Wednesday, March 7
8:00-5:00  Sleep Preconference Workshop  
2:00-5:00  RCTs and Scientific Writing Preconference Workshops  
5:30-6:15  Welcome and Announcements; Data Blitz; Awards  
6:15-7:15  Cocktail Reception and Citation Poster Session (p. A23 – A35)  
8:00  Special Interest Dinners

Thursday, March 8
7:00-8:00  Breakfast Roundtables  
8:15-9:45  President Award’s Lecture and Herbert Weiner Early Career Award Lecture  
10:00-11:30  Invited Plenary Symposium: The Public Health Burden of Work Stress  
11:30-12:45  Lunch on your own/Roundtable Lunches  
   Symposium 1102: Brain-Gut Interactions and Interoceptive Awareness of Emotion (p. A2 – A3)  
   Symposium I193: Psychosocial Perspectives on Asthma: From Experimental Research to Behavioral Intervention (p. A3 – A4)  
   Symposium I438: Recent Trials for Depressed Patients with Coronary Artery Disease: Back to the Drawing Table? (p. A4 – A5)  
3:00 – 4:00  Paper Session: Depressive Symptoms and Subsequent Mortality: Possible Mechanisms (p. A101 – A102)  
   Paper Session: Effects of Early Childhood Stress on Immune and Endocrine System Functions (p. A102 – A103)  
   Paper Session: Health Consequences of Early Life Adversities (p. A106 – A107)  
5:15 – 6:30  Poster Session I (p. A35 – A55)  
6:30 – 7:30  Mentor / Mentee Reception

Friday, March 9
7:00-8:00  Breakfast Roundtables  
8:00-9:45  President’s Address and Alvin P. Shapiro Award Lecture  
10:00-12:00  Invited Plenary Symposium: New Frontiers in Psychosomatic Medicine: Affect Science, Brain Science and Genetics  
12:00-1:15  Lunch on your own/Roundtable Lunches  
1:15-2:45  Symposium 1114: Neural Underpinnings of Cardiovascular Vulnerability: Convergent Evidence from Neuroimaging (p. A8 – A9)  
   Symposium 1610: The Biopsychosocial Model in IBS, Chronic Fatigue Syndrome and Fibromyalgia (p. A9 – A10)  
   Invited Symposium: Advances in the Study of Health Disparities (p. A10 – A11)  
3:00-4:00  Symposium I161: Mind, Brain, Inflammation: Lessons From the Gut (p. A11 – A12)  
   Paper Session: Genetics (p. A109 – A110)  
   Paper Session: Sociodemographic Factors and Health in Middle and Older Aged Adults (p. A110 – A111)  
   Paper Session: Work Stress & CVD (p. A111– A112)  
4:15-5:15  Paper Session: Psycho-Oncology: Beliefs, Emotions and Support (p. A112– A113)  
   Paper Session: Risk Factors in Cardiovascular Disease (p. A113 – A114)  
   Paper Session: Associations of Anxiety & Depression with Physical Health, Health Behaviors & Intimate Relationships (p. A114 – A115)  
   Paper Session: Neuroscience & Affect Science (p. A115– A116)  
5:15-6:30  Poster Session II (p. A55 – A78)

Saturday, March 10
7:00-9:00  Program Committee Meeting  
8:00-9:00  Professional Education Committee Meeting  
8:00-9:00  Breakfast Roundtables  
9:00-10:00  Business Meeting  
10:00-10:45  Patricia R. Barchas Award Lecture  
11:15-12:45  Invited Parallel Sessions  
12:45-1:45  Lunch on your own/Roundtable Lunches  
   Symposium I120: Biobehavioral Processes Linking Inflammation and Health (p. A12 – A13)  
1:45-3:15  Symposium I064: Is Religion Good for Your Health? (p. A16 – A17)  
3:30-5:00  Symposium I021: Psychosomatic Disorders in DSM-V and ICD-10 (p. A17 – A18)  
   Symposium I330: Connecting Depression to the Biology of Cardiovascular Risk (p. A18 – A19)  
   Symposium I068: Health Consequences of Disturbed Sleep: Basic and Clinical Research Perspectives (p. A19 – A21)  
   Symposium I524: Rumination: A Key Factor in Biological Dysregulation (p. A21 – A22)  
5:00- 6:15  Poster Session III (p. A78 – A99)  
7:00  Dinner and Entertainment
An emotional state has two components, one evident in a characteristic physical sensation and the other as a conscious feeling. We sense our gastrointestinal motility and we consciously feel disgust. Classical experiments on emotion examine how external stimuli such as public speaking, mental arithmetic, the Stroop test, etc. change our body. The elements of these tasks are divided into visual, auditory, olfactory, taste, and somatosensory stimuli. However, recent expressions of emotion. The latter are broadly summarized as consisting of increased negative affect and interference in the conscious processing of negative affect. To explore the latter, we tested 65 healthy (M age = 38, 51 females) and 50 Rome II diagnosed IBS patients (M age = 44, 39 females) with an inventory of typical pain, the Brief Symptom Inventory measure of distress and the Levels of Emotional Awareness Scale (LEAS). In IBS patients LEAS scores were inversely associated with pain (r = -.38, p < .01) and distress (r = -.34, p < .01). In controls, LEAS scores were unassociated to pain but positively correlated with distress (r = .26, p < .05). These data indicate that in IBS patients lower emotional awareness is associated with greater pain and distress whereas healthy functioning is associated with awareness of distress. These findings are consistent with how implicit and explicit emotional processes are mediated in the brain. According to the levels of emotional awareness framework, implicit emotional responses (at levels 1 and 2) consist of somatic (visceromotor) and action (somatosensory) efferents of the autonomic nervous system, play a crucial role in the affective response and motivational drive. The magnitude and gain of these central neural reflex responses, as well as the conscious awareness of bodily sensations (e.g. the homeostatic emotion), is determined by the nature of the perturbation and the state of the central system. In addition, top-down corticolimbic modulation mediates the effect of environmental context, emotions, cognitions and memories. Neuroimaging studies in humans are consistent with the model of homeostatic emotions and confirm the central role of the anterior insula and the dACC in brain responses to a variety of different gut stimuli. They also implicate central arousal systems, and cortical limbic pontine interactions as important modulatory mediators. Changes in the activity and connectivity of involved brain regions by different types of therapies may be relevant for the development of novel treatments for functional GI disorders.

**Individual Abstract Number: 1103**

**BRAIN-GUT INTERACTIONS IN IRRITABLE BOWEL SYNDROME**

**Shin Fukudo, Behavioral Medicine, Tohoku University Graduate School of Medicine, Sendai, Miyagi, Japan**

Recent concept of brain science began to propose that formation of emotion initially depends on the interception, in which visceral perception is one of the demonstrable phenomena. On the other hand, irritable bowel syndrome (IBS) has been considered as one of psychosomatic disorders but recent research on IBS seems to be beyond this classic concept. Visceral hypersensitivity and dysregulation of brain-gut interactions are the key features of pathophysiology of IBS. Therefore, clarification of pathophysiology and pathogenesis of IBS may contribute to not only gastroenterology but also research on emotion. Determining substance that plays a key role in brain-gut interactions is a crucial step for clarifying pathophysiology of IBS. Peripheral administration of CRH antagonist, alaphelical CRH (ahCRH), improves visceral stimulation-induced increase in colonic motility, abdominal pain, and anxiety in IBS patients. Peripheral administration of CRH receptor-1 agonist selectively induces similar phenomena in IBS model rats. In controls with mild colonic distention, administration of ahCRH inhibits increase in regional cerebral blood flow (rCBF) detected by positron emission tomography at the anterior cingulate cortex (BA24), right PFC (BA9), and right parahippocampal gyrus (BA28) compared with that of placebo. In controls, the rCBF with intense colonic distention after the administration of ahCRH is less in the right PFC (BA9) than that after the administration of placebo. IBS patients show greater activation in the brain stem to the mild and intense distention than controls. Significantly more activated brain regions with intense distention between placebo and ahCRH treatments in IBS patients than that in controls are right anterior insula, right PFC (BA9), left parahippocampal gyrus (BA28). Functionally crucial role of CRH in limbic and prefrontal cortices during normal and abnormal visceral perception is suggested. Further research of CRH on regional brain function and emotional awareness of the body is warranted.
Individual Abstract Number: 1359

PSYCHOBIOLOGY OF PLACEBO RESPONSES IN BRAIN-GUT INTERACTION
Paul Eack, Psychosomatic Medicine, University Hospitals, Tuebingen, Germany, Sibylle Klosterhalfen, Institute of Medical Psychology, Heinrich Heine University, Dusseldorf, Germany

Placebo responses (PR) have been reported to be specifically high in functional bowel disorders such as the irritable bowel syndrome (IBS), ranging between 10 and 80 % in more than 80 randomized placebo-controlled clinical trials. However, meta-analysis and re-analysis of published data revealed that on average a 40 % PR rate is present, similar to other medical conditions such as in depression, and that design and other methodological factors ("regression to the mean") may contribute substantially to the high variability. Novel experimental designs (hidden treatment, balanced placebo design, multiple cross-over models) have been used to control for the PR in clinical trials. The mechanisms underlying the remaining "true" PR are thought to be either Pavlovian conditioning (PC) or manipulation of central sensitisation rather than due to hypervigilance then it may be possible to treat them effectively with drugs that block specific receptors.

Symposium 1193

PSYCHOSOCIAL PERSPECTIVES ON ASTHMA: FROM EXPERIMENTAL RESEARCH TO BEHAVIORAL INTERVENTION
Rosalind J. Wright, Medicine, Harvard Medical School, Boston, MA, Thomas E. Ritz, Psychology, Southern Methodist University, Dallas, TX, Duck-Hee Kang, School of Nursing, University of Alabama @ Birmingham, Birmingham, AL, Ricarda A. Joachim, Internal Medicine and Psychosomatics, Charité, Universitätsmedizin Berlin, Berlin, Berlin, Germany, Bruce D. Miller, Psychiatry and Pediatrics, SUNY at Buffalo, Buffalo, NY, Germany, Carol Bobb, Community Health Sciences, St. George's Hospital Medical School, London, London, UK

While it is well recognized that psychosocial factors influence the development and progression of asthma in various ways, the elucidation of underlying pathways and the translation of findings into clinically relevant interventions remains a challenge. This requires integration of behaviorally relevant asthma research being conducted across overlapping areas of scholarship, from basic animal models and human population-based studies to the implementation of behavioral interventions in the clinical setting. This symposium aims to bridge these research activities. In laboratory studies using a murine model of stress-induced asthma, researchers have demonstrated that environmental stressors lead to airway hyperresponsiveness and inflammation through neuroepileptic pathways. Both human and animal studies have also found an association between stress and the expression of a Th2 cytokine pattern. Research in birth-cohort studies has linked stress with blunted maternal hypothalamic-pituitary-adrenal functioning in pregnancy which, in turn, predicts higher total IgE expression. Whether immunomodulatory effects of maternal cortisol expression has implications for fetal sensitization and childhood allergy and asthma risk is being further examined. Furthermore, highlighting a potential interaction between psychopathology and airway pathophysiology, a laboratory stress paradigm demonstrated that depressed vs non-depressed asthmatic children show greater respiratory resistance. Finally, a brief intervention targeting patients' awareness of allergic and nonspecific triggers of their asthma has yielded improvements in patients' lung function, which were independent from their perceptions of asthma symptoms and control. This symposium will detail these findings and discuss implications for a translational approach in behaviorally oriented asthma research going forward.

