism (p<0.0005) and gender (odds ratio for females= 2.07, p=0.003) were also significant predictors. For dizygotic twins, however, having a co-twin with IBS was not a significant predictor of IBS in the index twin (p=0.058), but gender (p=0.0005) and neuroticism (p=0.029) were predictors.

Both heredity and psychological factors contribute to the development of IBS.

Abstract 1302
IBS & CHRONIC FATIGUE IN FUNCTIONAL DYSPESPIA: COMORBIDITY AND DETERMINANTS OF SYMPTOMS

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Overlap between functional dyspepsia (FD), irritable bowel syndrome (IBS) and chronic fatigue syndrome (CFS) is frequent. We studied gastric sensorimotory function, a barostat (sensitivity to gastric accommodation) and gastric emptying test. We measured psychosocial factors (depression, anxiety, fatigue, alexithymia, perceived stress and abuse history) and some somatic symptom severity/somatization (SSS) using self-report questionnaires in 139 consecutive FD patients. IBS status (Rome II criteria) was obtained from a 10-item questionnaire. CFS status was obtained from a VAS score measuring morning fatigue and a question on chronicity of fatigue. Sensorimotor factors, SSS and SSS*abuse interaction were compared relative to IBS and CFS status; multiple logistic regression was used to identify determinants of IBS and CFS status. 50 patients (36%) had comorbid CF symptoms; the median[IQR] momentary fatigue score was 47[42]. 80 patients (61%) had comorbid IBS according to Rome II criteria. There was a trend towards an association between IBS and CFS status (chi²=2.45,p=0.11). Presence of IBS was associated with higher gastric accommodation, SSS, worry and perceived stress and with an history of abuse. Gastric accommodation (beta=-.04,p=0.02), SSS (beta=-.23,p<0.003), overall abuse history (beta=-.1, p<0.01) and an SSS*abuse interaction term (beta=.24,p<0.04) were independent determinants of IBS status (model pseudo-R²=.21±.78,p<0.0003). Presence of CF was associated with more weight loss, higher dyspepsia symptom score, higher depression & SSS score, more perceived stress and with a history of panic disorder and abuse. A composite SSS-depression index (beta=-1.12,p<0.0002) and overall abuse history (beta=-.99,p<0.05) were found to be independent determinants of CF (model pseudo-R²=.24, p=.82,p<0.0001). In conclusion, comorbidity with IBS and CF is high in FD. Abuse history is an important predictor of this comorbidity in FD.

Abstract 1357
GASTROENTEROLOGIST (GE) RATINGS OF PATIENT ANXIETY: PERCEPTION OR ATTRIBUTION?

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Introduction. MD assessment of pt anxiety (ANX) and depression (DEP) is often poor. Further, MDs can harbor negative attitudes towards pts with functional GI disorders (FGID). Accurate, unbiased assessment of psychosocial factors is needed to optimize outcomes. We assessed GE ratings of pt ANX and DEP with respect to diagnosis. Methods. Subj were new pts at 2 university GI clinics and their GE. Pts were grouped by post-visit diagnosis as FGID, organic disorder (IBD, PUD, etc.OD) or symptom-based diagnosis (abdominal pain, nausea, etc.(SD). Pts completed HADS and a measure GI symptom specific ANX(Visceral Sensitivity Index/VSI). GE rated ANX and DEP on 100mm VAS with anchors "not at all" and "severe." Results. 30 FGID, 29 OD and 41 SD pts were evaluated by 26 GE. Groups did not differ by age or sex. No differences existed btw groups for HADS ANX or DEP(Table). VSI scores were sig
Fatigue is a common complaint among adolescents and is often attributed to pubertal hormonal changes, psychological struggles and new educational and social demands. High rates of school absenteeism as a consequence of severe fatigue indicate that the impact of fatigue in youngsters should not be underestimated. We determined the prevalence of severe fatigue and prolonged fatigue (i.e. severe fatigue > 1 month) in an adolescent school-based population (n=3454), explored the role of life style factors (extracurricular activities, substance use and sleep) and investigated the comorbidity of self-reported depression, anxiety and chronic fatigue syndrome (CFS)-related symptoms such as unrefreshing sleep, myalgia, headaches and cognitive disturbances. High prevalence rates of severe fatigue were observed. 20.5% of the girls and 6.5% of the boys scored above the clinical cut-off score on the fatigue questionnaire. Of these subjects 80.0% of the girls and 61.5% of the boys reported prolonged fatigue. In both genders, life style characteristics only played a minor role in predicting fatigue. We propose that fatigue in girls may be due to sex hormonal changes during puberty since we observed a rise in girls with lower age at menarche. Although girls scored higher on depression, anxiety and CFS-related symptoms than boys (p < .001), in both genders a clear relation between fatigue and these comorbid symptoms was observed. Duration of fatigue was related with fatigue severity, severity of comorbid complaints and the number of CFS-related symptoms. We conclude that particularly adolescent girls are vulnerable for the development of fatigue and psychological and CFS-related symptomatology. This cluster of symptoms, however, is not gender specific. The association between fatigue duration on the one hand and fatigue severity and the severity of comorbidity on the other hand suggests that enduring severe fatigue may form a risk factor for the development of CFS.

Abstract 1511

DEVELOPMENT OF DEPRESSION AND ANXIETY SCALES FOR COMPUTERIZED ECOLOGICAL MOMENTARY ASSESSMENT USING COMPUTERIZED ADAPTIVE TESTING

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Computerized ecological momentary assessment (computerized EMA), which uses a personal digital assistant (PDA) as an electronic diary, has been developed for assessing subjective symptoms reliably in natural settings. With typical EMA, items for assessing mood states are fixed and are repeated many times. Recently, item response theory (IRT) has been developed for computerized EMA because of the calculating capacity of PDAs. Therefore, the aim of this study was to develop CAT of anxiety and depression scales for computerized EMA because of the calculating capacity that has been much improved in some PDAs with Linux for their operating system. We prepared 78 items for anxiety and 82 items for depression with a 5-point scale. Using factor analyses and item-remaider tests, we reduced items for each scale to 40 items, and established a pool of 40 items for each scale, which fitted the two-parameter logistic model. By simulating CAT, we will show how many items are necessary for each scale with a high concordance with the score based on all items. In conclusion, we have developed anxiety and depression item pools that could be used in CAT on a PDA whose operating system is Linux for computerized EMA.

Abstract 1512

PREDICTING EMOTIONAL RESPONSES TO STRESS: THE INDEPENDENT CONTRIBUTIONS OF PREVIOUS MOOD AND HEART RATE

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Previous measures of mood have shown limited utility in predicting responses to later psychological stressors. The aim of the present research was to determine the extent to which mood, assessed on an earlier occasion, and heart rate responses to the current stressors contribute independently to ratings of anger and disgust. One-hundred and one African-American students (41 males) rated their levels of anger and disgust after they performed mental arithmetic and viewed a racist stressor. Heart rate was measured during each task. One week earlier, the participants had completed the Positive and Negative Affect Scale (PANAS) along with other personality measures. Correlational analyses determined that earlier positive mood was related to anger responses to the racist stressor (r = -.17), and to anger (r = -.19) and disgust (r = -.20) following mental arithmetic. Heart rate responses to mental arithmetic were positively correlated with anger (r = .30) and disgust (r = .30) during the math stressor. The previous ratings of positive mood provided significant increments in the prediction of both disgust (R² change = .04, p = .02) and anger (R² change = .05, p = .01) once heart rate reactions to the mental arithmetic were controlled in hierarchical regression analyses. The findings demonstrated the utility of cardiac reactions and earlier mood measures as predictors of emotional responses to mental arithmetic but not the racial stressor.

Abstract 1567

BELIEFS, PREFERENCES AND EXPECTATIONS ABOUT TREATMENTS OF WOMEN WITH SURGICALLY-INDUCED MENOPAUSE AFTER THE WOMEN'S HEALTH INITIATIVE REPORTS

Mali Bunde, Jerry Suls, Psychology, René Martin, Adult & Gerontological Nursing, Christina Dowd, Psychology, Susan R. Johnson, Obstetrics & Gynecology, University of Iowa, Iowa City, IA

Although nearly all women will experience menopause, little is known about their common sense beliefs or their preferences and expectations about conventional hormone therapy (HT) and complementary/alternative treatments for menopausal symptoms. The questions are increasingly important in light of the Women's Health Initiative's report about risks associated with HT. This descriptive study assessed beliefs, preferences, and expectations about conventional HT and alternative treatments of women who...
had a hysterectomy with bilateral oophorectomy. Participants (N=118) were recruited via an advertisement placed on the Web site hysteristers.com. Women were selected to participate in an online assessment, menopausal symptoms, treatments, and what sources of information influenced their decision-making regarding treatments. The sample was primarily Caucasian (89%) and married (82%) and none of the women had experienced menopause prior to their surgeries. A majority of women chose to manage their menopausal symptoms with HT (57%), although women reported utilizing other strategies as well, including exercise (28%), dietary changes (25%), medications for anxiety or depression (17%), stress management (9%), and soy (4%). Notably, 23% of women chose to let their menopausal symptoms take their natural course. Although the proportions of women choosing alternative or complementary treatments were not large, 44% of women considered such treatments. Women were as likely to follow their doctors’ recommendations for treatment (50%) as they were to choose a different treatment (50%). Women reported having varying levels of knowledge about the WHI, with 50% reporting not knowing of the results of the research, 24% having a basic understanding of these research results, and 26% reporting a clear understanding of these research results.

Abstract 1570
A QUASI-CONTROLLED STUDY OF THE USE OF A BEHAVIORAL MEDICINE GROUP PROGRAM AMONG HIGH-UTILIZING, SOMATIZING PATIENTS IN TWO PRIMARY CARE PRACTICES

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Somatizing patients are frequent users of health care services in primary care. The Personal Health Improvement Program (PHIP) is a manualized, six-week behavioral medicine group program that has been successfully used to reduce symptom distress, office visits, and health costs among somatizing patients. We administered the Somatization Index Questionnaire (SIQ), a brief paper-and-pencil screening tool, to patients in two primary care practices to identify a cohort of 174 high utilizing, somatizing patients. Those reporting serious mental disorders or alcoholism were excluded. The unit of randomization was the practice site. SIQ+ patients at one site were referred for PHIP (n=85) while 136 SIQ+ patients at the other site received usual care (controls). Questionnaires were completed at three time points: baseline (or study entry), at completion of the 6-week course (or 6-week later), and at 6-month follow-up. There were 44 PHIP completers and 83 control patients in the intention to treat model. Analysis of study outcomes used repeated measures and mixed effects models that included interaction terms representing contrasts between intervention and usual care at each of the follow-up data collection points. Subjects’ mean age and gender distributions did not differ significantly between the sites. Somatization (BSI) was lower immediately after completion of PHIP (p=.001) relative to controls, as it was at 6-mo follow-up. Other distress measures that were significantly lower after PHIP at the 3rd time point included anxiety (p=.03), somatic symptoms (p=.003), and the GSI, a BSI summary measure of overall distress (p=.008). Reductions in measures of hostility (p=.09), hypochondriacal traits, and somatosensory amplification were non-significant.