Individual Abstract Number: 1197

AIRWAY CYTOKINE RESPONSES TO STRESS IN AN ANIMAL MODEL OF ASTHMA
Duck-Hee Kang, School of Nursing, University of Alabama @ Birmingham, Birmingham, AL

Stress may exacerbate asthma conditions. However, mechanisms by which stress modulates asthma exacerbation are unclear. Stress is known to alter immune responses, while the pathogenesis of asthma includes airway inflammation supported by a Th2 predominant cytokine profile. Furthermore, stress responses may differ between single acute stress and repeated stress. We therefore examined airway cytokine responses of Th2 (interleukin [IL]-4 and IL-5) and Th1 (IL-2 and gamma interferon [IFN-g]) cytokines to stress, comparing responses of asthmatic animals with those of non-asthmatic animals and responses to acute single stress with those to repeated stress. Sixty male BALB/c mice were divided into six groups: two control, two acute single stress and two repeated stress groups of asthma and non-asthma. Asthma was induced following a well-established murine model of asthma. Stress was administrated using open-field stress combined with mild rotation for 60 min once for acute single stress and for four consecutive days for repeated stress. Immediately after stress, mice were euthanized and bronchoalveolar lavage fluid was collected for cytokine measurements by ELISA. Results indicated that, in non-asthmatic mice, both single and repeated stress led to a significant decrease in IL-4, p < 0.001. In contrast, asthmatic mice showed a significant increase in IL-4, p=0.04 but a significant decrease in IFN-g, p=0.05 to acute stress, and significant decreases in IL-4, IL-5 and IFN-g, p<0.001 to repeated stress. These changes prompted significant shifts in Th1:Th2 cytokine balance. Furthermore, increased IL-4 responses to acute stress in asthmatic mice may explain a mechanism mediating the impact of acute stress on exacerbation of asthma condition. Future investigations should include a characterization of lung function corresponding to stress-induced airway cytokine changes.
ENRICHED ENVIRONMENT PREVENTS STRESS EFFECTS IN MURINE ALLERGIC AIRWAY INFLAMMATION
Ricarda A. Joachim, Internal Medicine and Psychosomatics, Charité, Universitätsmedizin Berlin, Berlin, Berlin, Germany

Despite the well documented clinical association of stress and bronchial asthma morbidity, experimental data on mechanisms is still limited. To explore pathways linking stress and asthma we employ an animal model that combines an established protocol of allergic airway inflammation with sound stress exposure. Our findings demonstrate that exogenously applied stress dramatically enhances airway reactivity and airway inflammation via the neurokinin-1 receptor which is the main receptor for the tachykinin substance P. After stress increased SP expression was found in airway innervating neurons and mice with allergic airway inflammation expressed higher levels of PPT-1 mRNA (encoding for substance P) under stress conditions. Furthermore, we identified the chemotactant eotaxin to be involved in stress increased eosinophilic airway inflammation. In humans there is growing evidence that stress reducing therapy can have positive effects on asthma symptoms and lung function. To investigate underlying mechanisms we are currently establishing a mouse model employing stress modulating housing conditions. We found that under the condition of enriched environment the effect of stress on allergic airway inflammation was reversed as quantified by leukocyte number in broncho-alveolar lavage (p< 0.001). Ongoing studies will dissect possible pathways.

BLUNTED CORTISOL RESPONSE PREDICTS ELEVATED IGE IN PREGNANT MOTHERS ENROLLED IN AN ASTHMA BIRTH-COHORT STUDY: PROJECT ACCESS.
Rosalind J. Wright, Medicine, Harvard Medical School, Boston, MA

Prenatal maternal stress may have long-lasting programming effects on the physiological development of children mediated through altered activity of the maternal hypothalamic-pituitary-adrenocortical (HPA) axis. Stress-induced altered activity of the maternal HPA axis may have immunomodulatory effects that influence expression of IgE during pregnancy. Elevated maternal IgE in utero may potentiate fetal sensitization to allergens and enhance atopic risk in infancy. We examined the relationship between diurnal salivary cortisol expression and total IgE among 89 pregnant mothers enrolled in the Asthma Coalition on Community, Environment, and Social Stress (ACCESS) project, a prospective cohort designed to study the effects of early life stress on childhood asthma risk. Salivary cortisol was collected five times per day over three days to assess basal awakening response, morning rise, diurnal slope, and area under the curve. Total IgE was dichotomized above or below the population median (48.95 IU/ml). Repeated measures mixed models were run controlling for race, income, and weeks pregnant at the time of cortisol sampling. Higher levels of maternal total IgE were significantly associated with a flatter diurnal cortisol slope (p=0.05). Examination of the cortisol curves showed that those with higher IgE demonstrated less of a decline during the evening. Blunted HPA functioning in these pregnant women is related to higher total IgE expression. The immunomodulatory effects of maternal cortisol expression during pregnancy may have implications for fetal sensitization and childhood allergy and asthma risk which warrants further study.

DEPRESSED ASTHOMATIC CHILDREN SHOW INCREASED RESPIRATORY RESISTANCE

Depression is associated with morbidity and mortality in childhood asthma. Miller's ANS Dysregulation Model of Emotions and Asthma posits that depression potentiates vagally mediated airway compromise. Previous research showed greater vagal activation and sympathetic withdrawal from baseline to emotional stimuli for depressed(D) versus non-depressed(ND) asthmatic children, supporting the depression-vagal activation link in the ANS model. This study tests the model further by comparing differences in pulmonary function in D versus ND asthmatic children in controlled laboratory conditions. Children, n=171, were recruited from an ER. Pulmonary function (FEV1 and respiratory resistance(Rint)) were assessed pre and post bronchodilator(BD). The Child Depression Inventory(CDI) assessed depression. Subjects with CDI scores >11 and those with scores <4 were identified. Of these, 32 children with FEV1 scores <80% predicted were selected for study: 17D, 15ND. There were no group differences in age, gender, race, SES or medication adherence. The movie "ET" and a stressful family interaction protocol were used to stimulate emotion. FEV1 and Rint were measured pre and post bronchodilator (BD) and 6 times during the protocol. Post-BD Rint showed no group differences, and was chosen as the optimal reference point to compare changes under experimental conditions. The D group showed greater mean Rint across conditions compared with the ND (t=3.13, p<0.01). The D group also showed greater increases in Rint (from post-BD to experimental condition) than the ND group in the 6 conditions: (t=2.08, p<0.05), (t=1.97, p<0.05), (t=1.63, p<0.10), (t=1.58, p<0.10), (t=1.61, p<0.10) and (t=1.82, p<0.10). Findings for the FEV1 measures were in the same direction but not significant. Taken together with the finding demonstrating a link between depression and vagal bias, these findings support the ANS model of vagally mediated effects of depressive emotion on airway function in asthma.

TARGETING AWARENESS OF ASThma TRIGGERS BY SKIN PRICK TESTING AND AVOIDANCE ADVICE IN PRIMARY CARE IMPROVES LUNG FUNCTION: A RANDOMIZED TRIAL IN PRIMARY CARE
Carol Bobb, Community Health Sciences, St. George's Hospital Medical School, London, London, UK, Gill Rowlands, Institute of Primary Care and Public Health, London Dental and Maxillofacial Hospital; London Dental and Maxillofacial Hospital; Chris Griffiths, MRC Asthma UK Centre for Allergic Mechanisms in Asthma, Centre for Health Sciences, Queen Mary, London; Thomas Ritz, Southern Methodist University, Dept of Psychology, Dallas, USA.

Whether allergen avoidance measures improve asthma control is uncertain. The content of primary care asthma reviews is under debate. We developed an asthma review protocol for practice nurses that included completion of an asthma trigger inventory, a structured allergy questionnaire, skin prick testing (SPT) and allergen and trigger avoidance advice (AAA). We tested this in a randomized controlled trial. Six practices in South London participated. Respiratory practice nurses were trained to deliver SPT and the AAA review. All practitioners invited participants in asthma clinics to participate. 179 patients with asthma were recruited and randomized to usual asthma check (UC) or AAA. Outcomes were measured prior to randomization and after four to six months by a blinded researcher, by questionnaires (asthma symptoms, asthma control, perceived control of asthma, and asthma self efficacy), and lung function tests plus symptoms, inhaler technique, and compliance audit. Groups were equivalent in demographic and asthma related variables at baseline. Both groups showed significant improvements in asthma self-efficacy. The intervention significantly increased awareness of trigger avoidance measures and improved indices of spirometric lung function (FEV1, FEV1/FVC) in the AAA group only. Positive audit results were found in both groups, while patients did not report changes in asthma symptoms or perceived control. A structured asthma review providing SPT and trigger avoidance advice, delivered in primary care by a nurse, results in clinically important improvements in lung function but not necessarily in patients perception of their asthma.
very few controlled trials evaluating the efficacy of antidepressants and psychotherapeutic interventions in reducing the intensity of depressive symptoms. Two trials have been recently completed and will be presented. Dr. Kenneth Freedland will present the benefit of cognitive behavioural therapy, in comparison to supportive stress management and usual care, among 123 CAD patients with both major and minor depression following coronary artery bypass graft surgery. Dr. Lesperance will present the background and design and Dr. Baker the results of a recently completed CREATE trial, a 2 X 2 factorial study evaluating the efficacy of 12 weeks of citalopram and interpersonal psychotherapy (IPT) for the treatment of major depression in a sample of 284 CAD outpatients. Dr. Katon will put these trials into perspective for the clinicians and draw some lessons for planning future trials for refining the treatment of depression in patients with CAD.

Individual Abstract Number: 1597

RESPONSES OF MAJOR VS. MINOR DEPRESSION TO TREATMENT AFTER CORONARY ARTERY BYPASS GRAFT SURGERY

Kenneth E. Freedland, Judith A. Skala, Robert M. Carney, Brian Steinmeyer, Psychiatry, Washington University School of Medicine, St. Louis, Missouri

We recently reported the primary outcomes of a randomized, controlled clinical trial (n=123) of 12 weeks of cognitive behavior therapy (CBT), supportive stress management (SSM), or usual care (UC) for depression after coronary artery bypass graft (CABG) surgery. CBT was superior to UC on the Hamilton Rating Scale for Depression (HAM-D-17) and the Beck Depression Inventory (BDI) at the 3-month post-treatment assessment, and at a 9-month follow-up. SSM was superior to UC on these measures at 3 months. We subsequently conducted a subgroup analysis to determine whether these treatment effects were moderated by baseline depression diagnosis. Sixty-six percent of the participants had major and 34% had minor depression at baseline according to DSM-IV criteria. Nearly 50% of the patients in all three groups were on non-study antidepressants during the trial. A mixed model with Type III fixed effects was used to evaluate the main effects of diagnosis groups were on non-study antidepressants during the trial. A mixed model with Type III fixed effects was used to  evaluate the main effects of diagnosis, treatment group (p=.12), antidepressant use (p=.25), time with Type III fixed effects was used to evaluate the main effects of diagnosis and its interactions with time and treatment. The effects on the HAM-D were: diagnosis × treatment (p=.001), treatment × group (p=.002), antidepressant use × time (p=.0001), diagnosis × time (p=.02), diagnosis × group (p=.15), group × antidepressant (p=.25), and diagnosis × group × time (p=.06). The results were similar for the BDI. Thus, baseline diagnosis was a significant predictor of depression outcomes, and it affected the course of depression over 9 months, but it did not significantly moderate the effects of treatment. This suggests that patients with either major or minor depression after CABG surgery can benefit from CBT or SSM.

Individual Abstract Number: 1525

THE DESIGN AND RATIONALE OF CREATE TRIAL: A 2 BY 2 FACTORIAL RANDOMIZED TRIAL OF CITALOPRAM AND INTERPERSONAL PSYCHOTHERAPY FOR MAJOR DEPRESSION IN PATIENTS WITH CORONARY ARTERY DISEASE

François Lesperance, Psychiatry, Centre Hospitalier de l'Université de Montréal, Montreal, Quebec, Canada, Diana Koszycyki, Nancy Fusser-Smith, Marc-André Laliberté, Louis T. vanZyl, John Robert Swenson, Kayhan Ghatavi, Beth L. Abramson, Paul Dorian, Marie-Claude Guertin and Brian Baker

The primary aim of the CREATE study (Canadian cardiac randomized evaluation of antidepressant and psychotherapy efficacy) was to determine the efficacy of citalopram compared to matched placebo, and interpersonal psychotherapy (IPT) compared to clinical management (CM) in reducing depressive symptoms in 284 outpatients with major depressive disorder (MDD) and coronary artery disease (CAD) from 9 Canadian centers. Eligibility criteria included current unipolar MDD of minimum 4 weeks duration, a score of at least 20 on the 24 item Hamilton Depression Rating Scale (HAM-D) at baseline, a history of angioplasty, bypass surgery or myocardial infarction with currently stable CAD. Subjects were randomized both to 20–40mg citalopram or placebo and to 12 weekly sessions of CM or IPT. IPT is a semistructured psychotherapy dealing with themes such as role transition which apply to cardiac patients. It had not been previously evaluated in patients with MDD and CAD. IPT was delivered by trained IPT therapists. If the HAM-D score was > 8 at 6 weeks, citalopram dosage was increased from 20 to 40mg, as long as it was tolerated. Tolerability and safety were also evaluated including blood pressure, electrocardiogram and adverse events. Trained psychologists assessed the primary outcome, the HAM-D by telephone. The secondary outcome was the Beck Depression Inventory (BDI-II).