This study confirmed symptom reduction occurs among those who participate in PHIP compared to usual care, as well as the utility of a brief, self-administered questionnaire to identify candidates for the intervention.

Abstract 1614
PERCEIVED STRESS MEDIATES THE EFFECTS OF ALEXITHYMIA ON PHYSICAL SYMPTOMS IN AN ETHNICALLY DIVERSE SAMPLE

Jennifer F. Bernard, Erin Tooley, Paulette Christopher, Bruce W. Smith, Psychology, University of New Mexico, Albuquerque, New Mexico

Alexithymia is a potential risk factor for increased physical symptoms and illness behavior (Luney, 2004). The purpose of this study was to examine the relationship between alexithymia, perceived stress, and physical symptoms in an ethnically diverse sample. Participants were 309 undergraduates (65% female; 42% Caucasian, 33% Hispanic, 9% Native American, 17% mixed and other ethnic background). Measures included alexithymia (TAS-20; Bagby, Parker, & Taylor, 1994), perceived stress (PSS-10; Cohen, Kamarck, & Mermelstein, 1983), and physical symptoms (Mobcke, Cronkite, & Finney, 1986). The hypotheses were that (1) alexithymia would predict perceived stress, (2) alexithymia would predict physical symptoms, (3) perceived stress would predict physical symptoms, and that (4) perceived stress would mediate the relationship between alexithymia and physical symptoms. Mean differences in alexithymia, stress, and symptoms were examined across gender and ethnicity. Women were higher than men on symptoms (M = 1.20 vs. 0.97, t = 2.94, p < .01). Native Americans were higher than both Hispanics and Caucasians on alexithymia (M = 2.69 vs. 2.43, t = -2.02, p < .05 and M = 2.69 vs. 2.48, t = -2.19, p < .05, respectively). Hypotheses 1, 2, and 3 were confirmed in that alexithymia predicted both stress and symptoms (r=.45, p < .001 and r = .51, p < .001, respectively) and stress predicted symptoms (r = .51, p < .001). Using Baron & Kenny’s (1986) criteria and Sobels test for mediation, Hypothesis 4 was confirmed. Perceived stress partially mediated the relationship between alexithymia and symptoms for men (Beta = .38, z = 3.12, p < .001) and fully mediated this relationship for women (Beta = .50, z = 5.19, p < .001). Thus, alexithymia may increase the report of physical symptoms through its influence on perceived stress, especially for women. In addition, Native Americans may be vulnerable to increased perceived stress and physical symptoms because of higher levels of alexithymia.

Abstract 1725
NEUROTICISM, STRESS, AND SLEEP QUALITY: THE ROLE OF CONSCIENTIOUSNESS

Paula G. Williams, Psychology, University of Utah, Salt Lake City, UT, Tammy L. Moroz, Sleep Disorders Clinic, Stanford University Medical Center, Stanford, CA

Individuals high in neuroticism (N) report higher levels of daily hassles, poorer sleep quality, greater functional disability in response to illness, and poorer mental and physical well-being. N has also been associated with poorer immune functioning, elevated cortisol, treatment adherence, and mortality. However, not all high-N individuals experience negative outcomes. Recent evidence suggests that conscientiousness (C) may moderate the reactive personality traits (i.e., N and extraversion) because effortful control is thought to serve as the foundation for levels of C in adults. The current study investigated the interactive effects of N and C on daily hassles, perceived sleep quality, functional disability (i.e., sick days from work/school), and depression across the course of an academic year. Using the NEO-FFI to assess personality traits (N, C, and E), and the NEO-FFI-BDI-II to assess perceived stress and depression, we assessed at the beginning of the academic year. Measures of recent hassles (Inventory of College Student Recent Life Experiences), sleep quality (Pittsburgh Sleep Quality Index), and functional disability (Functional Status Questionnaire-modified) were completed approximately 2 months (mid-term exams) and 6 months (final exams) later, along with repeat BDI-II assessments. In regression models, C was found to moderate the effects of N on 2-month depression and number of sick days, as well as change in depression from baseline to 2 months, p < .05. There were also significant N x C interactions predicting daily hassles at 6 months, and change in daily hassles and sleep quality from 2 to 6 months, p < .05. In all cases, the effects of N on these outcomes were only significant under conditions of low C, p < .05. Additionally, sleep quality was related to 2 month depression and change in depression only among high-N/low-C individuals, r(−76, p < .0001. Results support the hypothesis that C may moderate the effects of N, such that high-N/low-C individuals appear to be at the greatest risk for poor emotional regulation and, hence, negative mental and physical outcomes. These findings suggest that N and C may be important personality factors in understanding mechanisms underlying stress-related health problems and illness behavior.

Abstract 1724
COPIING STYLES IN CASES WITH CHRONIC FATIGUE SYNDROME IDENTIFIED FROM THE GENERAL POPULATION IN WICHITA, KANSAS

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Chronic fatigue syndrome (CFS) is an important public health problem. There is evidence mostly from studies in primary and tertiary care patients suggesting that maladaptive coping styles contribute to the pathogenesis and/or maintenance of CFS. However, results of these studies might be biased due to small sample size of CFS cases. In the current study, we assessed coping styles in a population-representative sample of
clinically confirmed CFS cases, persons with insufficient symptoms of fatigue and non-fatigued controls identified from 56,146 adult residents of Wichita, KS.

We enrolled 43 subjects meeting the 1994 Research Case Definition of CFS, matching them with 61 subjects with chronic fatigue not meeting the 1994 Research Case Definition due to insufficient symptoms (ISF) and 60 non-fatigued controls. Coping styles as well as clinical features of CFS and associated symptoms were assessed using standard rating scales. Coping styles were compared between groups and correlated with clinical features. Cases with CFS and cases with ISF reported significantly more escape-avoiding behavior compared to non-fatigued controls (p<0.001), while there were no differences between CFS and ISF cases. Within the group of CFS, escape-avoiding was associated with fatigue severity, pain and disability. This is the first demonstration of maladaptive coping in a population-based sample of CFS and other fatiguing illnesses. Escape-avoiding behavior is consistent with high trait anxiety which has been previously reported for CFS patients. Identification of maladaptive coping styles informs psychological research into the mechanisms of CFS and provides targets for the prevention and treatment of CFS using cognitive-behavioral strategies.

Abstract 1658
SOCIAL SUPPORT MODERATES THE EFFECTS OF EXPRESSIVE WRITING ON OLDER ADULTS’ HEALTH OUTCOMES
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Expressive writing has well-documented salutary effects on physical health, however, no previous studies have focused on the effects of expressive writing on older adults or on whether social support plays a role in the relationship. Older adults (N=111) reported the extent to which they receive emotional support, and then wrote about (a) their thoughts and feelings concerning a most distressing experience in their lives, or (b) mundane topics, for 20 minutes every other day for 3 days. Participants reported 4 months later their health care use. Hierarchical regression analyses indicated that participants who wrote expressively about distressing events reported fewer health care visits in the 4 months following writing compared to control writers, but this relationship was dependent upon social support (writing x support interaction term β = −1.25, p = .01; full model p = .03). Follow-up analyses indicated that among those reporting higher levels of emotional support prior to writing, expressive writing resulted in fewer health care visits compared to mundane writing (p = .00). For older adults with lower emotional support, there were no differences in health care use between expressive and control writers. Furthermore, among trauma writers, higher social support was associated with fewer health care visits compared to lower social support (p = .03), but social support did not impact health care use among controls. These findings suggest that older adults’ perception of their social context plays an important role in whether they will experience health benefits of expressive writing.

Abstract 1748
VARIATION IN TOTAL BODY WATER ACROSS THE MENSTRUAL CYCLE: EFFECTS ON CARDIOVASCULAR FUNCTION DURING REST AND PSYCHOLOGICAL STRESS
Stephen M. Patterson, Psychology, Ohio University, Athens, Ohio, Birgit A. Shanholzer, Psychology, Marshall University, Huntington, West Virginia, Regina Warfel, Psychology, Ohio University, Athens, Ohio

Although several studies have assess the effects of various menstrual cycle phases (e.g., follicular, luteal) on resting BP and HR and cardiovascular reactivity during acute psychological stress, the reported findings are inconclusive. One possible explanation for the inconclusive results may be that fluctuations in total body water (TBW) across the cycle effect resting and stress-induced changes in BP and HR. Therefore, the goals of the present study were to: 1) assess differences in TBW during the follicular (FP) and luteal (LP) phases, 2) examine the effects of TBW on resting BP and HR during each phase, and 3) assess the effects of TBW on stress-induced changes in BP and HR during each phase. Sixty-two women (mean age 19.6±2.4) not taking birth control pills were assessed during both the FP and LP of their menstrual cycle. During both sessions, TBW was assessed via bioelectrical impedance. Blood pressure and HR were assessed during a 10-min rest period and a 6-min mental arithmetic task. Results revealed that there was a significant Phase effect for TBW (F(1,62)=14.18, p<.001) with TBW being higher during LP. Results of the resting BP and HR revealed a significant Phase effect for HR (F(1,62)=4.79, p<.05) with HR being higher during the LP. After covarying for TBW, Phase effects became non-significant (F(1,62)=1.09, p=.3). Cardiovascular reactivity results revealed a significant Phase effect for HR (F(1,62)=5.81, p<.05) with HR being greater during LP, and a significant Task X Phase interaction for DBP (F(1,62)=5.52, p<.05) with the magnitude of DBP change being greater during the FP. However, after covarying for TBW, both the HR Phase effect and the DBP Task X Phase interaction were no longer significant (p>.2). The results of this study support the theory that total body water may be a factor that warrants consideration when investigating cardiovascular function across various phases of the menstrual cycle.