Individual Abstract Number: 1575

RESULTS OF THE CREATE TRIAL: A 2 BY 2 FACTORIAL RANDOMIZED TRIAL OF CITALOPRAM AND INTERPERSONAL PSYCHOTHERAPY FOR MAJOR DEPRESSION IN PATIENTS WITH CORONARY ARTERY DISEASE

Brian Baker, Psychiatry, University of Toronto, Toronto, Ontario, Canada, Nancy Frasure-Smith, Diana Koszycyki, Marc-André Laliberté, Louis T. vanZyl, John Robert Swenson, Kayhan Ghatavi, Beth L. Abramson, Paul Dorian, Marie-Claude Guertin and François Lesperance

This study randomized 284 patients of which > 83% of those assigned to interpersonal psychotherapy (IPT) or clinical management (CM) completed all 12 weekly sessions. 75% were male and 43% had previously had a major depressive episode. 94% completed the final Hamilton Depression scale (HAM-D). 70% of patients had a final dosage of 40mg citalopram/ placebo. Mean duration of sessions was 48 minutes for IPT and 20 minutes for CM. Citalopram reduced depressive symptoms more than placebo over 12 weeks. The HAM-D difference was 3.3 points (96.7% CI .80 to 5.85; P = .005); at 6 weeks this effect was apparent (P = .01). Citalopram was efficacious for recurrent depression as compared to those experiencing MDD for the first time. However, there was no additional benefit of adding IPT to CM (HAM-D difference -2.3 points; 98.3% CI, -4.78 to .27; P = .06), favoring CM over IPT in lowering depressive symptoms. Subgroup analysis suggested that CM was more efficacious in lowering depression compared to IPT for those subjects with low levels of functional performance and social support. There was no impact of active drug on electrocardiogram (including QTc) and blood pressure. There were 12 cardiovascular and 23 other serious adverse events classified by independent committee. Citalopram can be considered as a first line treatment of MDD in patients with CAD. So far it has not been shown if any form of psychotherapy, besides CM is indicated for such patients.

Symposium 1707

COGNITION, EMOTION AND STRESS RESPONSE

Nicholas D. Giardino, Psychiatry, University of Michigan, Ann Arbor, MI, Keith D. Sudheimer, Psychiatry, Neuroscience Program, University of Michigan, Ann Arbor, Michigan, James L. Abelson, Anthony P. King, Psychiatry, Samuel A. McLean, Emergency Medicine and Psychiatry, Israel Liberzon, Psychiatry, University of Michigan, Ann Arbor, MI

Presentations in this symposium include: 1) Studies of how psychological factors, including “control” and “coping” techniques can acutely moderate HPA response to pharmacological activation with the CCK-B agonist, pentagastrin, and how these findings may help to develop stress inoculation techniques with specific efficacy in reducing HPA responses to unavoidable stressors, 2) fMRI studies investigating the effects of exogenous cortisol administration on subjective emotional states, responses to emotional stimuli, and brain activity associated with emotional processes, 3) a study that examined HPA axis markers and stress characteristics that were previously associated with post-surgical psychopathology to prospectively investigate risk factors for psychiatric morbidity following major abdominal surgery, and 4) studies of physiological measures taken in the emergency department after a motor vehicle collision that were associated with the later development of pain and psychological problems. Our discussant will consider the implications of these findings for our understanding of cognitive-emotional-somatic interactions and applications to the practice of psychiatry, psychology, surgery, and emergency medicine.
Individual Abstract Number: 1754

PSYCHOLOGICAL MODULATION OF THE HUMAN NEUROENDOCRINE STRESS RESPONSE TO PHARMACOLOGICAL ACTIVATION
James L. Abelson, Israel Liberzon, Psychiatry, University of Michigan, Ann Arbor, MI, Hedieh Briggs, Psychiatry, University of Michigan, Ann Arbor, MI, USA; Elizabeth A. Young, Samir Khan, Psychiatry, University of Michigan, Ann Arbor, MI

The hypothalamic-pituitary adrenal (HPA) axis may mediate the deleterious impact of stress on emotional and physiological health. Precise identification of psychological modulators of the human HPA axis may help us design interventions to reduce this impact. Novelty, control, and coping are modulators of HPA stress responses in animals and may be particularly salient to stress effects on health, but these factors have been difficult to study in humans. We have previously shown that a cognitive intervention (CI) addressing novelty, control and coping can reduce HPA response to pharmacological activation (with the CCK-B agonist, pentagastrin). We have now replicated this finding and “dissected” the intervention. Healthy subjects were assigned to one of 4 groups: (1) standard instructions, (2) full CI; (3) cognitive coping component; (4) control component alone. Instructions were administered prior to a two visit (placebo first) HPA axis activation paradigm using pentagastrin. Interventions reduced cortisol responses. "Control" and "Coping" components were equally effective and were as effective alone as when combined. Brief psychological manipulation can significantly modulate activity in HPA activation paradigms. We produced similar reductions in cortisol using (1) simple provision of control over exposure to an activating agent, or (2) cognitive preparation that reduced potential surprise and enhanced cognitive coping. The two components were independently effective. "Control" and "coping" techniques can acutely moderate HPA responses to activation and may have utility in efforts to combat the negative health effects of stress. Laboratory studies like this may help us develop stress inoculation techniques with specific efficacy in reducing HPA responses to unavoidable stressors.

Individual Abstract Number: 1713

THE EFFECTS OF CORTISOL ON EMOTION AND BRAIN REGIONS PROCESSING EMOTION
Keith D. Sudheimer, Stephan F. Taylor, Brian Martis, James Abelson, Psychiatry, University of Michigan, Ann Arbor, MI, Andrea Manduzzi, Psychiatry, University of Michigan, Ann Arbor, Michigan, Diana Mohyai, Israel Liberzon, Psychiatry, University of Michigan, Ann Arbor, MI

Cortisol is suspected to affect a wide variety of physiological and psychological processes and play a critical role in Major Depressive Disorder. Surprisingly, the direct effects of cortisol on the neural correlates of emotion have scarcely been investigated. In this fMRI study, we investigate the effects of exogenous cortisol on subjective emotional states, responses to emotional stimuli, and brain activity associated with emotion in healthy subjects. Analysis was conducted using 27 subjects assigned to one of 3 groups: placebo (P), exposure to a single exposure of 100mg hydrocortisone (SD100), or an extended exposure to 25mg/day over the course of 5 days (ED25). During the 5 days, subjects rated their emotional state 4 times/day using the PANAS. During scanning, subjects viewed emotional images from the IAPS and facial expressions. Both image types contained stimuli happy, sad, or neutral in nature. After scanning, subjects rated the intensity of their emotional reactions on Likert scales for happiness, sadness, neutrality, valence, and arousal. The ED25 group rated their emotional state, as measured by the PANAS, more sad, compared to the P group over the 5 days. Similarly, in ratings of emotion induced by the stimuli, when viewing sad stimuli, subjects in the ED25 group reported lower valence. A negative linear correlation was also found between group and valence ratings of sad stimuli. Preliminary fMRI results indicate exposure to exogenous cortisol modulate activity in brain regions involved in emotional processes. These regions include the PFC, Insula, Hippocampus, PCC, Basal Ganglia, Amygdala and Subgenual Cingulate. The influence cortisol exerts on brain regions during basic emotion processes may exemplify a critical bottom-up process that impacts a wide variety of physiological and psychological outcomes.

Individual Abstract Number: 1755

PRE- AND PERI-SURGICAL HPA AXIS NEUROENDOCRINE FUNCTION, SURGICAL STRESS, AND POST-SURGICAL PSYCHOPATHOLOGY
Anthony P. King, Bardia Gholami, Psychiatry, Peter Henke, Vascular Surgery, James Abelson, Israel Liberzon, Psychiatry, University of Michigan, Ann Arbor, MI

Stress-related psychiatric disorders (MDD and PTSD) are associated with dysregulation of HPA axis neuroendocrine system, and appropriate cortisol response to stress/trauma has been hypothesized to be protective against development of PTSD. We prospectively examined HPA axis markers and stress characteristics as specific risk factors for psychiatric morbidity following major abdominal surgery, which we previously associated with psychiatric risk. Pre-surgical saliva cortisol circadian area under curve (AUC) and plasma ACTH and cortisol responses to surgery, peri-surgical clinical measures, and psychiatric diagnoses (MDD, PTSD, partial PTSD) and symptom severity (BDI, CAPS and IES) were assessed at intake and at 3 and 9 month follow-ups in abdominal aortic aneurism patients undergoing surgical repair (n=64) or conservative treatment (n=57). Having a surgery (OR=.63, p=.04) and having high baseline AUC saliva cortisol (OR=.29, p=.06) emerged as risk factors for de novo psychiatric disorders at followup in a logistic regression model with all subjects (n=121) controlling for age, gender, stress characteristics as specific risk factors for psychiatric morbidity following major abdominal surgery, which we previously associated with psychiatric risk. Pre-surgical saliva cortisol circadian area under curve (AUC) and plasma ACTH and cortisol responses to surgery, peri-surgical clinical measures, and psychiatric diagnoses (MDD, PTSD, partial PTSD) and symptom severity (BDI, CAPS and IES) were assessed at intake and at 3 and 9 month follow-ups in abdominal aortic aneurism patients undergoing surgical repair (n=64) or conservative treatment (n=57). Having a surgery (OR=.63, p=.04) and having high baseline AUC saliva cortisol (OR=.29, p=.06) emerged as risk factors for de novo psychiatric disorders at followup in a logistic regression model with all subjects (n=121) controlling for age, gender, and baseline psychiatric symptoms. Among surgical patients, basal cortisol AUC predicted postoperative PTSD symptoms (r=.47, p<.005), and prolonged surgical intubation also predicted psychiatric diagnosis (OR=.34, p=.05) and PTSD symptoms (r=.44 p<.05); both predicted PTSD symptoms in a regression model (R2=.31) controlling for age and gender. Interestingly, while high surgical cortisol response predicted lower PTSD symptoms (r=-.42, p=.005), pharmacological blockade of surgical cortisol responses did not affect psychiatric outcome; patients treated with etomidate showed no differences in psychiatric outcomes. Thus baseline and surgical cortisol response emerge as potential trait risk markers for psychiatric stress vulnerability, yet magnitude of surgical cortisol response in and of itself may not explain psychiatric risk.

Individual Abstract Number: 1800

EMERGENCY DEPARTMENT PHYSIOLOGIC PREDICTORS OF PAIN AND PSYCHOLOGICAL SEQUELAE AFTER MOTOR VEHICLE COLLISION
Samuel A. McLean, Emergency Medicine and Psychiatry, University of Michigan, Ann Arbor, MI

Purpose: Stress system dysregulation may contribute to the development of both chronic pain and psychological sequelae after motor vehicle collision (MVC). However, the association between emergency department (ED) cortisol levels and these sequelae has not previously been examined. Material and Methods: Patients being evaluated in the ED after MVC were recruited into an ongoing multicenter study which includes ED baseline assessment and 1-month outcome evaluation. ED assessment includes salivary cortisol collection. Outcome evaluation includes assessment of persistent moderate or severe MVC-related neck or back pain symptoms (0-10 scale), PTSD(IES-R score >33), and significant depressive symptoms (CES-D > 27). Associations between ED cortisol levels and 1 month outcomes were assessed via ANOVA and t-tests. Results: To date, follow-up data has been obtained in 48 of 49 patients who have reached the 1 month follow-up time point (98%, 28 female, 20 male, age 18-84, mean 36.4 years). ED cortisol levels were associated with 1 month outcome (Table 1). Conclusion: These pilot data suggest that cortisol response to trauma, assessed in the ED, is associated with post-MVC pain and psychological sequelae.

| Table 1. Association between mean ED cortisol level and persist  |
|-----------------|-----------------|
| 1 Month Outcome (n): | ED Cortisol (ug/mL): |
| No Symptoms (26) | .33 ± .46 |
| Pain Only (10) | .27 ± .29 |
| PTSD ± Pain (5) | .18 ± .10 |
| Depression ± Pain (2) | 1.48 ± 2.0 |
| Depression & PTSD ± Pain (5) | .52 ± .50 |
| ANOVA F statistic (p value) | 2.777 (.039) |
This symposium will describe basic biobehavioral processes involving endocrine and immune factors underlying cardiovascular disease (CVD) risk, chronic lung disease (CLD) and HIV/AIDS. Our first speaker will provide evidence that chronic stress exposure, social isolation and depression are related to elevation of adhesion molecules, inflammatory markers and proinflammatory cytokines that predict CVD; individual differences in stress-induced inflammatory responses also predict progression of CVD risk. The second speaker will provide evidence that habitual sleep duration <6 or ≥9 hours is associated with obesity, inflammation and metabolic syndrome, which predicts CHD. Our third speaker compared prematurely born children who neonatally received dexamethasone (DEX) or hydrocortisone (HC) to prevent CLD versus an untreated group and found that DEX but not HC programs behavior, the HPA-axis and immune system. The fourth speaker will provide evidence that distress, inflammation and oxidative stress predict CVD and other morbidities in HIV/AIDS and that participants treated with the antioxidant mineral selenium compared with placebo showed a significant decline in oxidative stress but not inflammation. Greater levels of selenium predicted HIV viral load, which in turn predicted increased CD4 count. These findings indicate that understanding psychoneuroimmunological aspects of disease is important for moving research from bench to bedside.

Individual Abstract Number: 1405

PSYCHOSOCIAL FACTORS AND INFLAMMATION IN CARDIOVASCULAR DISEASE
Andrew Steptoe, Epidemiology and Public Health, University College London, London, N/A, United Kingdom

Inflammatory processes are central to the development of atherosclerosis and coronary heart disease. They contribute to vascular endothelial dysfunction, the infiltration of lipoproteins and monocytes into the intimal layer of the vessel wall, foam cell formation and the proliferation of smooth muscle cells, and at later stages to plaque instability and thrombus formation. Acute psychological stress activates proinflammatory processes, while psychosocial factors including chronic stress exposure, social isolation and depression have been related in population studies with elevated levels of adhesion molecules, inflammatory markers such as C-reactive protein and fibrinogen, and proinflammatory cytokines. There is accumulating evidence that individual differences in stress-induced inflammatory responses predict the progression of cardiovascular risk. For example, we have found that heightened stress-induced fibrinogen and interleukin-6 responses are associated with greater increase in ambulatory systolic blood pressure (BP) over a 3 year period, independently of baseline ambulatory BP, cardiovascular stress reactivity, and baseline levels of inflammatory markers. Ongoing inflammatory activity in the vasculature is likely to promote changes in the arterial wall leading to reductions in elasticity. In a recent study, we measured arterial stiffness using in vivo pulse wave velocity and the augmentation index in 302 healthy men and women, aged 35-63 years, and recorded psychophysiological stress testing. Heightened fibrinogen and tumor necrosis factor alpha stress responses were positively associated with greater arterial stiffness independently of age, gender, adiposity, smoking, BP and lipid levels. However, it has not yet been established that activation of inflammatory processes mediates psychosocial influences on cardiovascular disease development in humans, since relevant prospective studies have not been completed.

Individual Abstract Number: 1408

SLEEP DURATION AND THE METABOLIC SYNDROME
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Sleep is implicated in the development of cardiovascular disease (CVD), but the biobehavioral pathways important to the sleep-CVD relationship are just beginning to be explored. Sleep duration (<6 or ≥9 hours) is associated with independent CVD risk factors including obesity, hypertension and inflammation. We hypothesized that sleep duration would be similarly predictive of the metabolic syndrome, which represents a clustering of risk factors for CVD. Reported habitual sleep duration and components of the metabolic syndrome were evaluated in a population-based sample of 1,295 adults (52% female, 16.5% black, age range = 30–54 years). Metabolic syndrome was present in 21% of the sample. Logistic regression was used to model the hypothesized U-shaped relationship between sleep duration (quadratic term) and the metabolic syndrome, after adjusting for effects of age, sex and race. The curvilinear relationship between sleep duration and the metabolic syndrome was significant (Exp(B) 1.09, CI 1.01–1.16, p<.05). We then evaluated relationships among sleep duration and individual components of the metabolic syndrome. Significant U-shaped relationships were observed for abdominal adiposity and impaired glucose regulation (p values <.05). In both models, the prevalence of abdominal adiposity and impaired glucose regulation was highest among short and long sleepers, as compared to the 7-8 hour reference group. Results suggest that risk for the metabolic syndrome is elevated in short and long sleepers and that this risk is seen in mid-life men and women without clinical history of atherosclerotic disease.

Individual Abstract Number: 1414

LONG TERM PROGRAMMING EFFECTS OF NEONATAL STEROID TREATMENT IN HUMANS: CONSEQUENCES FOR NEURODEVELOPMENTAL OUTCOME, HPA AXIS REACTIVITY AND THE CYTOKINE BALANCE AT SCHOOL AGE
Cobi J. Heijnen, Immunology, Children University Hospital, Utrecht, N/A, The Netherlands, Barry Hurwitz, Psychology, University of Miami, Miami, FL, N. Schneiderman, Psychology, University of Miami, Coral Gables, Florida

Prematurely born children who neonatally received dexamethasone (DEX) to prevent chronic lung disease were compared to a group of children neonatally treated with the clinically equally effective drug hydrocortisone (HC) and an untreated reference group (REF) in a retrospectively matched cohort study at school age. The groups were matched for gestational age, birth weight and year, gender, severity of respiratory distress syndrome and neurological complications. From 141 children (DEX, n=46; HC, n=52; REF, n=43) the Child Behavioral Checklists for parents and teacher and the Movement Assessment Battery were analyzed. Moreover, we tested HPA-axis function in a response to the Trier Social Stress test. In addition, the capacity to produce pro- and anti-inflammatory cytokines was determined. Girls neonatally treated with DEX had a significantly poorer performance on nearly all behavioral scales as compared to HC-treated girls and the REF group. In contrast, DEX-treated boys did not differ from the HC- and REF-group. Neuromotor development was significantly poorer in both girls and boys of the DEX-group compared to the HC and REF group. With respect to the response to a laboratory stressor, the HPA axis of the DEX-treated children showed a hyporesponsiveness. Moreover, the cytokine TH1/TH2 balance of DEX-treated children was increased compared to the REF group. We conclude that neonatal treatment with DEX but not HC programs behavior, HPA-axis and immune system. We also suggest that HC is a safe alternative for DEX for the neonatal treatment of CLD.

Individual Abstract Number: 1415

DISTRESS, INFLAMMATION, OXIDATIVE STRESS AND IMMUNE RECONSTITUTION IN HIV/AIDS
Barry Hurwitz, J. Klau, Psychology, University of Miami, Miami, FL, J. Greeson, Psychology, Duke University Medical Center, Durham, NC, M. Llabre, Psychology, University of Miami, Miami, FL, N. Schneiderman, Psychology, University of Miami, Coral Gables, FL

Distress, inflammation and oxidative stress are possible sources of morbidity in HIV/AIDS. Previously, we examined distress and HIV disease severity and showed that greater distress predicted greater disease severity, indexed by...
The vagal (high frequency [HF]) component of heart rate variability (HRV) is known to predict survival in post-MI patients and is thought to reflect vagal antagonism of sympathetic influences. Previous studies of the neural correlates of vagal tone involved cognitive or mental stress tasks. To explore the neural substrates of vagal tone during emotion, we correlated HF-HRV with measures of cerebral blood flow (rCBF) derived from positron emission tomography (PET) and 15O-water in 12 healthy women. Happiness, sadness, disgust and three neutral conditions were each induced by film clips and recall of personal experiences (12 conditions). Inter-beat intervals derived from ECG (lead II) recordings during the 60-second scans were spectrally analyzed, generating 12 separate measures of HF-HRV in each subject. The six emotion (E) and six neutral (N) conditions were grouped together. We report correlations between HF-HRV and rCBF specifically attributable to emotion (E minus N). This random effects analysis in SPM2 updates a previous preliminary report of our findings from a fixed effects analysis in SPM98. Four brain areas survived correction for multiple comparisons at the cluster level (p<.05) when the significance threshold for the second-level contrast was set at p<.001 (z=3.11). Three frontal areas, the right superior (26 43 5; BA 46) and bilateral (left-right) medial prefrontal cortices (-6 47 5; BA 24, 32) were significant at p values of 0.025, 0.025 and 0.014, respectively. The right parietal cortex (44 -29 47; BA40) was significant at p<0.043. These new random effects findings, which generalize to the population, demonstrate a predominant role of the right hemisphere, as well as a bilateral medial frontal area, in the regulation of vagal tone during emotion.

Individual Abstract Number: 1208

FUNCTIONAL NEUROANATOMY OF EXAGGERATED CARDIOVASCULAR REACTIVITY TO STRESS
Peter J. Gianaros, J Richard Jennings, Karen A. Matthews, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Individuals who show exaggerated blood pressure reactions to psychological and physical stressors are at increased risk for hypertension, atherosclerosis, and stroke. At present, the brain systems that mediate individual differences in blood pressure reactivity remain largely undefined. The objective of this fMRI study was to replicate our preliminary findings demonstrating that individuals with a tendency to show exaggerated blood pressure reactivity also show...
heightened stressor-induced activation of the posterior cingulate, an area that may support the processing of emotionally self-relevant information (Psychosom Med, 67, 31-39, 2005). Participants were 46 healthy postmenopausal women (65-71 yrs) who completed a performance-titrated Stroop color-word task in a laboratory and an fMRI testing session. Results from the fMRI session demonstrated that the Stroop task engaged dorsolateral, mid-cingulate, and posterior parietal areas that support effortful cognitive processing. Replicating preliminary findings, increased posterior cingulate activation correlated with a larger task-induced increase in systolic pressure across individuals (r = 0.58, p < 0.001). Building on preliminary findings, increased blood pressure reactivity covaried across individuals with heightened activation in other areas implicated in stress-related cardiovascular control: the perigenual cingulate, orbitofrontal cortex, anterior insula, and cerebellum (rs > 0.49, ps < 0.005). Further, when entered as a set in hierarchical regression analyses, activation values in these areas uniquely predicted task-induced changes in systolic and diastolic pressure (R2 changes > 0.30, ps < 0.05), after controlling for task accuracy and subjective reports of stress. We speculate that heightened stressor-induced activation of cingulate, orbitofrontal, insular, and cerebellar areas may represent a functional neural phenotype that characterizes individuals prone toward exaggerated cardiovascular reactivity and possibly increased cardiovascular disease risk.

Individual Abstract Number: 1211

SHAPING OF AUTONOMIC REACTIONS BY PERIPHERAL FEEDBACK: FURTHER INSIGHT INTO CARdioVASCULAR VULNERABILITY.

Hugo D. Critchley, Psychiatry, Brighton and Sussex Medical School, Brighton, East Sussex, UK, Marcus A. Gray, WDIN, UCL Institute of Neurology, London, GL, UK, Peter Taggart, Heart Hospital, UCLH, London, GL, UK

Afferent feedback is central to control bodily arousal states at both homoeostatic and behavioural levels. Combining neuroimaging with patient studies permits dissection of afferent and efferent components of autonomic control. A PET study [Critchley et al 2001] of patients with peripheral Pure Autonomic Failure suggests a hierarchical organisation to this feedback representation: Brainstem and insula were implicated in a first order mapping, whereas activity within posterior and mid cingulate cortices was sensitive to the second order context of feedback during physical and mental stress. Subsequent brain imaging studies highlight the role of insula in interoceptive representations and suggest finer dissociation between vagus nerve and spinal cord afferent mapping within prefrontal, cingulate and insula cortices. A PET study of patients with cardiovascular disease [Critchley Taggart et al 2005], observed that lateralization of brainstem activity during stress predicted pro-arrhythmic states of the heart. This observation is consistent with an efferent lateralization account of arrhythmogenesis [Lane & Schwartz 1987]. However, we suspected that this abnormal efferent drive is amplified by inhomogeneous feedback from a diseased heart. We have therefore identified, using EEG, a surface brain potential corresponding to afferent (baro/mechanoreceptor) signals generated with each contraction. The potential reflects myocardial function, correlating with cardiac output (not blood pressure) and predicting pro-arrhythmic electrical changes in repolarization. This observation represents a novel index of afferent cardiac information, and highlights the role of brain-heart loops and common afferent/efferent substrates in neural control of adaptive and pathological autonomic reactions to stress.

This joint symposium of APS and Functional Brain-Gut Group includes two prospective population-based studies. One included a group free of chronic widespread pain (fibromyalgia) but at risk of developing it. HPA dysfunction at baseline predicted later onset of CWP even after controlling for confounders suggesting that psychosocial factors are moderated through dysfunction of HPA axis in the onset of CWP. In the other study 1018 primary care patients were followed up after an acute episode of infection and most psychological predictors were common to the onset of later CFS and IBS but depression was associated only with CFS whereas perceived stress predicted only IBS. This study indicates similar, but not identical, psychological predictors of IBS and CFS. In a clinical study of IBS patients it was found that 24-hr urine cortisol levels were significantly higher in IBS patients compared with healthy controls and patients who had both IBS and fibromyalgia, whereas the last group (IBS+FM) had a higher number of cortisol peaks than IBS only suggesting possible differences between these syndromes. However, HPA axis parameters were correlated with symptom ratings of arousal and anxiety suggesting that levels of stress/anxiety may be more closely associated with altered HPA axis function than the actual syndrome. A secondary analysis of a randomised controlled trial showed that both psychotherapy and antidepressants led to improved health-related quality of life in patients with severe IBS (n=200) but that the main predictor of this success was a high baseline high somatisation score. These studies suggest future work is needed to clarify the role of the HPA axis and psychological predictors in people at risk of developing of CFS, IBS or CWP. In established syndromes the HPA axis may be related to some aspect of mental state, possibly somatisation, rather than the particular syndrome.