Abstract 1559
PREDICTING RISKY BEHAVIORS IN COLLEGE STUDENTS: A TWO-YEAR PROSPECTIVE STUDY
Melissa T. Buelow, Margret A. Appel, Psychology, Ohio University, Athens, Ohio

College students’ involvement in various risky behaviors, including tobacco use, drug use, and alcohol use, is a current area of concern. Variables that can predict future involvement in these behaviors are important for the development of prevention and intervention programs. The present study examined whether cognitive, social, and personality variables assessed at Time 1 could predict risky behaviors at Time 2, after controlling for the frequency of the behavior at Time 1. Participants were 46 female and 50 male college students who completed a demographic survey, the Center for Disease Control’s National College Health Risk Behavior Survey, and the following cognitive, personality, and social measures: the Cognitive Appraisal of Risky Events questionnaire, the Need for Cognition, the Zimbardo Time Perspective Inventory, the sensation seeking subscale of the Zuckerman-Kuhlman Personality Questionnaire, the Family Environment Scale (the control, conflict, cohesion, and expressiveness subscales), and the Inventory of Parent and Peer Attachment. Participants completed these surveys first in 2002 and again in 2004. Multiple stepwise regression analyses were conducted, with the Time 1 behavior forced in on the first step. There were no significant predictors other than the Time 1 frequency of the behavior for alcohol use, risky driving behaviors, and risky sexual behaviors. Gender predicted tobacco use and aggressive behaviors at Time 2 (p<.001): males were more likely than females to engage in tobacco use and aggressive behaviors. The perception of risk associated with the behavior predicted tobacco use and drug use at Time 2 (p<.001): individuals with a high risk perception were less likely to engage in tobacco and drug use. The results indicate that previous behavior is the most consistent predictor of future involvement in most of the behaviors examined in the present study, although other variables such as gender and risk perception were also found to be predictors.

Abstract 1681
SOCIOECONOMIC DISPARITY IN PERIODONTAL DISEASE PROGRESSION
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Persons higher in socioeconomic status are less likely to develop periodontal disease than persons lower in socioeconomic status. This disparity may partially result from differential infection by periodontal pathogens and partially from differential disease progression after infection. We hypothesize that socioeconomic status, smoking, and oral health behaviors will distinguish disease developers from disease non-developers. Participants were 240 adults from 161 families in Western Pennsylvania and West Virginia. Standardized oral exams were performed and self-report of demographic and behavioral information was obtained. Measures of periodontal disease were obtained from 161 families in Western Pennsylvania and West Virginia. Standardized oral exams were performed and self-report of demographic and behavioral information was obtained. Measures of periodontal disease were obtained from 161 families in Western Pennsylvania and West Virginia.
disease was defined as infection, probing depth less than 3mm, and no bleeding on probing. 56% of the teeth met criteria for having disease. Multilevel modeling was used, nesting teeth within person, and person within family. A higher probability of having disease was associated with having fewer years of education, OR = 1.81, 95% CI = 1.15 to 2.85. Once smoking and oral health behaviors were accounted for, the association between probability of disease and number of years of education was reduced, OR = 1.61, 95% CI = 1.01 to 2.56. This suggests that interventions targeting both smoking and oral health behaviors may help reduce the disparity due to socioeconomic status. Future research should examine the effectiveness of such interventions. Supported by NIH / NIDCR R01-DE014899.

Abstract 1763

ENHANCED HEART RATE VARIABILITY AFTER SHORT TERM PRACTICE OF SPECIALIZED YOGIC BREATHING PROCESS IN PHYSICALLY ACTIVE PERSONS: AN ADD ON EFFECT

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Introduction: Rhythmic variation in breathing is a well-known physiological factor in modifying autonomic control of heart. In the present study we have assessed effects of short-term practicing of specialized breathing process of Yoga on autonomic control of heart in physically active healthy adults. Methods: A homogeneous group of young healthy adult male volunteers undergoing regular rigorous physical training were randomized in two arms.

Control Group - which did not undergo the 6 days of specialized breathing process and Test Group – which underwent training in specialized breathing process. Cardiac autonomic function (Heart Rate Variability-HRV) was recorded at baseline and then at 7th Day.

Results: The two groups did not show any differences in time domain and frequency domain parameters at baseline. The group which underwent short term breathing practices showed significantly higher values for SDNN index, range, 95%CI, 99%CI and SE and borderline increase in Variance, SD, SDSD and RMSSD, at 7th day.

Discussion: Regular physical exercise enhances the HRV. However the specialized Yogic breathing process practiced over a short span of 6 days produces a more favorable response. This Yogic process may be of benefit as add on effect and to patients unable to undergo physical exercise to modify autonomic nervous system favorably.

Abstract 1751

SOCIAL WORD USE IS ASSOCIATED WITH LONGEVITY IN A POPULATION OF WELL-KNOWN PSYCHOLOGISTS

Sarah D. Pressman, Michal Kollnheiser, Sheldon Cohen, Psychology, Carnegie Mellon University, Pittsburgh, PA

Writing has long been thought to be a doorway revealing an individual's state of mind. The current study was interested in what psychological processes, as revealed by an analysis of autobiographical writing, would predict longevity. Specifically, given the robust finding that social and emotional factors predict health and mortality, we were interested in whether words indicating these psychological factors would be associated with length of life. Subjects were a group of 81 well-known, deceased psychologists who contributed autobiographical pieces for an eight volume set of encyclopedias published between 1930 and 1989. Using Linguistic Inquiry and Word Count software (LIWC, 2001) we examined the association between the number of positive affective words, negative affective words, and social words and the number of years lived by each subject. Results showed that after controlling for sex and year of birth, individuals using more social words (e.g., talk, us, friend) lived significantly longer (p < .01), but that affective words were not associated with length of life. Discussion will focus on mechanisms and the use of this technique as a non-invasive manner of examining psychosocial state.

Abstract 1746

CONCEPTUALIZING, OPERATIONALIZING, AND STUDYING AFRICAN AMERICAN CULTURAL ORIENTATION: AN EFFORT TO EVALUATE AND EXPAND EXISTING WORK FROM A HEALTH PSYCHOLOGY PERSPECTIVE

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Research emerging out of numerous disciplines has begun to underscore the importance of culture in the health and well-being of racial and ethnic minorities in America. This literature has considered cultural variables such as collectivism and interdependence; religiosity and spirituality; degree of acculturation and acculturative stress; cultural variations in health-related schema and definitions of illness and wellness; and culturally specific expressions of mental and physical pathology. African Americans have the poorest health of all Americans. Still, they are largely overlooked in research on the intersection of culture and health despite being a distinct cultural group. The few existing efforts to operationalize and test theoretical conceptualizations of African American culture have identified elements that reflect a broader Afrocentric world-view. Commonly-identified components include: a) a time orientation to the present, b) a holistic, spiritual, collectivist and communal world-view, c) a self that is defined both by _I_ and by _We_ , d) the gaining of knowledge through introspection and faith, e) oral transmission of knowledge and histories, and d) improvisation, rhythm, and orality in social contexts. Few researchers, however, have examined the implications of these cultural elements for health-related processes and outcomes. In the present research, we operationalize these concepts from the perspective of health psychology in order to understand how they relate to both physical health and psychological well-being. We present preliminary data from two studies: 1) an interview study of African American pregnant women recruited from community prenatal clinics, and 2) a laboratory experiment that examines cultural mediators of African American-Caucasian disparities in the utilization of gynecological healthcare.

Abstract 1506

SLEEP QUALITY IN ADOLESCENTS EVALUATED BY ECOLOGICAL MOMENTARY ASSESSMENT AND ITS INFLUENCE ON PSYCHOLOGICAL AND PHYSICAL SYMPTOMS

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It has recently been suggested that disruption in sleep patterns influences daytime psychological and physical symptoms in adolescents. To demonstrate the relationship between the quality of sleep and daytime psychological and physical symptoms, most previous studies have used subjective sleep assessments by retrospective self-report. In such studies, it is difficult to evaluate the sleep quality, because sleep assessments based on subjective reports are frequently distorted by recall bias. To overcome this problem, in this study, we use an ecological momentary assessment method, including a continuous measurement of locomotor activity. Through multivariate analysis of these data, we investigate the relationship between sleep statistics and daytime psychosomatic and physical symptoms. In our experiment, we studied 47 Japanese junior high school students (18 boys and 29 girls; aged 14). They underwent a one-week measurement of psychological and physical symptoms by visual-analog scales at scheduled moments (1 p.m., 4 p.m. and 8 p.m.) and event-driven moments when they got up and went to bed at night, and continuous locomotor activity with a watch-type computer. Linear mixed multivariate models were used to investigate the relationship between sleep statistics and psychological and physical symptoms. There were significant main effects of the ratio of nocturnal activity (from 10 p.m. to 7 a.m. next day) to diurnal activity (from 7 a.m. to 10 p.m.) on scores for morning fatigue, headache and heaviness of the head (p < 0.05). Our results show that adolescents who suffered from sleep disruptions (mainly night-time awakenings) complained of psychosomatic problems. We conclude that ecological momentary assessment is a powerful tool for evaluating the association between objective sleep statistics and subjective symptoms.

Abstract 1729

SOCIOECONOMIC INEQUALITIES IN PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR IN YOUTH

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Sedentary behavior and physical inactivity demonstrate strong inverse
relationships with socioeconomic status (SES) in adults. Barriers to physical activity are disproportionately high among low SES individuals and include individual and environmental factors such as expenses, safe recreational areas, availability of resources, and access to facilities. Healthy lifestyle habits are established early in life and physical activity levels track from childhood into adulthood. The aim of the current study was to evaluate the association between family and school SES with physical activity levels and sedentary behavior in youth. The 1999 Quebec Child and Adolescent Health and Social Survey was a provincially representative cross-sectional survey of Quebec youth aged 9, 13, and 16 years (N=3613) from 190 schools. Children provided self-report of physical activity and sedentary behavior using Sallis’ 7-day recall checklist. Measures included physical activity frequency, school physical education class attendance, and amount of time viewing television. Parents provided self-report of education and income. School SES was derived using 3 indices from the Ministry of Education of Quebec for each school: maternal undereducation, global poverty, and the socioeconomic environment index. Based on the results of age, sex, and BMI-adjusted mixed-modeling, higher family SES (parental education, household income) and higher school SES (maternal undereducation, socioeconomic environment index) were both significantly related to greater physical activity frequency and less sedentary behavior. Neither family nor school SES was associated with school physical education class attendance. These findings suggest a SES gradient exists for physical activity and sedentary behavior in youth. Further, they have important public policy considerations, as youth may only be engaging in physical activity at school, which highlights the importance of ensuring all schools offer adequate physical education classes.

Abstract 1742
PREDICTORS OF CESSATION 12 MONTHS AFTER A FORCED SMOKING BAN: GENDER DIFFERENCES
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Smoking is the leading cause of preventable death and disease in the United States. Previous research has documented a relatively low rate of smoking cessation in military recruits who undergo a forced 6-week smoking ban as part of Basic Military Training (BMT). This study is part of a large randomized clinical trial on smoking cessation during such a ban. Participants who reported smoking in the year prior to BMT were selected (n=8,046) for this study. Logistical regression analyses were utilized to examine the 7-day point prevalence of smoking within gender at 12 month follow-up. Potential predictors of cessation included age, ethnicity, family income, education, type of cigarette, years smoked, time to first cigarette, number of cigarettes per day, motivation, and intervention condition. Participants were young (mean age= 20 years), 75.7% male, 77.6% white, 8.4% black, 6.8% Hispanic, 3.9% Asian/pacific islander, and 3.2% other ethnicity, with an average level of education equal to high school graduation or less. The majority of participants smoked less than 5 years prior to BMT. Regression analyses revealed significant predictors of cessation in both men and women (all p_s <.01). Both men and women who reported lower indices of dependence and higher motivation to quit were more likely to be quit at 12 month follow-up. Motivation level was a relatively stronger predictor in women (OR= 1.73 vs 1.39). Men differed from women in that they were more likely to quit if they were older and smoked light cigarettes. This study identifies predictors of cessation in a group of young people in BMT. Future studies of this population may examine the possibility that young women in particular may benefit from motivational enhancement strategies to quit smoking.

Abstract 1035
PREVALENCE OF TOBACCO USE AMONG BRAZILIAN ELDERLY LIVING IN COMMUNITY
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In a cross sectional design a representative sample of 6963 subjects, randomly selected, aged 60 years old and over, living in community, in urban areas, Brazil, was examined to estimate the frequency of smoking tobacco. All subjects were included in person interview. Smoking was measured by means of a household questionnaire administered by trained interviewers that inquired about current tobacco use, sociodemographic characteristics, among other instruments. Bivariate and multivariate analysis between smoking and social and demographic variables were applied. The prevalence of tobacco use was 28.9% among men and 13.5% among women. Factors associated with increased risk of tobacco smoking were: less educated men, non-caucasians, non-evangelic, lower income and marital status (bachelor, divorced, or widowed). Two social characteristics interact: religiosity and race. Non-whites and non- evangelic were 2.1 fold more likely to be a smoker than the others subjects (95% C. I. 1.2 3.7). Factors associated with a decreased risk of tobacco smoking were: aging and religiosity (evangelic). The use of tobacco is more frequent in men than in women in a proportion of 2:1. Being men, less educated, non-white, non-evangelic, with lower income and not married, is strongly related with smoking in community elderly in Brazil.

Abstract 1732
ESSENTIAL ELEMENTS: INFLUENCE OF DIETARY INTAKE ON HYDRATION STATUS
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The goal of this study was to: (a) assess the effects of a behavioral manipulation in water consumption on diet and total body water (TBW), and (b) determine the predictive value of self-reported diet on impedance derived assessments of body water. Dietary food and water intake was assessed in 39 individuals during 3 laboratory sessions occurring over a 2 week period. Diet diaries were used to assess daily food and beverage intake for a 3-day period preceding Session 2 (S2) and Session 3 (S3). During Session 1, participants received diet diary 1 (DD-1) and were instructed to begin filling it out 3 days prior to S2. During S2, bioelectrical impedance assessments (BIA) of TBW, extracellular (ECW), intracellular (ICW), and % TBW by kg (%TBW) were obtained. Participants were assigned to either a Fluid Enhanced (received 6 L of water to drink with their normal diet) or No-Fluid (received no water) group. All participants received DD-2. During S3, BIA was again obtained. Diet analyses for the No-Fluid group revealed a significant difference in Na+ between DD-1 and DD-2 (p=.011). The Fluid Enhanced group exhibited a difference in water intake (p<.01) as expected due to the fluid manipulation, but no differences in Na+ or K+. Thus, Fluid Enhanced individuals maintained stable levels of dietary elements from S2 to S3 despite the intensive fluid manipulation. Body water analyses revealed that the Fluid Enhanced group had significant increases in ICW from S2 to S3 (p<.05), and a marginally significant increase in TBW (p=.062). No significant changes were found for the No-Fluid group. Regression analyses at S2 indicated dietary K+ was a significant predictor of TBW, ECW, and ICW (p<.05). Results at S3 indicated dietary K+ was a significant predictor of TBW, ECW, ICW, and %TBW (p<.05) accounting for 17.2, 12.5, 19.6, and 49.4 % of the variance in body water, respectively. These results indicate self-reported dietary K+ is a consistent predictor of impedance derived body water and may be used to predict changes in hydration status.

Abstract 1665
PSYCHOLOGICAL RESPONSES TO LIVER TRANSPLANTATION ACCORDING TO PRESENCE OR ABSENCE OF SUBSTANCE ABUSE HISTORIES
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This study examined whether liver transplant recipients whose histories of substance abuse were seen as contributing to their underlying disease processes would view their transplant experiences differently than those recipients whose underlying disease processes were unrelated to substance usage. 85 (39 females, 46 males) liver transplant recipients were classified into two groups: (a) those with liver disease related to substance usage (Chronic Hepatitis C, Cirrhosis-Alcoholic) and had a history of substance abuse (drugs and/or alcohol) confirmed by medical assessment (n=34); and (b) those with disease processes (e.g. Primary Biliary Cirrhosis) unrelated to substance usage (n=51). As part of a larger survey conducted by mail, recipients filled out validated self-report questionnaires of measures of quality of life (SF-36 v. 2), depression symptoms (Patient Health Questionnaire), and emotional and behavioural responses specific to the transplant experience (Transplant Effects Questionnaire).
T-test and chi-square analyses indicate the two groups did not differ significantly to each other with respect to their age, time since transplant, and marital status. The groups did differ significantly with respect to gender make-up, with the substance abuse group having a higher proportion of males to females ($p < .05$). The two groups showed similar quality of life scores on the physical component scale on the SF-36 v. 2 ($t(79) = .24, p > .05$). However, analysis of covariance (using depression scores from the Patient Health Questionnaire as a covariate) showed that the two groups had different emotional and behavioural responses to their transplantation: As measured by the Transplant Effects Questionnaire, recipients whose diseases were related to their histories of substance abuse felt less guilty (F(1,80) = 8.96, $p < .01$) and less worried (F(1,80) = 14.70, $p < .01$) about their transplants than the other recipients.

**Abstract 1620**

**EFFECTIVENESS OF A WORKSITE-BASED INTERACTIVE WEBSITE FOR REDUCING ALCOHOL CONSUMPTION IN MODERATE-RISK EMPLOYEES**


This study examined the effectiveness of a website-based intervention for reducing alcohol consumption in moderate-risk drinkers in a worksite. Participants categorized as low- or moderate-risk for alcohol problems were randomized to one of two psychoeducation conditions, either Limited Individualized Feedback or Full Individualized Feedback. Participants were 145 employees of a Silicon Valley worksite in California. At baseline and at a three-month follow-up, quantity and frequency of alcohol consumption were assessed. Participants in this study accessed the website for an average of 14.7 minutes. Among moderate-risk participants, those receiving Full Individualized Feedback compared to those receiving Limited Individualized Feedback showed significantly ($p < .05$) greater reductions in the number of beers usually consumed, which declined 24% (compared to a decrease of 13%). Furthermore, the frequency of beer binges also dropped significantly more in participants receiving the Full Individualized Feedback condition, who reduced their frequency of binge drinking of beer by 48%, as compared to those receiving the Limited Feedback condition, who increased their frequency of binge drinking of beer by 13% ($p < .01$). These results suggest that an intervention using an interactive website with individualized feedback can be a powerful tool in the workplace to alter problematic drinking behavior.

**Abstract 1556**

**ARE SELF-REPORTED MEASURES OF SLEEP QUALITY AND QUALITY GOOD MARKERS OF SLEEP AS MEASURED BY POLYSOMNOGRAPHY?**

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Epidemiologic studies generally rely on self-report measures of sleep when evaluating the impact of sleep quantity and quality on health and risk for disease, due to the expense and inconvenience associated with polysomnography (PSG) sleep measures. The protocol for this study included 2 nights of in-home PSG and retrospective assessment of sleep quantity and quality using the Pittsburgh Sleep Quality Index (PSQI). The PSQI assesses sleep habits in the past month such as bed time, wake time, time to fall asleep (sleep latency) and the duration of time asleep (sleep duration). Results are based on a sample of 9 men and 25 women, approximately equal numbers of Caucasians and African Americans, mean age-58.5 who are enrolled in the Pittsburgh SleepSCORE Project. Eligibility includes: 47-73y/o, no history of treatment for sleep disordered breathing (for this analyses an apnea/hypopnea index (AHI) of 10 or less), no frank cardiac disease or diabetes, or known factors felt to perturbate sleep or to affect the acquisition of accurate PSG data. The 2 nights of PSG sleep measures were averaged for the purpose of correlating self-report PSQI data and objective PSG measures. Spearman Rank-Order Correlations were used to evaluate relationships among objective and subjective measures of sleep latency and duration. Potential control variables included AHI and Body Mass Index (BMI). $p$ values of < .05 were considered significant. BMI was positively correlated with sleep latency ($p = .08$). Persons reporting greater sleep latency on the PSQI had significantly greater sleep latency on PSG ($p = .015$), this relationship remained significant when controlled for BMI. Correlations of self-report sleep duration and efficiency and PSG measures of sleep duration and efficiency were not statistically significant. These findings show that self-report sleep latency is closely related to objective PSG measures of sleep latency. Sleep latency is likely to be recalled accurately, and has previously been related to mortality in a study of PSG sleep. These preliminary data suggest that epidemiological studies linking self-report sleep duration may be measuring something other than actual duration of sleep.

**Abstract 1586**

**SUBSTANCE USE AND PERCEIVED RISK FOR CONTRACTING HIV IN MEN WHO HAVE SEX WITH MEN**

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The relationship between substance use and high-risk sexual behavior has been established by past research. However, relationships between recent substance use and perceived risk of contracting HIV have not been thoroughly examined in men who have sex with men (MSM), a group at increased vulnerability to HIV and other STDs. Surveys assessing substance use, sexual behavior, and perceived risk of contracting HIV were completed by 322 MSM attending the 2005 Denver Gay Pride celebration. Results are based on responses from the 279 HIV-negative participants. Overall substance use was associated with greater levels of perceived risk of contracting HIV. Specifically, participants who perceived themselves as at risk of acquiring the virus reported higher rates of marijuana use ($Z = -2.33, p < .05$), ecstasy use ($Z = -2.36, p < .05$), poppers use ($Z = -2.68, p < .01$), methamphetamine use ($Z = -3.88, p < .001$), and cocaine use ($Z = -3.401, p < .001$) compared to those who perceived themselves at no risk. Further, participants involved in high-risk sexual behavior viewed themselves to be at greater risk for contracting HIV. Findings suggest that related mechanisms may influence personal decisions regarding use of illicit drugs and involvement in high-risk sexual behavior. Future HIV prevention strategies may be enhanced by considering the role of substance use on decisions to engage in high-risk sexual behavior.