Individual Abstract Number: 1639

PSYCHOSOCIAL RISK FACTORS ARE MODERATED THROUGH DYSFUNCTION OF THE HYPOTHALAMIC-PITUITARY-ADRENAL STRESS AXIS IN THE ONSET OF CHRONIC WIDESPREAD MUSCULOSKELETAL PAIN

John McBeth, ARC Epidemiology Unit, University of Manchester, Manchester, UK, UK, Alan J. Silman, Yee H. Chiu, ARC Epidemiology Unit, David Ray, Medicine, Christopher Dickens, Psychiatry, University of Manchester, Manchester, ., UK, Gary Macfarlane, Epidemiology, University of Aberdeen, Aberdeen, Scotland

Background: To test the hypothesis that abnormalities in the hypothalamic-pituitary-adrenal (HPA) stress response system would act as an effect moderator between HPA function and the onset of chronic widespread pain (CWP). Methods: We conducted a population based prospective cohort study. Current pain and psychosocial status were ascertained in 11,000 subjects. Of the 768 eligible subjects free of CWP but at future risk based on their psychosocial profile, 463 were randomly selected and 267 (58%) consented to assessment of their HPA axis function. Diurnal function was measured by morning (9am) and evening (10pm) salivary cortisol. Serum cortisol levels were measured after a low dose (0.25mg) overnight dexamethasone suppression test, and a potentially stressful clinical examination. All subjects were followed up 15 months later to identify new onset CWP cases. Results: 241 (93.4%) completed the follow up study and 28 (11.6%) reported new CWP. High post dexamethasone (odds ratio = 3.5, 95% confidence Interval (CI) (1.2, 10.7)), low morning salivra (1.4 (0.5, 3.9)) and high evening salivra (1.9 (0.6, 5.9)) levels were all associated with CWP. These three factors were independent and additive predictors of CWP (odds ratio for all 3 factors 8.5, 95% CI (1.2, 10.7)), controlling for depression, sleep disturbance, recent traumatic life events, and pain status. One or more of these three HPA factors identified 26 (93%) new onset CWP cases. Conclusions: Among a group of psychologically at risk subjects, dysfunction of the HPA axis helps to distinguish those who will and will not develop new CWP.
determine whether they met published diagnostic criteria for IBS and/or CFS. This study of irritable bowel syndrome (IBS) and fibromyalgia (FM) aimed:

IN IRRITABLE BOWEL SYNDROME AND FIBROMYALGIA DYSREGULATION OF THE HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS AND ITS ASSOCIATION WITH SYMPTOMS IN IRRITABLE BOWEL SYNDROME AND FIBROMYALGIA

Rona E. Moss-Morris, School of Psychology, University of Southampton, Southampton, UK, Meagan Spence, Psychological Medicine, University of Auckland, Auckland, New Zealand

This study aimed to evaluate prospectively the cognitive behavioral model in relation to the onset of irritable bowel syndrome (IBS) and chronic fatigue syndrome (CFS). 1018 primary care patients with an acute episode of campylobacter gastroenteritis or infectious mononucleosis were recruited. At the time of infection participants completed measures of perfectionism, mood, somatisation, perceived stress, illness perceptions and illness behaviour. Six months after the initial infection they completed a second questionnaire to determine whether they met published diagnostic criteria for IBS and/or CFS. 183 participants were excluded from analysis on the basis of a pre-existing condition which could explain their symptoms. 7 participants who met criteria for both IBS and CFS were also excluded. Logistic regressions controlling for age, gender and severity of infection showed that anxiety, somatisation, perfectionism, negative illness beliefs and an all-or-nothing pattern of responding to symptoms predicted both the onset of IBS and CFS (p < .05). However, perceived stress predicted only IBS, while depression predicted only CFS. Cross sectional comparisons of the IBS and CFS patients showed that the CFS group was significantly more disabled, more likely to take time off work, inactive and distressed than the IBS group. The results suggest substantial overlap in the psychological predictors of the two syndromes. In support of the cognitive behavioral model, high levels of negative perfectionism, negative illness beliefs and all-or-nothing behavior were common predictors. But there were differences; CFS was more closely associated with pre-existing depression and CFS patients were more disabled and distressed than those who developed IBS. The results suggest subtle differences between the predictors of these disorders.

DYSREGULATION OF THE HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS AND ITS ASSOCIATION WITH SYMPTOMS IN IRRITABLE BOWEL SYNDROME AND FIBROMYALGIA

Lin Chang, CURE: Digestive Diseases Research Center, UCLA, Los Angeles, California, Naliboff Bruce, Psychology, UCLA, Los Angeles, Ca

This study of irritable bowel syndrome (IBS) and fibromyalgia (FM) aimed: 1) to compare secretion of adrenocorticotropic hormone (ACTH) and cortisol in IBS, FM and healthy controls, 2) to correlate stress hormone levels with symptoms, psychosocial factors, and colonic mucosal cytokine levels in IBS patients. METHODS: 66 female subjects (IBS only [n=24], IBS+FM [n=17] and healthy controls [n=25]) underwent 24 hr collections of plasma ACTH and cortisol at 10min sampling intervals, and of urine cortisol. Pain and psychosocial factors were assessed by questionnaires and structured interviews. HPA axis measures were analyzed by summary statistics including total secretion measured by area under the curve, cosinor analysis of the circadian rhythm, pulsatility and peak analysis. RESULTS: 24 hr urine free cortisol levels were higher in IBS only (124±14 mg) than controls (81±9 mg) and IBS+FM (67 ± 10) (p <.05). Early morning plasma cortisol levels were higher, and plasma ACTH levels were significantly lower, in both patient groups compared to controls (p<.05). IBS+FM had a higher number of cortisol peaks than IBS only (p<0.05). Pain ratings did not correlate with the HPA axis parameters but stress symptom ratings of arousal and anxiety positively correlated with mean and maximal levels of plasma cortisol, and anxiety ratings also positively correlated with number of cortisol peaks and urinary cortisol levels (p< 0.05). CONCLUSIONS: IBS patients with or without FM show evidence of dysregulated basal HPA axis activity, suggesting an enhanced HPA axis with greater negative feedback control of cortisol. Further studies are needed to assess whether this dysfunction is associated with anxiety and arousal rather than being specific to the syndrome.

SOMATISATION PREDICTS OUTCOME OF PSYCHOLOGICAL TREATMENT IN PEOPLE WITH SEVERE IRRITABLE BOWEL SYNDROME

Francis H. Creed, Psychiatry, University of Manchester, Manchester, UK

Objective: Psychological treatments help some patients with severe IBS but the mechanism is unknown. We tested the hypothesis that somatisation score would predict both pain and depression in the long-term. Method: Patients were randomly allocated to brief interpersonal psychotherapy, an SSRI antidepressant or usual care. Assessments at baseline, 3 and 15 months were Hamilton Rating Scale for depression, the SCL-90 somatisation score and a visual analogue scale for abdominal pain. Analysis used path analysis. Outcome (quality of life) was calculated using SF36 and compared in patients with high and low baseline somatisation scores. Results: Of 257 patients with severe IBS, 87.5% were successfully followed up at 15 months. Path analysis indicated that, after the effect of pain and depression at baseline had been accounted for, baseline somatisation score predicted severity abdominal pain at 3 months (p=0.006) and depression severity at 3 and 15 months (p=0.001 at both). Significant improvements in health-related quality of life for the psychotherapy and antidepressant groups compared to usual care occurred only in those patients who had a high somatisation score at baseline (table). Conclusion: In severe IBS only patients with a high somatisation score respond to psychological or antidepressant treatment. If this is so also in CFS & fibromyalgia the search for an underlying common aetiology should assess patients with high and low somatisation scores separately.

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<tr>
<th>Somatisation</th>
<th>Psychotherapy</th>
<th>Antidepressant</th>
<th>Treatment as usual</th>
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<tr>
<td>Low somatisation</td>
<td>45.8 (sem=1.4)</td>
<td>44.9 (sem=1.5)</td>
<td>41.8 (sem=1.4)</td>
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<tr>
<td>High Somatisation</td>
<td>36.6 (sem=1.8)</td>
<td>40.2 (sem=1.4)</td>
<td>31.6 (sem=1.8)</td>
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<td>p value adjusted for baseline sc</td>
<td>0.12</td>
<td>0.001**</td>
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RACE, RACISM AND HEALTH

David Williams, Harvard University, Boston, MA

This presentation will describe salient patterns in the large and persistent racial/ethnic variations in health. However it will centrally focus on the multiple ways by which racism can affect health. It will provide an overview of a growing body of research that is examining the ways in which stress generated by subjective experiences of discrimination can adversely affect health. Advancing our understanding of this relationship requires improved the assessment of the phenomenon of discrimination and increased attention to identifying the pathways that link exposure to bias to health status. Residential segregation is an often overlooked institutional mechanism of racism that can also have pervasive health consequences. Segregation shapes socioeconomic status (SES) and thus health by restricting access to educational and employment opportunities, discounting the economic value of a given level of SES and creating health-damaging conditions in residential environments. Research on segregation highlights the importance of paying attention to the contexts in which health risks and resources emerge. Racism can also affect health through determining access to desirable services such as medical care.
ADVANCES IN HEALTH DISPARITIES ABSTRACT

Thomas LaVeist, Johns Hopkins University, Baltimore, MD

Background: African American adults exhibit consistently higher blood pressure (BP) levels compared to whites. However, little is known about the role of socioeconomic status or differential community exposures in producing disparities in hypertension.

Methods: We examined the relationship between race and hypertension in persons aged 18 years and older among African American and white adults living in an integrated community without race differences in socioeconomic status.

Results: Of the 1408 participants, 835 (59.3%) were African American, 820 (55.1%) were women, and the mean age was 40.7 years. After adjustment for potential confounders, African Americans exhibited higher odds of having hypertension (odds ratio [OR] = 1.40, 95% confidence interval [CI] 1.06-1.84), elevated systolic (OR = 1.51, 95% CI = 1.13-2.01) and elevated diastolic BP (OR = 1.37, 95% CI = 1.06-1.76) relative to whites. Comparing analytic models from our sample with NHANES 1999-2000 data, we found the OR was 44.5% smaller in our sample.

Conclusions: We conclude that environmental exposures and health related characteristics explained a substantial proportion of the race difference in hypertension, but not all of the black-white difference.

Symposium 1161

MIND, BRAIN, INFLAMMATION: LESSONS FROM THE GUT


Several recent studies of exacerbation and of quality of life have provided strong evidence for an association between psychological factors and clinical status in inflammatory bowel disease. This symposium explores some of the more complex aspects of the relationships among psychological factors, physiological factors, and disease activity in ulcerative colitis and Crohn's disease. The first speaker reports that acute but not chronic psychological stress can intensify systemic and rectal mucosal inflammatory responses in patients with inactive ulcerative colitis. The second speaker attempts to explain inconsistencies in the literature by examining the hypothesis that psychological factors are associated with disease course in patient subgroups defined by both psychological and nonpsychological characteristics, finding differences in the relationship between psychological and physiological variables in ulcerative colitis patients classified into four subgroups by attachment and p-ANCA status. The third speaker reports data suggesting that inflammatory bowel disease may influence mood and psychological functioning through an effect of inflammation on tryptophan. The final speaker challenges the conventional distinction between "functional" and "organic" disease by developing the concept that irritable bowel syndrome and inflammatory bowel disease exist on a continuum where bowel inflammation, central pain regulation and symptoms interact.

Individual Abstract Number: 1283

THE EFFECTS OF ACUTE AND CHRONIC STRESS ON SYSTEMIC AND MUCOSAL MEASURES OF INFLAMMATION IN ULCERATIVE COLITIS


Introduction: Previous studies suggest that chronic stress increases the risk of relapse in patients with ulcerative colitis(UC) and predicts mucosal inflammation in asymptomatic UC. In animal models acute stress increases gastrointestinal inflammation, an effect enhanced by chronic stress. Purpose: To study the effects of acute and chronic psychological stress on systemic and rectal inflammatory responses in patients with inactive UC.

Methods: 25 patients with inactive UC and 11 healthy volunteers (HV’s) underwent an experimental stress test. 10 UC patients and 11 HVs underwent a control procedure. Systemic and mucosal measures of inflammation were assessed before and after each protocol. Chronic stress was measured with questionnaire. Results: Chronic stress did not correlate with baseline inflammatory measures. Acute stress increased pulse and BP. In UC, stress increased LPS-stimulated production of TNF-alpha by 54% and IL-6 by 11%, leucocyte count by 16%, NK cell count by 18%, platelet activation by 65% and PLA formation by 25%; on endoscopy, stress increased TNF-alpha concentrations in peri-mucosal fluid by 102%, and mucosal ROM production by 475% (p<0.05 for all). There was no overall change in histological score of rectal biopsies but in all five patients with pre-existing inflammation stress increased histological score; these patients also showed a greater increase in mucosal TNF-alpha release(p=0.02). In preliminary studies, stress increased the proportion of activated mucosal mast cells from 7 to 28% (n=7). There was no relationship between chronic stress and the autonomic and inflammatory response to acute stress, and no difference in the responses of UC patients and HVs. Conclusion Acute psychological stress induces systemic and mucosal inflammatory responses which could contribute to exacerbations of UC. This may be enhanced in individuals primed by pre-existing mucosal inflammation.