**Abstract 1458**

**FATALISTIC TIME PERSPECTIVE AND SEXUAL RISK IN HIV+ MEN WHO HAVE SEX WITH MEN**

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People's thoughts about past, present and future or "Time Perspective" (TP) influence many psychological processes including problem solving, risk-taking and decision-making. For example, those reporting a high Present Fatalistic TP have thoughts dominated by hopelessness and immutable beliefs that outside forces control their lives. Future costs associated with current decisions are thought to be inevitable. This study surveyed 314 men who have sex with men (MSM) attending Denver's Gay Pride celebration regarding sexual risk and TP. Present Fatalistic TP was significantly associated with the number of times having sex after having too much to drink (rho=0.133, p=0.016). Of the 312 men reporting their HIV status, 50 (16%) reported they are seropositive, 251 (80%) reported seronegative status and 11 (4%) reported unknown status. HIV positive men indicated significantly higher Present Fatalistic TP (M=2.65, SD=0.86) than those who reported they are HIV negative (M=2.33, SD=0.77; F=3.62, p=0.028). Seropositive men also reported unprotected receptive anal intercourse with significantly more men (M=1.9, SD=6.4) in the past 3 months than their seronegative counterparts (M=0.51, SD=0.85; z=2.024, p=0.04). Understanding sexual risk in MSM who are HIV positive may help to inform HIV prevention strategies.
SELF ESTEEM IS ASSOCIATED WITH SLOWER CD4 DECLINE IN HIV
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Prior studies of psychosocial predictors of disease progression (DP) in HIV have focused on stress, coping and social support. However, many of the groups affected by HIV are marginalized by society suggesting the potential importance of self-esteem. We examine the association between self esteem and changes in two markers of DP over 4 years in HIV. A secondary purpose was to examine the relationship between self esteem and established predictors of DP.

This study was a sub-study of a larger longitudinal study of HIV+ participants in the mid range of illness who were seen for questionnaires and blood draws for DP markers (CD4 and viral load) every 6 months. In the current study 96 of them received Rosenberg’s self esteem questionnaire at an intermediary time point. The sample was diverse with respect to gender, ethnic group and sexual orientation. Hierarchical Linear Modeling was used so that the relationship between self esteem and slope of CD4 (and log VL) could be tested controlling for baseline CD4/ VL, antiretroviral medication at every time point, age, gender, ethnic group, and education. Self esteem was significantly related to change in CD4 over 4 years (β = .14, t(88) = 2.67, p < .05). It was not significantly related to changes in log VL (β = -.30 x 10^-5, t(88) = -8.62, p = .40). Self esteem was also significantly related to several predictors of DP including depression (r = -.41, p < .01), optimism (r = -.42, p < .01) and adherence to medications (r = -.23 with proportion of missed doses, p = .05). It was not significantly related to safer sex practices, alcohol or cocaine use. Future analyses will test these as mediators longitudinally.

Thus self esteem was significantly related to changes over four years in a major marker of disease progression. Variables that correlated significantly with self esteem that also predict disease progression provide potential mechanisms by which this may occur, such as better adherence, optimism, and less depression.

Abstract 1235

BODY IMAGE AND SEXUAL RISK BEHAVIOR IN MEN WHO HAVE SEX WITH MEN
Mandi Browning, Andrew Rosen, Eric Benotsch, Chris Netles, Kristina Urban, Kirsten Martin, Psychology, University of Colorado, Denver, CO

Previous research has documented a relationship between dissatisfaction with body image (BI) and sexual risk behavior in women receiving family planning services. The relationship between BI and sexual behavior has not been thoroughly examined in men who have sex with men (MSM), a group at elevated risk for HIV and other STDs. The present investigation examined the relationship between BI and sexual risk behavior in HIV+ and HIV- MSM. A total of 346 MSM attending the 2005 Denver Gay Pride celebration participated in the study. Participants completed an anonymous survey assessing demographic information, HIV status, body image, and sexual risk behaviors. Relationships between body image and sexual risk behavior were examined separately for HIV+ and HIV- participants. For both groups, dissatisfaction with BI was associated with sexual risk behavior; however, the relationship between BI and specific behaviors differed for the two groups. For HIV+ men, BI was associated with unprotected receptive anal sex acts (r(88) = -0.13, p < .05) and the total number of unprotected receptive anal partners (r(88) = -0.18, p < .05). For HIV+ men, BI was associated with unprotected insertive sex partners (r(88) = 0.29, p < .05). The findings suggest that dissatisfaction with BI was associated with the highest risk behavior for each group: BI dissatisfaction in HIV+ men was associated with insertive acts, and BI dissatisfaction in HIV- men was associated with receptive acts. Both groups may be engaging in unprotected sex as a way of coping with BI dissatisfaction and affirming their attractiveness. Interventions designed to increase body acceptance may lead to lower rates of sexual risk behavior in MSM. Future research should focus on longitudinal studies of both HIV+ and HIV- MSM and examine potential mediators of the relationship between these constructs. Studies utilizing qualitative methods may be especially productive in describing relationships between BI dissatisfaction and risk behavior.

Abstract 1698

SEXUAL REVICTIMIZATION, PTSD, AND PAIN AMONG HIV-POSITIVE ADULTS

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This study examined the association between revictimization, posttraumatic stress disorder (PTSD), and pain among 71 HIV-positive adults (45 men and 26 women) who were enrolled in a research trial (Project RISE) designed to reduce stress symptoms. Each participant completed baseline measures, which assessed demographics, trauma experiences, PTSD symptoms, and pain. Most (89%) reported some level of pain associated with their HIV disease. Twenty percent of the sample reported being raped as a child and 25% reported being inappropriately touched on the genitals as a child. As adults, 38% reported being raped and 42% reported unwanted sexual experiences. One quarter (25%) of the sample reported being sexually abused as a child and then again as an adult. Sexual revictimization was positively and significantly associated with greater PTSD symptoms (r = .28, p < .05) and those individuals who reported a history of revictimization were more likely to report greater pain symptoms compared to those without a history of revictimization (t = 2.01, p = .05). After controlling for age, gender, ethnicity, and CD4 T-cell count, multiple regression analysis found that greater trauma symptoms were associated with greater subjective pain severity [Adj. R-Square = .10, F = 6.96(df = 4,66), p < .03]. Our findings suggest that reducing psychological distress associated with trauma symptoms may significantly improve health outcomes, particularly as it relates to pain management, among HIV-positive patients. Prevention efforts that focus on reducing revictimization among adults who have been sexually abused in childhood are critically needed.

Abstract 1667

PTSD/HIV/AIDS: IS ONE A RISK FACTOR FOR THE OTHER IN ADOLESCENTS AND YOUNG ADULTS?
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HIV rates continue to rise among adolescents and young adults. Our inner-city, youth friendly programs with co-located and wrap around services care for this population who present with unique risk profiles and are often marginalized. This study included 64 youth 12-31 years, with 63% male, 7% transgender, 75% African-American, 12.5% Latino; 60% are under 25 years. We examined rates and types of trauma in order to direct clinical programming (mental health treatment and support) and to support adherence to medical regimens.

Forty-two percent were diagnosed with Post-Traumatic Stress Disorder at intake (30% female; 55% male; 15% transgender). The average frequency of traumatic events was four for males, three for females. Events included, sexual assault/rape as a child, 27%; physical assault/abuse as child, 27%; witness to serious assault/violent death, 25%; serious accident/fire, 27%; domestic violence, 44%; Females acknowledge four times more children than males; have considerably less education (high school 16% v. 34%), and are far less employed (11% v. 31%). Forty two percent of the females and 55% of males take HIV medications and over 50% report always using condoms. A recent clinical review of prospective data shows that self-report HAART adherence rates are highest among those who are active in mental health care. Similarly, condom use increased by 50% for those receiving any type of mental health services.

These data strongly suggest early trauma as a risk factor for HIV and may place youth at risk for less favorable outcomes. To reverse this trend we recommend mental health care to be routine for those with HIV, especially youth; policies to aid troubled families to prevent childhood trauma, early intervention for traumatized youngsters and, widespread professional training to recognize and treat traumatic exposure.

Abstract 1645

SOCIAL AWKWARDNESS AND HIV RISK BEHAVIORS IN MEN WHO USE THE INTERNET TO FIND SEXUAL PARTNERS
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The Internet has increasingly become an avenue for men who have sex with
men (MSM) to find sexual partners. Previous research has documented a relationship between meeting partners on the Internet and higher rates of sexual risk behaviors. Individuals who feel awkward in social situations may be motivated to find partners online rather than in traditional settings. This investigation examined the association between social awkwardness, using the Internet to find sexual partners, and sexual risk behavior. A total of 346 MSM surveyed assessing demographic information, social awkwardness ratings, sexual risk behavior and use of the Internet. More than half of the sample (56%) reported having met a sexual partner online. MSM who had met a sexual partner online reported overall higher rates of sexual risk behavior in the previous three months, including more total sexual partners, higher rates of unprotected insertive anal sex (ps<0.05). Participants who reported having sex with a partner first met over the Internet scored significantly higher on the social awkwardness scale (M=10.31, SD=2.83) than participants who had not met a sexual partner online (M=9.23, SD=2.90, t(339)=3.44, p<.01). MSM who report feeling awkward in social situations may be turning to the Internet to find sexual partners. Future research should examine cognitive variables, such as lack of confidence or fear of rejection, in socially awkward men who choose the Internet to find sexual partners. Interventions directed at this population are needed and should focus on the prevention of high risk behavior and also on factors that may mediate risk, including social awkwardness.

Abstract 1491
THE PREVALENCE OF ANXIETY, DEPRESSION, AND DISTRESS IN PERSONS WITH HIV INFECTION IN IBADAN, NIGERIA
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The primary purpose of this study was to assess the prevalence of anxiety, depression and distress in Nigerian adults with human immunodeficiency virus infection, and to compare these rates with those of HIV-positive persons living in New York City, as well as with HIV-negative persons living in Nigeria. The feasibility of screening for such mental illnesses in an international primary care setting was also explored. A convenience sample was obtained from patients that were receiving primary care services at a non-governmental organization in Ibadan, Nigeria. All subjects completed two questionnaires: the Hospital Anxiety and Depression Scale (HADS) and the Distress Thermometer. These scores were then compared to those of another group of patients that had completed the same questionnaires in an AIDS clinic in New York City. Scores were also compared to those of HIV-negative but chronically ill patients in Ibadan, Nigeria. It was found that the prevalence of anxiety, depression, and distress were significantly higher in the Nigerian population than in the American HIV-positive population and in the Nigerian HIV-negative population. Findings also suggest that HADS and the Distress Thermometer could be valuable screening tools, in resource-poor, international primary care settings.