Individual Abstract Number: 1184

FROM INCONSISTENCY TO SPECIFICITY: MARKERS OF PSYCHOPSYCHOLOGICAL INTERACTION IN ULCERATIVE COLITIS

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The relationship between ulcerative colitis (UC) and psychosocial factors is inconsistent. Previous studies could explain why studies that do not stratify by subtypes obtain different results. We have studied the hypothesis that psychological factors are associated with disease course in some patients, but not all. Previously, we identified a relationship between an interpersonal vulnerability factor, attachment insecurity, and a subclinical marker of biological subtypes, perinuclear anti-neutrophil cytoplasmic antibody (p-ANCA). In a follow-up study of 143 UC patients, attachment insecurity was not related to disease severity, but there were differences in the correlation between psychological and physiological variables in patient groups stratified by attachment (high or low attachment anxiety) and p-ANCA. We examined the relationship between psychological variables (health anxiety, chronic perceived stress) and inflammatory activity (disease severity score, erythrocyte sedimentation rate, ESR) in four groups. The correlation between health anxiety and disease severity was strong when p-ANCA was absent and attachment anxiety was high (r = .79, p < .001), moderate in p-ANCA-negative UC with low attachment anxiety (r = .41, p = 0.014) and negligible in p-ANCA positive UC (r = .16, p = .36), similar to previous findings for depression. The relationship between health anxiety and ESR was insignificant except in p-ANCA negative/high attachment anxiety (r = .35, p = .04). Chronic perceived stress was related to disease severity in both pANCA-negative groups (r = .40 to .50, p = .02 to .002) but insignificant in p-ANCA positive UC. In each case, the absence of p-ANCA indicates a group with a greater psychophysiological interaction. Testing psychophysiological relationships in psychological and biological relevant subgroups may clarify apparent inconsistencies in studies of other chronic illnesses. Further genetic and longitudinal studies are required.

Individual Abstract Number: 1278

CROHN'S DISEASE AND PSYCHOSOCIAL PROBLEMS: EXPLORING A POSSIBLE BIOLOGICAL LINK WITH INFLAMMATION

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Background: Crohn's disease (CD) is often associated with psychosocial problems, which are generally attributed to illness severity and course. However, there is evidence suggesting that other factors may play a role, including increased tryptophan (TRP) catabolism due to induction of the enzyme indoleamine 2,3 dioxygenase by inflammation. TRP is the precursor of serotonin (5HT), which is implicated in biological theories of psychological functioning. Cerebro-5HT synthesis decreases, peripheral TRP levels are reduced. In some conditions with an active inflammatory state, lower TRP
levels have been demonstrated and reported to correlate with psychosocial symptoms. Aim: to study TRP in relation to inflammation and quality of life in CD. Method: in 39 active CD patients before (T1) and after (T2) anti-TNF-alpha treatment, total and free TRP levels and their association with the Inflammatory Bowel Disease Questionnaire (IBDQ) were studied. Results: Compared to stable CD patients (n=9), total and free TRP levels were significantly lower at T1 in ill CD patients (p<0.01). At T2, total and free TRP levels had only increased significantly (p<0.01) in patients without detectable inflammation after treatment (n=20). The difference in total and free TRP levels between T1 and T2 (DT2-T1) correlated significantly (p<0.01) with DT2-T1 c-reactive protein (resp. r=0.55 and r=0.52) and with DT2-T1 IBDQ (resp. r=0.52 and r=0.59). The highest correlations were found between DT2-T1 free TRP and DT2-T1 IBDQ subscales of emotional (r=0.54) and social functioning (r=0.66). A linear regression with DT2-T1 IBDQ as dependent variable identified DT2-T1 free TRP as an independent predictor (10% unique variance contributed, p<0.01). Conclusion: These results confirm a link between TRP levels and inflammation in CD and suggest that TRP might play a role in modulating psychosocial functioning in CD patients experiencing an exacerbation.

Individual Abstract Number: 1180

POST-INFECTIONOUS IBS AND IBD-IBS: BLURRING THE BOUNDARIES
Douglas A. Drossman, Medicine and Psychiatry, Spencer D. Dorn, Medicine, University of North Carolina, Chapel Hill, NC

Recently, there is evidence for the loss of distinction between so-called organic and functional gastrointestinal illness and disease. This is best represented by the similarities between two conditions—post-infectious IBS (PI-IBS), a recently identified subset of IBS, is characterized by the persistence of gastrointestinal symptoms of abdominal pain and often diarrhea after a bacterial gastroenteritis. IBD-IBS is characterized by the persistence of abdominal pain and diarrhea much like IBS in a patient with inflammatory bowel disease (usually ulcerative colitis) in remission. This presentation will review the emerging data that suggests homology between these two bowel disease (usually ulcerative colitis) in remission. This presentation will address these issues and discuss how they may be linked to the pathophysiology of each condition.

Individual Abstract Number: 1180

INFLAMMATION IS LINKED TO DECLINE IN PHYSICAL FUNCTION
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The prevalence of elevated inflammatory cytokines increases with age. Inflammation is involved in various disabling disease processes, including cardiovascular disease, metabolic syndrome and diabetes. Inflammation may also be involved in sarcopenia, the age-related loss of muscle mass and strength, and consequently, in loss of mobility. Common mechanisms may include different pathophysiological mechanisms resulting in physical disability. Population-based aging studies, including Health ABC (n=3075, aged 70-79 years) and InChianti (n=1156, aged 65+), were used to examine the association between inflammation and indicators of physical function, including the onset of disability, objective physical performance, and muscle strength. Serum levels of interleukin (IL)-6, and C-reactive protein (CRP), tumor necrosis factor alpha (TNF-alpha) and interleukin-1 receptor antagonist (IL-1Ra) were measured. We also tested the extent to which associations were related to prevalent metabolic syndrome, cardiovascular disease, diabetes and sarcopenia. Among initially non-disabled persons, the onset of disability was defined as reporting difficulty or inability to walk one-quarter of a mile or to climb 10 steps during two consecutive semiannual assessments over 3.5 years. After adjustment for demographics and body composition, IL-6, CRP and TNF-alpha were significant predictors of onset of disability (Risk per SD deviation of range 1.99 and 1.40, p<0.01). Also, significantly lower physical performance and lower muscle strength and mass were confirmed among persons with high inflammation. Inflammatory marker levels were elevated in the presence of cardiovascular disease, diabetes and sarcopenia. High levels of inflammatory markers predicted physical decline in persons with these somatic conditions but also in disease-free individuals, indicating that the link between inflammation and physical decline is not completely due to cardiovascular processes. We conclude that inflammation appears to be a common root of different pathophysiological mechanisms resulting in physical disability.

Individual Abstract Number: 1321

ELEVATED CYTOKINE RESPONSES TO STRESS ARE LINKED TO ADIPOSY IN YOUNG WOMEN
Lena Brydon, Epidemiology and Public Health, University College London, London, N/A, UK

Obesity poses a major challenge to public health, with levels approaching epidemic proportions in many parts of the world. Evidence from population studies in humans suggests that exposure to chronic psychosocial stress favors the development of abdominal and total obesity, although the biological pathways involved remain unclear. The cytokines leptin, interleukin-1 receptor antagonist (IL-1Ra) and interleukin-6 (IL-6) play a key role in fat metabolism and adipogenesis, and there is growing evidence from humans and animals that these molecules are responsive to psychological stress. We investigated the relationship between measures of adiposity and cytokine responses to acute mental stress in a group of sixty-nine healthy young women, aged 18-25. Participants’ weight, height and waist circumference were measured and body fat mass was estimated by bioelectrical impedance. They then completed two 5-minute behavioral tasks administered under time pressure; a computerized color-word interference task and a public speaking exercise, at the end of which they rested for 45 minutes. Blood samples obtained at baseline, immediately post-tasks and during recovery, were used for analysis of plasma cytokines. Participants were not overweight on average, but there were large individual differences in adiposity measures. Increases in plasma IL-1Ra immediately post-stress and at 45 minutes correlated positively with plasma leptin, and IL-1Ra and leptin predicted changes in abdominal and peripheral fat mass. These results suggest that pro-inflammatory responses to stress may contribute to adiposity in women.
with BMI and waist circumference (r = 0.31-0.42, all p < 0.05). Similarly, increases in plasma IL-6 immediately post-sleep were significantly correlated with BMI and percentage body fat (r = 0.26-0.28, p < 0.05) and increases in plasma leptin at 45 minutes correlated with BMI (r = 0.31, p < 0.05). All associations were independent of age, smoking status and baseline cytokine levels. The positive relationship between cytokine stress responses and measures of adiposity suggests that cytokines could be one mechanism linking psychosocial stress and obesity.

Individual Abstract Number: 1327

DISTURBED SLEEP AND INFLAMMATION IN HEALTHY ELDERS
Michele L. Okun, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Martica Hall, Psychiatry and Psychology, University of Pittsburgh School of Medicine, Pittsburgh, PA

Aging is associated with significant sleep disturbances including difficulty initiating and maintaining sleep and reduced slow-wave sleep (SWS). Aging is also associated with increased proinflammatory cytokine production which has been implicated as a predictor of chronic disease including cardiovascular disease, Alzheimer's disease and diabetes. Sleep disturbances, regardless of age, have been linked to increased proinflammatory cytokine production, particularly IL-6 and TNF-alpha. A recent meta-analysis of age-related changes in sleep demonstrated that comorbidity contributes significantly to disturbed sleep in the elderly. Few studies have evaluated how sleep disturbances in healthy elders may affect inflammation and the extent to which sleep is associated with proinflammatory cytokine production is not known. In the present study, we evaluated relationships among sleep and circulating proinflammatory cytokines (IL-6 and TNF-alpha) in a group of elders without significant sleep complaints or medical comorbidity (N = 33, 79.6 ± 3.3 yrs). Sleep was measured by laboratory-based polysomnography (PSG). Morning blood draws were conducted in conjunction with sleep studies. Although TNF-alpha levels were unrelated to PSG-assessed sleep, measures of sleep continuity and depth were significant correlates of circulating IL-6 levels. Higher circulating IL-6 levels were associated with longer sleep latencies (r = .45, p = .009), poorer sleep efficiency (r = .43, p < .05) and increased percent of Stage 4 sleep (r = .36, p < .05). Importantly, these relationships were observed in healthy elders without significant complaints about the quality of their sleep. Given the evidence for age-related increases in inflammation, these data have implications for vulnerable elders (e.g., bereaved, caregivers) who report of disturbed sleep. They may be at increased risk for sleep-related increases in proinflammatory cytokines and increased cognitive impairment and mortality.

Individual Abstract Number: 1326

EMERGING EVIDENCE FOR AN INCREASED ATHEROSCLEROTIC RISK IN POSTTRAUMATIC STRESS DISORDER: ARE INFLAMMATORY CHANGES AT WORK?
Roland von Kanel, Psychocardiology Unit, Swiss Cardiovascular Center, Bern, Bern, Switzerland

The prevalence of PTSD following myocardial infarction (MI) is as high as 15% with studies performing a clinical interview to diagnose PTSD as relates to the heart attack as a potentially life threatening event showing a somewhat lower prevalence of about 10%. A growing body of research suggests that patients with posttraumatic stress disorder (PTSD) are at a substantially increased risk to develop a variety of biologically related disorders such as cardiovascular disease. The psychobiological mechanisms contributing to first-time or recurrent MI in patients with PTSD are manifold and involve both behavioural and direct psychophysiological links. Several studies suggest that inflammatory changes pertinent to atherosclerosis initiation and progression might play an important role. More precisely, we and others found that patients with PTSD had an increase in circulating proinflammatory cytokines on the one hand and a decrease in anti-inflammatory cytokines on the other. In addition to this proinflammatory state, there is also first evidence to suggest that soluble atherosclerotic risk markers related to endothelium activation and procoagulability might exert a toll on cardiovascular health in PTSD patients. Although this has not been investigated thoroughly, well-known alterations in the autonomic nervous system (i.e., sympathetic overactivity and vagal withdrawal) and in the hypothalamic-pituitary-adrenal axis (i.e., hypocortisolemia) of patients with PTSD might mediate the proinflammatory state. In conclusion, the relevance of PTSD for somatic medicine is substantial. Further research seems warranted to better understand through which mechanisms chronic posttraumatic stress may affect biological health in general and cardiovascular health in particular.