Abstract 1077
IMMUNE PATHWAYS INVOLVED IN THE EFFECTS OF HEPATITIS C VIRUS INFECTION ON NEUROCOGNITIVE FUNCTION: AN EGYPTIAN SAMPLE
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Hepatitis C virus (HCV) infects over 4 million individuals worldwide. Infection with HCV is often co-morbid with HIV infection and/or a complication of stimulant use. Neurocognitive impairment occurs with both viruses and stimulant use. The isolated effect of HCV infection on neurocognitive function is unknown. Egypt has an unusually high prevalence of HCV monoinfection (20%) due to unsafe injection practices. This offered a unique opportunity to examine the isolated effect of HCV on neurocognitive function. HCV infection possibly affects neurocognitive function through an inflammatory cascade. In this case-control study, 21 men and 4 women, ages 22 to 53 were recruited from the Virology Clinic of Assiut University School of Medicine. Subjects were matched on age, and SES. All patients were serologically positive. Exclusion criteria included cirrhosis, interferon therapy, drug or alcohol use, psychiatric disorders, parasitic infections and any acute or chronic condition affecting cognitive function or immune markers. Assessments included Brief Visuospatial Memory Test-Revised (BVMT-R), Word Recall (WST-R) and the Wisconsin Card Sorting Test. HCV+ subjects (N= 11) had significantly higher total number of errors (p<.04) and perseverative responses (p=.05) and significantly lower conceptual level responses (p=.04) on the WAIS-R. Cases also scored lower on the BVMT-R delayed recall (p=.09). Overall, HCV+ subjects had worse neurocognitive performance than their matched controls. TNFR-II levels were higher in cases (10.2 ± .83) than controls (6.8 ± .57) (p=0.002). Our pilot data suggest the presence of cognitive deficits associated with HCV infection, which may be triggered by changes in immune function.

Abstract 1548
CD16+ MONOCYTE DEMARGINATION IN RESPONSE TO EXERCISE IN YOUNGER AND OLDER ADULTS
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Monocyte migration is a critical component of the inflammation process in many diseases, including diabetes, atherosclerosis, and AIDS. Especially, monocytes that express CD16 are increased in pathological conditions. In spite of the important role of cellular adhesion molecules (CAMs) in monocyte migration, the literature on CAM expression on CD16+ monocytes is limited. We examined CD64, CD11b, CD62L and CCR5 expression on CD16+CD14+ vs. CD16-CD14+ monocytes under physical stress in 25 men and 23 women (23 to 54 years of age). Participants underwent 20-min exercise at 65-70% of their peak capacity with blood drawn pre, post, and 10-min post. CAMs were detected by flow cytometry. The data were analyzed using repeated measures ANOVA. We identified monocyte subsets based on the presence of CD16 expression (M1=CD14+CD16+, M2=CD14+CD16−), and CD16-CD14+ (M3). At rest time, 4, 17, and 65% of monocytes were M1, M2, and M3, respectively. At exercise, numbers of all three subsets increased (p<.05) although % M3 decreased (p<.01) whereas % M2 increased. Time by age (median split, younger <41yrs< older) interactions revealed larger increases in M1 and M2 in younger participants (p<.05). CD4 and CCR5 density decreased after exercise and returned near resting values on M2 and M3 (p<.05). CD11b and CD62L density increased in M1 and M2 increased in all three subsets (p<.05). After exercise, numbers of all three subsets increased. In summary, CD16+ monocytes demargination to peripheral blood is more readily than CD16- monocytes in response to physical stress. Also, older age is associated with attenuated monocyte responses to exercise, and this age effect is more apparent in CD16+ monocytes and their CD62L expression. Exercise is a plausible stress model to detect acute changes in CD16+ monocytes that are critical in inflammatory disease processes. Its clinical implications merit further investigation.

Abstract 1057
THE ASSOCIATION BETWEEN ATOPY AND ANXIETY SENSITIVITY IN ADULT ASTHMA PATIENTS
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Background: The majority of asthmatics have atopy (allergic disease). Panic Disorder (PD), a psychiatric disorder characterized by high anxiety sensitivity (AS) (a trait measure of “fear of fear” and a tendency to experience panic-like anxiety) has been shown to be six times as prevalent in asthmatics compared to the general population. Due to the high comorbidity of both atopy and PD in asthmatics, and several similarities in the symptom presentation of these conditions, it has been suggested that atopy and PD may be mechanistically linked. However, the association between atopy and AS has yet to be firmly established in patients with asthma. This study examined the association between atopy and AS in a sample of adult asthmatics. Method: A total of 217 asthma patients were recruited from the asthma clinic of a major university hospital. All patients underwent standard pulmonary function testing and also completed the Anxiety Sensitivity Inventory (ASI) on the day of their clinic visit. Patients also completed and Beck
Depression Inventory-II (BDI-II) and underwent a structured psychiatric interview (PRIME-MD) to assess the prevalence of mood and anxiety disorders. Results: Among adult asthmatics, independent of age, sex, smoking status and asthma duration (p<.05). Having both PD and atopy was associated with higher AS than the presence of either PD or atopy alone (p<.05). Interestingly, there was no association between atopy and anxiety or mood disorder diagnoses, or between atopy and BDI-II scores (p's>.05). Conclusion: These preliminary findings provide support for the hypothesis that perceived stress dysregulates the immune system. This may be an important missing link in the relationship between stress and inflammatory disease.

Abstract 1508

ADIPOSITY AND CYTOKINE RESPONSES TO ACUTE MENTAL STRESS

The cytokines interleukin-6 (IL-6) and interleukin-1 receptor antagonist (IL-1Ra) play a key role in atherosclerosis. Elevated plasma levels of these cytokines are associated with an increased risk of coronary artery disease and poor prognosis in cardiac patients. Acute psychological stress has been shown to raise plasma levels of IL-6 and IL-1Ra in humans and animals. Although the cellular origin of stress-responsive cytokines is unknown, one suggested source is adipose tissue. We examined the relationship between adiposity and cytokine stress responses in a group of 93 healthy volunteers (28 men, 65 women) aged 18-25. Participants weight, height, waist and hip circumference were measured and their plasma cytokine levels were assessed in response to an acute laboratory stressor. They had a mean body mass index (BMI) of 23.3 ± 3.57, and there were no significant gender differences in age or BMI. There was a significant relationship between measures of adiposity and cytokine stress responses. Increases in plasma IL-6 levels immediately post-stress were positively correlated with participants BMI (standardized B = 0.258, p = 0.013) and waist circumference (B = 0.290, p = 0.006), independent of age, gender and baseline IL-6 levels. Similarly, in women only, there was a significant correlation between BMI and plasma IL-1Ra responses at all time points (immediate post-stress, 45 and 90 min post-stress (B = 0.353-0.433, all p< 0.01)), independent of age and baseline IL-1Ra levels. Although IL-1Ra responses and waist circumference were unrelated, there was a positive correlation between waist circumference and absolute levels of IL-1Ra at all times in women. Together, these results support the role of adipose tissue as a source of stress-responsive cytokines. Gender differences in cytokine responses may be due to varied sensitivity to glucocorticoid inhibition. Stress-induced cytokine release from adipose tissue could be a mechanism linking stress, obesity and coronary risk.

Abstract 1532

CIRCULATING CYTOKINES, COGNITION AND AGE IN HEALTHY WOMEN

Among internal determinants of cognition, increasing evidence suggest an active role of the immune system. The aim of the present study was to analyze the relationship between circulating cytokines and aspects of declarative memory and cognition in a normal population. From the Betula prospective cohort study on health, ageing and memory, 306 healthy women (age 45-90) were studied in terms of memory (episodic recall; semantic recall; episodic recognition, prospective memory), executive functioning and levels of circulating cytokines (IL-1beta; IL-1ra; IL-8RII, IL-2Ra; TNF-alfa and IL-6) as determined by ELISA. Levels of IL-1 beta correlated positively with episodic and semantic recall (p's<.01) and executive functioning (p<.05), while levels of IL-2Ra and IL-6 correlated negatively with performance in episodic and semantic recall (p's<.001), episodic recognition, prospective memory and executive functioning (p's<.05). However, when controlling for age, education and BMI in multiple regression analyses, most correlations decreased to non-significant levels. IL-6 as well as IL-2Ra increased strongly with higher age. Because recent data indicate higher cytokine sensitivity with...
increased age, interactions between age and cytokine levels were further analyzed in multiple regressions. For IL-6, significant interactions with age were found for semantic recall and prospective memory (p's<.01), thus indicating an increased sensitivity for IL-6 with increasing age with respect to memory functions. In conclusion, the study indicates a relation between cytokines and cognition that is largely mediated by age. In addition, the study supports recent findings of increased sensitivity in the behavioral domain for influence of inflammatory activity.

Abstract 1703

FIBROMYALGIA AND DISTURBED SLEEP
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Fibromyalgia (FM) is associated with chronic sleep disruptions. Insufficient sleep (< 6 hours per night) has been linked with serious long-term health consequences. However, few studies have examined whether insufficient sleep has a proximal effect on adjustment or whether sleep debt, accrued over several successive nights, has additive effects on psychological adjustment. Thus, we tested the hypothesis that successive nights of insufficient sleep would be related to the progressive worsening of mood. Participants were 89 women who met American College of Rheumatology criteria for primary FM (88.7% Caucasian; 69.7% married or living with partner; mean age of 44.4 years). Over 30 consecutive days, participants reported pain and mood on a hand-held computer. Upon awakening, participants recorded the total number of hours of sleep for the previous night. Multi-level modeling (PROC-mixed) analyses controlled for study day, time of assessment, and current pain, as well as each person's average sleep duration, and sleep the prior night. Moreover, the autoregressive covariance matrix controlled for serial dependencies of repeated measures. To test for the successive night effect, we coded nights with <6 hours of sleep as 0, and identified clusters of low sleep nights by coding the first night with <6 hours sleep as 1, the second night as 2, etc. After controlling for characterological sleep patterns (average sleep) and a steady drop to the nadir at 15 hours post wake time. Multiple NA peaks, and a steady drop to the nadir at 15 hours post wake time. Multiple NA peaks, but no obvious time-related trends in NA characterized low sleep nights. These data suggest that there may be different diurnal affect curves for older people with chronic pain. Furthermore, NA may vary as a function of sleep duration.

Abstract 1514

EFFECT OF RELAXATION THERAPY ON HEART RATE VARIABILITY IN TENSION-TYPE HEADACHE PATIENTS
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Relaxation therapy (RT) has been suggested to be effective in treating tension-type headache (TTH). However, its mechanism is still unclear although it is speculated that RT has an effect on autonomic nervous function. Therefore, the aim of this study was to investigate the change of heart rate variability (HRV) after RT in TTH using linear and non-linear analysis. The subjects were 15 men (age 40.3 +/- 9.9 yrs) and 39 women (age 36.6 +/- 10.4 yrs) with TTH. They participated in 8-week RT sessions. RR intervals (RRIs) were collected in a supine position for 10 minutes before and after RT. RRIs were analyzed by coarse graining spectral analysis to obtain low frequency (LF, 0.04-0.15Hz) power, high frequency (HF, 0.15-0.40Hz) power, total power, LF/HF, fractal power, %fractal and spectral exponent beta and by detrended fluctuation analysis to obtain scaling exponents alpha 1 and alpha 2. First, we tested the change of each variable and mean RRI after RT by paired t-test in each position separately. Second, for each variable and mean RRI, we tested main effects of time (before vs after RT) and position, and time x position interaction by repeated measures ANOVA. In paired t-tests, there was no significant difference although there seemed to be trends that RRI in a supine position was increased (p = 0.084) and beta in a supine position was decreased (p = 0.070) after RT. In repeated measures ANOVAs, time x position interaction on RRI was significant (p = 0.029) as well as the main effects of position on variance. These results suggest that RT can reduce weekly recall of headache intensity in TTH patients.

Abstract 1513

EFFECT OF RELAXATION THERAPY ON TENSION-TYPE HEADACHE: A RANDOMIZED CONTROLLED TRIAL
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Relaxation therapy (RT) has been thought to be effective in treating tension-type headache (TTH). However, there were few randomized controlled studies on its efficacy in TTH patients. Therefore, the aim of this study was to investigate the effect of RT on headache intensity in TTH patients in a randomized controlled design. The subjects were 15 men (age 40.3 +/- 9.9 yrs) and 39 women (age 36.6 +/- 10.4 yrs) who met the International Headache Society diagnostic criteria for TTH. Thirteen had episodic TTH (ETTH) and 41 had chronic TTH (CTTH). They were randomly assigned to an RT group (n = 46, for all variables) or a wait-list control (WLC) group. Before RT and after RT period and waiting period, they were asked to recall and rate their headache intensity during the previous week with a 100-mm visual analog scale. We compared headache intensity before the RT period with that after the RT period using repeated measures ANOVA as within-group comparison. We also compared headache intensity change of RT group during the RT period with that of WLC during the waiting period using repeated measures ANOVA as between-group comparison in the whole patients and separately in CTTH and ETTH patients. In within-group comparison, headache intensity was significantly reduced after the RT period in the whole patients (p = 0.002). In between-group comparison, headache intensity was significantly reduced after the RT period compared to the WLC in CTTH patients (p = 0.04), although there was no significant difference in the whole patients or in ETTH patients (p = 0.18 and 0.51, respectively). In conclusion, RT was suggested to be effective in reducing weekly recall of headache intensity in CTTH patients.
Abstract 1296

CHRONIC PELVIC PAIN

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Positive affect (PA) is associated to an approach oriented attitude and activity in general, while negative affect (NA) is related to avoidance and more passive coping. Thus we expect patients with a higher level on the Pain Readiness to Change approach (PRC) to have higher levels of PA than those with lower PRC. Moreover that higher levels of NA would relate to lower PRC. To our knowledge, the relationship between PA and PRC has not been examined in pain patients before. A total of 43 patients with Rheumatoid arthritis (RA), 30 women with mean age 57.5 (SD = 13.1) participating in an eight weeks follow-up study were assessed weekly on PA and NA with PANAS. PRC, Approach-Avoidance coping and pain were measured at baseline with the Pain Stages of Change Questionnaire (PSOQC), the Brief Approach-Avoidance Questionnaire (BACQ) and a pain numerical rating scale, respectively.

PSOQC was submitted to K-means cluster analyses and a three cluster solution on PRC was detected and employed in a one way ANOVA. The results were significant on the relationship between the clusters on approach coping and average level of PA. The Cluster with highest scores on PRC had as expected, significant higher scores on approach coping (M=22.4, SD=3.5) than the two other clusters (M=20.3, SD=2.6, p=0.01 and M=19.7, SD=5, p<0.01). Furthermore, the patients in the highest PRC cluster also had a significant higher level on PA (M=33, SD=5.8, p<0.01) than the cluster with lowest scores (M=24, SD=8.9) on PRC. Interesting, no differences between the three clusters were found neither on NA nor on the pain variables. The results indicated that PA independent of NA, are associated to self-management in patients with RA i.e. those having a higher average level of PA are more ready to change, actively engage and participate in self management strategies to cope with their chronic pain.

Abstract 1541

PERCEIVED RELATIONSHIP TO PROVIDERS, AFFECT AND PAIN IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Purpose of study: To test the association between perceived relationships to providers, pain, negative affect (NA), positive affect (PA) and perceived interpersonal stress in a sample of patients with rheumatoid arthritis (RA). Sample and methods: Forty-three RA patients (30 women; mean age 57) included in a 10-years follow-up study, were interviewed by telephone once a week over eight weeks. A 10 item questionnaire on perceived relationship to providers (Weekly Assessment of Relations to Providers Inventory - WARP) as well as measures of interpersonal stress, NA, PA and pain were administered. Multilevel modelling was applied to study the within-week relationships among the variables.

Results: WARPi had a Chronbach's Alpha of .76. In multilevel models WARPi scores were inversely associated with weekly pain, both in terms of average pain, most intense pain and pain discomfort, in the same week and pain discomfort in the previous week.Conclusion: A consistent inverse association between perceived relationship to providers and pain was found in our sample of patients with RA. The association may be bidirectional, but data indicated a specific impact of relations to providers on pain discomfort.

Abstract 1326

PERSONALITY FACTORS AND SYMPTOMS IN PATIENTS WITH CHRONIC PELVIC PAIN

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The aetiology of chronic pelvic pain is not fully understood. The purpose of this study was to assess personality factors and symptoms in patients with Chronic Pelvic Pain (CPP, n=60) unexplained by pelvic pathology, compared to healthy controls (n=28). The patient group underwent a clinical examination (gynecologist, psychologist) and assessment by physiotherapist. Study inclusion criteria: women, 20-45 years old and no serious mental illness needing treatment.

Both groups completed extensive psychometric evaluation including the neuroticism (-N) and lie (-L) scales of the Eysenck Personality Questionnaire (EPQ), Lie/Aggression Questionnaire (GBB, sub score aggression), cardiovascular-, gastrointestinal-, muscular-skeleton- symptoms and symptom load), the Hospital Anxiety and Depression Scale (HAD) and the Buss-Perry Aggression Questionnaire (BPA, sub score physical aggression, verbal aggression, anger and hostility). The psychologist filled in the MINI International Neuropsychiatric Interview (version 5.0). The patient group had higher scores on aggression (BPA), especially regarding anger and hostility scores, but not on verbal aggression and more symptoms of anxiety and depression (HAD), although only a few had a clinical significant level of anxiety and depressive symptoms. The patients reported higher levels on all sub scales on GBB. The patient group also scored higher on neuroticism and conventionality (EPQ) than the healthy controls. Sixtyfive percent of the patient group had one or more psychiatric diagnoses. We conclude that the patients with CPP suffered from both more somatic symptoms from various organ systems and psychiatric symptoms of anxiety, depression and fatigue, compared to healthy controls. The CPP group in addition had higher level of personality factors often found to be associated with higher level of morbidity.
associated with increased subjective worry about heart functioning and heart disease.

This study examined objective cardiac risk factors, subjective worry about heart functioning and disease, and their relation in a sample of low risk patients with NCCP. Data were collected as part of a larger ongoing longitudinal study of clinical course and correlates of NCCP. Participants were 200 patients with a chief complaint of chest pain or discomfort who were seeking cardiac evaluation at an urban academic medical center. Patients who met inclusion and exclusion criteria completed an assessment battery (e.g., structured clinical interview, self-report questionnaire, medical record review) at baseline, 6-, 12-, and 18-month follow-up. The sample average age was 51 years (SD = 10), 43% male. Family history was significant for CAD/MI (51%), stroke (28%). Other individual risk factors were present including hypertension (35%), physical inactivity (44%), diabetes (9%), and tobacco use (22%). Stress and alcohol use were elevated. A series of analyses examining objective CAD risk and subjective worry were examined. Objective risk was related to increased subjective worry (DASS, p < .05) and worry about heart functioning (CAQ, p < .05). A single indicator versus additive risk factor model will be examined. Results show that objective risk is associated with subjective worry about heart functioning in patients with NCCP.

Abstract 1400

NOCEPTION AMONG OBESE AND NON-OBESE OLDER ADULTS WITH OSTEOARTHRITIS
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Osteoarthritis (OA) is a common chronic health condition among older adults, associated with significant pain and physical limitations. Prior studies have indicated that obesity may be associated with reduced pain tolerance. The purpose of this study was to evaluate nociception among obese (BMI≥35) and non-obese (BMI<30) patients with OA before and after a brief coping skills training (CST) session intended to enhance pain coping. Participants included 62 older adults (35 women), with a mean age of 63.3 (± 7.5) years (range: 50 to 76 years). Each participant completed two laboratory assessments of nociceptive threshold, as measured with the nociceptive flexion reflex (NFR). Following the first NFR procedure, participants completed a 45-minute CST session, including training in progressive muscle relaxation. After CST, a second NFR threshold was obtained. Before and after CST, participants completed questionnaires evaluating state anxiety and pain perception. Data were analyzed with repeated measures ANOVA, with time as a within-subject variable and obesity status as a between-subject variable. Results indicated that all participants had higher nociceptive thresholds [F(1,60)=16.57, p<0.001] and reported less pain [F(1,60)=13.27, p<0.001] after CST. There was also a significant obesity group effect for NFR [F(1,60)=4.26, p<0.04], with obese patients having lower NFR threshold both before and after CST. Specifically, obese patients with OA had a lower nociceptive threshold than non-obese patients, both at baseline and following CST despite the absence of obesity differences for pain perception. These findings underscore the importance of evaluating both subjective and objective indicators of nociceptive responding in studies of obese patients.