Symposium 1635

DEFINING AND MEASURING WORK RELATED STRESS IN THE 21ST CENTURY
Joachim E. Fischler, Institute of Public Health, Mannheim Medical Faculty, Heidelberg University, Mannheim, Germany, Paul A. Landsbergis, Dept. of Community and Preventive Medicine, Mt. Sinai School of Medicine, New York, NY, Johannes Siegrist, Institut für Medizinische Soziologie, Heinrich-Heine-Universität, Düsseldorf, Düsseldorf, NRW, Germany, Jane E. Ferrie, Mika Kivimäki, Dept. of Epidemiology and Public Health, University College London, London, England, United Kingdom

Throughout the past decades longitudinal cohort studies accumulated evidence supporting that work related stress increases the risk of adverse health outcomes (esp. cardiovascular disease and mental illness). The two most prominent scales used to assess work-stress are derived from the job demand-job control-social support model introduced by Robert Karasek and later amended by Tores Theorell; and the effort-reward imbalance model developed by Johannes Siegrist. Since the early conception of the scales almost two decades have elapsed. The past decades have witnessed an increasing globalization and a shift from long-term work-contracts to more short-term jobs in a predominantly service oriented economy. Therefore, the problem of how well these conceptualizations capture health-adverse components of modern working life provides a major challenge to science.

The symposium addresses this challenge by addressing the following questions. First, what is the current explanatory power of these models in view of globalized work? Second, what innovations have been developed within and beyond these models to measure stressful experience in modern work? More specifically, to what extent do the notions of organizational injustice and job insecurity complement current knowledge? Finally, what are the implications of recent progress for preventive measures within and beyond the scope of medical interventions? The second speaker will address the question of how to move our understanding of stress and its consequences beyond these models to measure stressful experience in modern work.

Individual Abstract Number: 1326

JOB STRAIN, AMBULATORY BLOOD PRESSURE, AND HIDDEN HYPERTENSION: THE RELEVANCE OF THE KARASEK-THEORELL-MODEL IN THE 21ST CENTURY AND ITS ASSOCIATIONS WITH CARDIOVASCULAR RISK
Paul A. Landsbergis, Dept. of Community and Preventive Medicine, Mt. Sinai School of Medicine, New York, NY, Peter L. Schnall, Department of Medicine, University of California at Irvine, Orange, CA 92868-3298, California

Associations between job strain, defined as the combination of high psychological workload demands and low job decision latitude, and casual or ambulatory blood pressure (BP) have been observed in a majority of the studies performed in the past 20 years. More specifically, to what extent do the notions of organizational injustice and job insecurity complement current knowledge? Finally, what are the associations between job strain and blood pressure (BP) elevation (in the range of 4-8 mm Hg) that have been tested these associations. Associations between job strain and blood pressure (BP) elevation (in the range of 4-8 mm Hg) have been found to be consistently observed among men and women when BP was measured with an ambulatory (portable) monitor. The widespread application of ambulatory BP monitoring has focused attention upon “white coat” hypertension (elevated casual clinic BP with normal ambulatory BP), an entity of low predictive value with respect to hypertensive cardiovascular disease (CVD) and beyond these models to measure stressful experience in modern work.

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With the advent of economic globalisation and technological progress, workplace changes are increasingly threatened. Given these constraints, employees often accept unfavourable working conditions where expected efforts are not reciprocated by adequate rewards in terms of money, esteem, and promotion prospects including job security. This non-reciprocity in exchange elicits negative emotions with adverse long-term effects on health. In this presentation, three lines of recent evidence are highlighted. First, based on a comparative study of working populations in Western and Eastern Europe, an increased health burden of work related stress among lower socio-economic status groups is demonstrated. Findings support the effect modification hypothesis claiming that most serious affections of non-reciprocity to health are expected in people who lack compensating resources. A second line of evidence concerns the application of scales measuring effort-reward imbalance to work forces in rapidly developing countries. First results indicate that these scales are relevant in explaining health, but suggest some operational modifications. Finally, to increase validity of self-report work stress measures the use of computerised ambulatory diaries and the combination of epidemiological investigations with experimental studies is discussed. In conclusion, this contribution demonstrates progress and open questions concerning work stress in terms of expected non-reciprocity.

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**Symposium 1545**

**NEW DIRECTIONS IN THE RELATION OF CARDIOVASCULAR DISEASE RISK FACTORS TO BRAIN AND COGNITIVE FUNCTION**

Shari R. Waldstein (Chair), Psychology, University of Maryland, Baltimore County, Baltimore, MD, Matthew M. Pase, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Stephen L. Seliger, Epidemiology, Columbia University, New York, NY, and Anne B. Zonderman, Geriatrics, National Institute on Aging, Baltimore, MD

Cognitive function - a critical dimension of quality of life - is diminished in the presence of cardiovascular disease (CVD) risk factors. Silent cerebrovascular disease is also noted among individuals with CVD risk factors prior to dementia or stroke. Further understanding of CVD risk factor-cognition associations and their underlying biological mechanisms is critical to efforts in the prevention of cognitive decline, dementia, and stroke. Research in this area has increased exponentially during the past 10 years, and has begun to move beyond the study of traditional CVD risk factors to incorporate examination of new CVD risk factors and biobehavioral risk. Accordingly, in this symposium we examine new directions in the relation of CVD risk factors - including select traditional, new, and biobehavioral risk factors - to brain and cognitive function. The first presentation will focus on the relations of blood pressure, blood pressure reactivity, and arterial stiffness to silent cerebrovascular disease and cognitive function. The second presentation will examine the association of heart rate variability to brain activation and cognitive function. The third presentation will describe the relations of blood pressure, blood pressure reactivity, and arterial stiffness to brain and cognitive function. The fourth presentation will examine the association of heart rate variability to brain activation and cognitive function. The fifth presentation will examine the association of heart rate variability to brain activation and cognitive function. The sixth presentation will examine the association of heart rate variability to brain activation and cognitive function.
the performance of tests of verbal and nonverbal memory and a cognitive factors may be critical to the preservation of brain and cognitive function. Participants also reveal relations of higher pulse wave velocity to decline in Baltimore Longitudinal Study of Aging (BLSA) will illustrate relations of stiffness. New data from 1,525 stroke and dementia-free participants in the determinant of BP and is independent of resting BP levels. Arterial stiffness is a major determinant of BP and is independently related to diminished cognitive function. Hypertension and associated risk factors may be critical to the preservation of brain and cognitive function.

Individual Abstract Number: 1553

HEART RATE VARIABILITY IS RELATED TO PREFRONTAL NEURAL FUNCTION AND COGNITION

Julian F. Thayer, Psychology, The Ohio State University; Columbus, OH, Anita L. Bermond, Bergen University College, Bergen, Norway, John J. Sollers III, Psychology, The Ohio State University, Columbus, OH, Bjorn Helge Johnsen, Psychosocial Science, University of Bergen, Bergen, Norway

Reduced heart rate variability (HRV) is an independent risk factor for cardiovascular disease, morbidity, and all-cause mortality. We describe a model of neurovascular integration in which a set of neural structures involved in cognitive, affective, and autonomic regulation are related to HRV and cognitive performance. We provide pharmacological and neuroimaging data in support of the neural structures linking the central nervous system to HRV. Next, we review a number of studies from our group showing that individual differences in HRV are related to performance on tasks associated with executive function and prefrontal cortical activity. In the first study, individual differences in resting HRV were related to performance on executive and non-executive function tasks. The results showed that greater HRV was associated with better performance on executive function tasks. In the second study we add a stressor (shock avoidance) to the previous paradigm and show that those with greater HRV were more stress tolerant. Specifically, those with greater HRV were not adversely affected by the added stressor. In the last experiment, HRV was manipulated by physical detraining. Again, those that maintained their HRV at the post-test showed better performance on executive and non-executive tasks. We propose that these findings have important implications for understanding the relationship between cardiovascular risk factors on the one hand, and brain and cognition on the other.

Individual Abstract Number: 1554

CHRONIC INFLAMMATION AND COGNITIVE FUNCTION AMONG MID-LIFE ADULTS

Anna L. Marsland, Psychology, University of Pittsburgh, Pittsburgh, PA, Janine D. Flory, Psychology, Queens College, City University of New York, Flushing, NY, Matthew F. Muldoon, Medicine, Stephen B. Manuck, Psychology, University of Pittsburgh, Pittsburgh, PA

In support of a growing animal literature, recent human findings demonstrate that peripheral levels of proinflammatory cytokines are associated with poorer cognitive function and predict future cognitive decline among the elderly. We have extended these findings to demonstrate an association between higher peripheral levels of interleukin-6 (IL-6) and poorer cognitive function among relatively healthy middle-aged adults. In this study, 500 volunteers aged 30-54 years had blood drawn for the determination of plasma IL-6 levels and completed a battery of neuropsychological tests evaluating verbal and nonverbal memory, attention, 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 tests assessing auditory recognition memory, attention/working memory, and executive function. Relationships between IL-6 and cognitive function were independent of a number of health factors, including BMI, exercise, alcohol use, smoking, dietary supplements, hypertension, self-reported health conditions, and medication use. We have recently increased the original sample to an examination of 1000 mid-life volunteers. A preliminary examination of this larger data set reveals a similar pattern of findings, with higher IL-6 being associated with poorer performance on tests of executive function and attention/working memory, but not auditory recognition memory. Together, these findings extend the existing literature linking chronic inflammation to poorer cognitive functioning in the elderly to a mid-life community sample, raising the possibility that IL-6 may represent a biomarker for risk of future cognitive decline.

Individual Abstract Number: 1557

RENAI FUNCTION AS A RISK FACTOR FOR BRAIN ABNORMALITIES AND COGNITIVE DECLINE

Stephen L. Seliger, Medicine, University of Maryland School of Medicine, Baltimore, MD, S. Carrington Rice, Shari R. Waldstein, Psychology, University of Maryland, Baltimore County, Baltimore, MD, Alan B. Zonderman, Intramural Research Program, National Institute on Aging, Baltimore, MD

Cardiovascular (CV) risk factors have been associated with cognitive dysfunction, dementia, and microvascular brain disease among older adults. Recent data suggests that kidney disease, which is highly prevalent among the elderly and a strong correlate of CV disease, may also increase the risk of brain disease. For example, our data from older adults in the Cardiovascular Health Study showed that those with higher levels of creatinine (Cr) and/or cystatin C - indicating lower renal function - had a significantly greater risk of incident dementia, and were more likely to have silent brain infarctions and white matter hyperintensities on brain imaging, after adjustment for vascular risk factors. We performed an analysis of renal function and cognition using data from the Baltimore Longitudinal Study of Aging (BLSA) community sample to an examination of 1000 mid-life volunteers. A preliminary examination of this larger data set reveals a similar pattern of findings, with higher IL-6 being associated with poorer performance on tests of executive function and attention/working memory, but not auditory recognition memory. Together, these findings extend the existing literature linking chronic inflammation to poorer cognitive functioning in the elderly to a mid-life community sample, raising the possibility that IL-6 may represent a biomarker for risk of future cognitive decline.

Individual Abstract Number: 1734

COGNITIVE FUNCTION AND OMEGA-6 AND OMEGA-3 FATTY ACID BALANCE

Matthew F. Muldoon, Medicine, Sarah Conklin, Christopher M. Ryan, Jeffrey Yu, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Joseph Hibbeln, Laboratory of Membrane Biochemistry and Biophysics, NIAAA, Rockville, MD, Stephen B. Manuck, Psychology, University of Pittsburgh, Pittsburgh, PA

The balance between omega-6 and omega-3 polyunsaturated fatty acids is purported to affect cognitive function because these fatty acids have opposing cellular effects and, in laboratory animals, dietary omega-3 deficiency impairs learning and memory. Therefore, we hypothesized that the ratio between the omega-6 arachidonic acid (AA) and the omega-3 docosahexaenoic acid (DHA) is related to cognitive performance and memory. Subjects were 116 generally healthy men and women (age 30-55). Fasting serum phospholipid fatty acid composition was determined by gas chromatography. General intelligence was estimated from standardized average scores on the vocabulary and matrices tests from the Wechsler Adult Intelligence scale. Immediate memory from standardized scores on 5 tests from the Wechsler Memory Scale (logical memory, verbal paired associates, faces, family pictures and visual reproduction), and delayed memory from 7 standardized scores on these 5 memory tests. In linear regression models of each measure of cognitive function, age, race and gender were entered as a first step followed by the AA:DHA ratio. A higher AA:DHA ratio was associated with lower intelligence (p < .05) due to an inverse relationship between the AA:DHA ratio and matrices score (p < .05). Although unrelated to immediate
memory, a high AA:DHA ratio was associated with poor delayed memory performance (p < .02). In supplementary analyses, two tests of delayed memory were significantly associated with the AA:DHA ratio (logical memory recall and visual reproduction recall, p's < .05), and two other tests exhibited non-significant trends (verbal paired associates and visual reproduction recognition, p's .09). These results support speculation that high intake of omega-6 fatty acids and/or deficient consumption of omega-3 fatty acids may disadvantage cognitive function.