Abstract 1416

THE EFFECTS OF VERBAL EMOTIONAL EXPRESSION ON PHYSICAL AND PSYCHOLOGICAL HEALTH IN JUVENILE PRIMARY FIBROMYALGIA: A CONTROLLED STUDY
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Brief emotional expression (EE) interventions have improved health indices in adult RA and Fibromyalgia(FM). This is the first controlled study to apply emotional expression to juvenile FM, a historically difficult to treat syndrome. Juvenile FM patients (N=49; 88% female, age range = 11-18) recruited from Pediatric Rheumatology Clinics in Southern California were assigned, on an age-matched basis, to talk about either personally emotional life stresses or nonemotional assigned topics (detailed descriptions of daily activities, pictures, and places) for three 20-minute sessions over two weeks. Participants and parents completed reliable, valid questionnaires assessing pain, fatigue, QOL, and mood at baseline and 1- and 3-months post-baseline. Manipulation checks were pre-post session pain and negative mood VAS's and subjective post-session ratings. Emotional expression (EE) participants perceived their disclosures as significantly more personal, emotional, and engaging than controls (p <.001). There was also a significant group X time interaction (p<.001) for immediate negative mood. EE participants reported significantly greater pre-post session negative mood increases than controls, who reported significantly greater decreases. A significant session X treatment interaction (p <.05) revealed that average negative mood lessened across sessions in the EE group, consistent with habituation. Preliminary analyses only found significant time effect so that all participants had QOL improvements. Treatment participants were then divided into groups based on their average subjective ratings for each session. Time interacted significantly with group status on parent-rated QOL (p <.01) from baseline to one month. Those who disclosed more at the last session rather than the first session had improved QOL, while those who engaged more at the first session, compared to the last, had worsened parent-rated QOL. Immediate mood data suggest nonemotional talking may distract participants and decrease current negative mood, while treatment participants who were more deeply engaged by the last session of disclosure evidenced health benefits.

Abstract 1466

DELAYED EFFECTS OF AVOIDANT ATTACHMENT STYLE ON SYMPTOM-SPECIFIC REACTIVITY AMONG CHRONIC PAIN PATIENTS IS MODERATED BY ATTENTION STRATEGY DURING PAIN
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Following Wegner's iconic process model, findings indicate that suppression of pain-related thoughts during pain results in delayed - rebound and contamination - effects on subsequent events. People characterized by distinct interpersonal attachment styles may respond to suppression differently. Those with avoidant attachment use suppression without direct awareness to deactivate reactions to threat, and may be particularly vulnerable to deliberately attempting to suppress. For 42 chronic low back pain patients (CLBP), high avoidant groups were expected to show higher symptom-specific (lower paraspinal; LP) muscle tension even in a control condition following pain than low avoidant. However, this effect would be magnified for high avoidant in suppression condition. LP and trapezius EMG, SBP, DBP and HR were collected while patients underwent cold pressor (CP; suppression or control conditions), followed by mental arithmetic (MA)and recovery. There was a significant time x condition x attachment interaction(p<.01). For LP changes, group differences in control condition were nonsignificant. However, in suppression condition, compared to baseline, high avoidant attachment patients showed continued elevated LP tension during MA(p<.03) whereas low avoidant group showed an immediate decrease in tension(see Table). LP tension in the high avoidant group remained elevated at 1-min recovery however difference from baseline did not reach significance(p=.08). Suppression of pain among CLBP patients with avoidant attachment style may lead to continued LP tension during the next noxious event and prolonged recovery.

Abstract 1741

EXPERIENCE AND RECOLLECTION: NEUROTICISM MODERATES SUBSEQUENT PERCEPTIONS OF STRESS BUT NOT CARDIOVASCULAR REACTIVITY AT TIME OF TASK
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Research supports the relationship between negative personality traits and dispositional stress and cardiovascular reactivity. The present study examined the moderating role of neuroticism on subsequent perceptions of stress and cardiovascular reactivity to laboratory tasks. However, data
Regarding neuroticism and CVR are sparse despite neuroticism’s strong associations with nearly all these candidate personality risk factors for disease. Instead, the majority of research has focused on neuroticism as a predictor of negative bias for health-related cognitions. The aim of the current study was to examine whether higher neuroticism influenced greater acute experiences of stress, as assessed by higher CVR, or only influenced subsequent perception of mood without acute CVR differences. Fifty undergraduates completed a measure of trait neuroticism (Eysenck Personality Questionnaire; EPQ) and participated in a laboratory evaluation of CVR. The lab procedure involved a 10-min resting, vanilla baseline followed by a 3-min star mirror tracing task. Anxiety and anger were assessed following baseline and again after the task. ECG and HRV (spectral analysis) were collected continuously along with Dinamap-derived SBP, DBP, and MAP collected during each minute. Change scores were calculated for mood and physiological measures and analyzed using repeated measures ANCOVA. Baseline values, gender, and neuroticism were included in all ANCOVA’s for mood and CVR. Results indicated that neuroticism did not moderate any physiological effects during the task. However, greater neuroticism was a significant predictor of higher post-task anxiety, F(1,48) = 8.73, p < .005. These findings suggest that Neuroticism may contribute to negative recall of events but not to a differential or more stressful experience in the moment. However, these effects may depend on the nature of the stressor (e.g., social vs. non-social). 

Abstract 1723

SOCIAL SUPPORT EFFECTS ON PHYSIOLOGICAL REACTIVITY DURING ANTICIPATION OF SOCIAL EVALUATION
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Social support is thought to buffer physiological reactivity to stress, thereby protecting individuals from stress-associated health consequences. Situations characterized by social evaluative threat are related to cardiovascular reactivity, as are the anticipatory periods prior to explicit evaluative threat. Social support attenuates cardiovascular reactivity to evaluative stressors under certain conditions, but whether social support buffers physiological responses during anticipation of evaluative stressors remains unclear. Further, social support’s role in buffering reductions in vagal cardiac control during acute stress, as indexed by respiratory sinus arrhythmia (RSA), remains to be demonstrated. Current research suggests larger decreases in RSA during acute stress predict lower resting RSA, and lower RSA appears to increase the relative vulnerability of cardiovascular disease. Therefore, this study explored the effects of social support awareness on heart rate (HR) and RSA during anticipation of an evaluative self-presentation task. Twenty-four participants engaged in a writing task that primed thoughts of either a supportive person in their life, or an acquaintance. Following the writing, all participants were told that they would perform a speech to a videocamera that would later be evaluated by other students. Participants prepared their speech in private, and then performed it while being videotaped. HR and RSA measures were derived from continuous collection of the electrocardiogram. Results indicated that individuals in both the support and acquaintance conditions had an increase in HR (p = .00 and p = .02, respectively) while preparing their speech in anticipation of their videotaped performance. However, only the acquaintance group showed a decrease in RSA (p = .01) during speech preparation. These exploratory data suggest that mental activation of social support prior to anticipation of social evaluation attenuates the increase in vagal control over the heart that is often observed during acute stress.

Abstract 1250

DO OVERWEIGHT UNDERGRADUATES HAVE HEIGHTENED CORTISOL REACTIVITY TO ACUTE STRESSORS?
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Obesity puts one at greater risk of disease. Research is emerging linking obesity and heightened cortisol reactivity. The purpose of the current study was to determine if people who are overweight vs. not differ in their threat emotions and cortisol reactivity to an acute stressor. One hundred twenty-three undergraduate students from a mid-western university provided demographic information (mean age 22.8, SD = 6.1, 74% Caucasian; 73% female) and were measured for body fat percentage using the Tanita, TBF-
This study examined the relationship of sleep duration and daytime cardiac functioning in normal individuals. Overweight participants displayed smaller cortisol reactivity to the stressor than their leaner counterparts (time x overweight: F(1,122) 4.59, p < 0.05). Further research is needed to understand the mechanisms behind this finding.  

Abstract 1704
CIRCADIAN ENDOCRINE CORTISOL SECRETION, STRESS RESPONSES AND AUTONOMIC NERVOUS SYSTEM REGULATION IN CRITICAL CARE PERSONNEL
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Everyday stressors elicit adaptive changes in the HPA axis and the autonomic nervous system. To date, there is a paucity of data on the relationship between the two systems under real-life conditions. Therefore, we conducted a prospective cohort study with simultaneous recording of heart rate variability and salivary cortisol in a stress exposed working environment. The study population comprised nurses (n = 114, accrual rate 94%) and physicians (n = 19) from a pediatric intensive care unit and from two intermediate wards. Participants collected salivary cortisol samples when coming to work and every two hours thereafter (5 samples per shift). Samples were collected during three investigation periods spread over 9 months. From 305 of the 3174 observed working shifts (n = 5761 cortisol samples) additional heart rate recordings were available. Changes scores for cortisol were calculated as deviations from the expected circadian baseline. Change scores from the grand diurnal mean in the time-domain based RMSSD were employed as index of alterations in parasympathetic activity. Changes in salivary cortisol were compared to changes in heart-rate variability and salivary cortisol in a stress exposed working environment. In the AN patients, there were no significant differences in QT interval and QT dispersion between the two groups for each subscale. In the BN patients, QT interval and QT dispersion in the high depression score group were significantly longer than those in the low depression score group (p = 0.04), and QT dispersion was significantly greater in the high anxiety score group than in the low anxiety score group (p = 0.004).

Abstract 1305
NEUROPSYCHOLOGICAL IMPAIRMENT IN CHRONIC FATIGUE SYNDROME (CFS)
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Estimations of the prevalence of CFS range from 0.1 to 0.4%. The fatigue of CFS is not induced by exercise, not relieved by rest, and present for longer than 6 months. Other criteria for inclusion are pain in muscles, joints and head, sore throat and glands, unrefreshing sleep, post-exertional malaise, and cognitive impairment (Pulakk 1994). The symptoms are reported by the patients and without objective proof. This led to a discussion about the actual existence of the syndrome and to different opinions about choice of therapy. Recently, Lange et al (2005) reported in a BOLD fMRI study that cognitive symptoms in CFS were associated with increased neural resource allocation during complex cerebral activity. We tested the hypothesis that this enhanced dependence on neural networks would be reflected in particular in the speed of the execution of complex neuropsychological functions. We tested 28 CFS patients and 42 healthy controls, matched for age. We used a subset of the Amsterdam Neuropsychological Tasks (De Sonneville 1999, 2002) to assess simple reaction time, perceptual and memory search processes, executive function (sustained attention, attentional flexibility, inhibition), and visuo-motor control . Performance between groups was compared in separate runs, using GLM, with speed, speed stability, and accuracy as dependent factors. Significant group differences with medium to large effect sizes were observed for all tasks, predominantly on speed and speed stability measures. Differences between groups increased with task complexity, suggesting, in particular, compromised executive functioning in CFS. These data confirm the results of Lange et al (2005). CFS is a disease with little chance for recovery. The identified neuropsychological sequelae might well be perceived of as being associated with consequences of the loss of gray matter volume in CFS (Okada 2004), and may have serious consequences for cognitive functioning and quality of life.