Symposium 1064

IS RELIGION GOOD FOR YOUR HEALTH?: AN EXAMINATION OF ATTENDANCE AT RELIGIOUS SERVICES AND DISTANT, INTERCESSORY PRAYER

Paul J. Mills, Psychiatry, University of California San Diego, La Jolla, California, Nicholas J. Christenfeld, Psychology, University of California, San Diego, La Jolla, CA, Richard P. Sloan, Psychiatry, Columbia University, New York, NY, Jeffrey A. Dusek, Medicine, Harvard University, Chestnut Hill, MA, Christopher G. Ellison, Sociology, University of Texas, Austin, Texas

There is widespread interest in the possibility that religious involvement has beneficial health effects, so much so that a robust scientific examination of such effects has evolved. Among the general public and the medical community, the consensus view is that the evidence is persuasive and reviews of the relevant studies, systematic and otherwise, generally are consistent with this position. On the other hand, critics contend that the evidence is weak and unconvincing, due largely to theoretical and methodological problems making it impossible to control for confounding factors and a reliance on multiple statistical comparisons without adequate adjustment to control experimentwise error. The aim of this symposium is to critically examine the methods and evidence relevant to a connection between religion and health. Proponents and critics of such a connection will consider two issues central to this debate. The first issue, with arguably the strongest evidence in the field, is that attendance at religious services confers a health benefit, and we will support our position by a review of epidemiological studies. The second, the only hypothesis in this area that can be tested using a true experimental design, is the study of the health effects of distant, intercessory prayer, in which intercessors designated by the researchers deliver prayers or other healing intentions for the recovery of randomly selected and geographically distant patients while control subjects receive no such prayer.

Individual Abstract Number: 1708

RELIGIOUS INVOLVEMENT AND MORTALITY RISK: THE STATE OF THE EVIDENCE

Christopher G. Ellison, Sociology, University of Texas, Austin, Texas

In recent years there has been growing interest in the links between religion and mortality risk. Although this work remains controversial in some quarters, there is mounting evidence that religious involvement -- usually measured in terms of attendance at services -- has a salutary effect on mortality risk among community-dwelling (US) adults, and also among the elderly. The strongest studies in this vein share several important characteristics. First, they typically include statistical adjustments for a range of variables that could confound, or mediate, the relationships between religious attendance and mortality risk. Such factors included: (a) socio-demographic variables (e.g. age, race/ethnicity, gender, education, income, place of residence, marital status, etc.); (b) baseline health status; (c) health behaviors (e.g. smoking, drinking, body mass); (d) social ties and supports; and other relevant factors that could either confound or mediate the relationship between religious involvement and mortality. These studies also incorporate data on the timing of death (e.g. from, the National Death Index) and use sophisticated methods, e.g., Cox proportional hazard models. In one prominent example, Hummer and colleagues (Demography, 1999) analyzed data from the cancer risk factor supplement of the 1987 National Health Interview Study, linked with data from the National Death Index through 1995. They found a graded pattern of religion-mortality effects. Net of all controls, compared with respondents who attended less than weekly face elevated mortality risks of 24% and those who attended once per week encounter 21% greater mortality risks during the follow-up period. After reviewing the evidence of religious effects on mortality from such studies, this presentation will discuss potential explanations for the observed relationships, and future research aimed at clarifying the religion-mortality link.

Individual Abstract Number: 1167

METHODOLOGICAL ISSUES IN ASSESSING THE IMPACT OF RELIGION ON HEALTH

Nicholas J. Christenfeld, Psychology, University of California, San Diego, La Jolla, CA

Research on religion and health has two basic forms, with quite different methodologies. One form, remote intercessory prayer, allows for direct causal testing through random assignment. This is methodologically simple, though, requiring the existence of a spiritual being who heeds prayers and respects the RCT in making life and death decisions, is anything but simple theologically. The other form is the examination of the effects of religiosity, or at least attending services, on health. This approach, not requiring the existence of a divinity, or even necessarily a belief in one, is theologically simpler, but statistically complex. Because, here, experimental designs are impossible, one must rely on statistical methods to adjust for confounding effects. One must consider such rival hypotheses as healthy people being more willing, or able, to attend church, or, depending on your view of what religiosity means, church attendance being a proxy for, or addition to, simple social contact. Statistical procedures for establishing the role of religiosity, however, are fallible and several errors often follow the use of statistical adjustment. The major issue is inferring that attendance is causal because it predicts mortality even after ‘statistical control’ for other factors. This inference is fallacious when such control involves the removal of imperfectly measured variables, or when some confounders are unmeasured. Another issue arises in studies that examine the effect of religiosity on recovery, because peoples’ religious behaviors and beliefs are likely to precede as well as follow the health state, and so it is conceptually almost impossible to establish initial equivalence. That is, if religion is health promoting, then it should not just speed post MI recovery, for example, but also such recovery would influence only the linear contribution of imperfectly measured variables, or when some confounders are unmeasured. This leaves the role of religion in health difficult to assess.

Individual Abstract Number: 1316

STUDY OF THE THERAPEUTIC EFFECTS OF INTERCESSORY PRAYER (STEP): RESULTS AND INTERPRETATIONS

Jeffrey A. Dusek, Medicine, Harvard University, Chestnut Hill, MA

Intercessory prayer is widely believed to influence recovery from illness, but claims of benefits are not supported by well-controlled clinical trials. Previous clinical trials have not addressed whether intercessory prayer or the patient’s awareness of receiving intercessory prayer may influence outcome. We evaluated whether receiving intercessory prayer or being certain of receiving intercessory prayer was associated with uncomplicated recovery after coronary artery bypass graft (CABG) surgery. Patients at 6 US hospitals were randomly assigned to one of 3 groups: 604 patients received intercessory prayer after being informed they may or may not receive prayer (Group 1); 597 did not receive intercessory prayer, also after being informed they may or may not receive prayer (Group 2); and 601 received intercessory prayer after being informed they would receive prayer (Group 3). To account for the effect of both Group 1 and Group 3 on Group 2, patients in Group 2 were assigned to one of 3 groups which were uncertain about receiving intercessory prayer, complications occurred in 52% of patients who received intercessory prayer (Group 1) versus 51% of those who did not (Group 2); 597 did not receive intercessory prayer, also after being informed they may or may not receive prayer (Group 2); and 601 received intercessory prayer after being informed they would receive prayer (Group 3). Intercessory prayer was provided by 3 Christian clergy groups for 14 consecutive days, starting the night before CABG. The primary outcome was presence of any complication within 30 days of CABG. In the two groups which were uncertain about receiving intercessory prayer, complications occurred in 52% of patients who received intercessory prayer (Group 1) versus 51% of those who did not (Group 2: relative risk 1.02, 95% CI 0.92-1.15). Complications occurred in 59% of patients certain of receiving intercessory prayer (Group 3) compared with the 52% of those uncertain of receiving intercessory prayer (Group 1: relative risk 1.14, 95% CI 1.02-1.28). Intercessory prayer itself had no effect on complication-free recovery from CABG, The finding that intercessory prayer, as provided in this study, had no effect on complication-free recovery from CABG may be due to the study limitations. Understanding why certainty of receiving intercessory prayer was associated with a higher incidence of complications will require additional study. Private or family prayers with the potential for uncomplicated recovery from illness and the results of this study do not challenge this belief.
Individual Abstract Number: 1256

SCIENCE, MEDICINE, AND INTERCESSORY PRAYER
Richard P. Sloan, Psychiatry, Rajasekhar Ramakrishnan, Pediatrics, Columbia University, New York, NY

Among the many recent attempts to demonstrate the medical benefits of religious activity, the methodologically strongest seem to be studies of the effects of distant, intercessory prayer (IP). In these studies, patients are randomly assigned to receive standard care or standard care plus the prayers or ‘healing intentions’ of distant intercessors. Most of the scientific community has dismissed such research and recent studies have failed to detect an effect but cavalier rejection of studies of IP is unwise for several reasons. First, because we live in an era of growing irrationalism, in which the most fundamental theories about the evolutionary basis of life on earth and the origins of the universe are under siege, these claims should receive the same degree of scientific scrutiny as more conventional research. Second, IP studies appear to conform to the standards of randomized controlled trials (RCTs) and, as such, would have a significant advantage over observational investigations of associations between religious variables and health outcomes. As we demonstrate, however, studies of IP fail to meet the standards of RCTs in several critical respects. They fail to adequately measure and control exposure to prayer from others, which is likely to exceed IP and to vary widely from subject to subject, and whose magnitude is unknown. This supplemental prayer so greatly attenuates the differences between the treatment and control groups that sample sizes are too large to justify studies of IP. Further, IP studies generally do not specify the outcome variables, raising problems of multiple comparisons and Type 1 errors. Finally, these studies claim findings incompatible with current views of the physical universe and consciousness. Unless these problems are solved, studies of IP can never be conclusive and should not be conducted.

Symposium 1021

PSYCHOSOMATIC DISORDERS IN DSM-V AND ICD-10
Joel E. Dimsdale, Psychiatry, University of California, San Diego, La Jolla, CA, Don Oken, Psychosomatic Medicine, Psychosomatic Medicine, Bala Cynwyd, PA, Richard Lane, Psychiatry, University of Arizona, Tucson, AZ, Wayne J. Katon, Psychiatry and Behavioral Medicine, University of Washington Medical School, Seattle, WA, Heinz Rueddel, Medicine and Psychosomatic Medicine, University of Trier, Bad Kreuznach, Bad Kreuznach, Germany, Joel E. Dimsdale, Psychiatry, University of California, San Diego, La Jolla, CA

Both ICD and DSM are evaluating new classification nomenclature. This symposium will review how psychosomatic disorders have been classified since the original DSM in 1952. What have been the implications of new diagnostic systems? Have they improved in the intervening years? The symposium will consider unique European inpatient treatment programs. Whereas inpatient treatment for such disorders was once common in the United States, such programs have largely disappeared from North America but are still evident in some European countries. What sorts of patients are treated in these programs and what are the data about their effectiveness? The symposium will invite extensive audience comments. How useful have the various diagnostic schema been in their practice settings? What suggestions would audience members wish to relay to the workgroups studying classification of psychosomatic disorders?

Individual Abstract Number: 1092

PSYCHOSOMATIC DISEASE AS VIEWED FROM DSM I TO IV
Don Oken, Editor-Emertitus, Psychosomatic Medicine, Bala Cynwyd, PA

This presentation will provide historical perspective on the conceptualization of “Psychosomatic Disease” (PD) by reviewing the evolution of its definition over the course of successive DSM’s. DSM’s I and II arose during the ascendance in Psychiatry of the dynamic psychoanalytic viewpoint. Most disorders were denoted “reactions” - largely to psycho-social factors; the PD’s were specifically categorized as “autonomic and visceral reactions” associated with emotional states, this reflecting the strong influence of Franz Alexander. DSM’s III and IV represented a major paradigmatic shift with emphasis on attempted etiological neutrality, avoiding psychogenesis, as well as basing diagnosis on criterion sets of observable phenomena. Some process orientation sneaked in alongside, via its “multi-axial” system. The PD’s became relegated to near the end of the hierarchical system, and considered only as various ways in which psychological factors were “affecting” medical conditions, eschewing a major etiological role. In addition to exploring these concepts and those of related diagnoses, I will examine the significance of psychiatric diagnostic systems for Medicine as a whole.

Individual Abstract Number: 1093

IMPAIRED MENTAL REPRESENTATION OF EMOTION IN SOMATOFORM PATIENTS
Richard Lane, Psychiatry, University of Arizona, Tucson, AZ, Claudia Subic-Wrana, Psychosomatic Medicine, University of Mainz, Mainz, Germany

Somatoform disorders may be defined as the somatic presentation of emotional distress. Emotional distress may present in this way because of deficits that somatoform patients have in their capacity to represent, understand and be aware of their own emotional responses. This hypothesis was evaluated in 30 patients on a psychosomatic inpatient unit and 30 healthy controls. The patients, relative to controls, used significantly fewer and less differentiated emotion terms and also scored significantly lower on scales indicative of "theory of mind" or "mentalizing" functioning (intentionality and appropriateness). These results suggest that somatoform patients are impaired in their capacity to represent emotional states as well as mental states more generally. These findings will be discussed in the context of a model of implicit (behavioral and somatic states) and explicit (conscious feelings) emotional processes in which somatoform symptomatology reflects implicit rather than explicit processing of emotional distress.

Individual Abstract Number: 1094

THE ASSOCIATION OF ANXIETY AND DEPRESSION WITH MEDICAL SYMPTOM BURDEN IN BOTH PATIENTS WITH AND WITHOUT CHRONIC MEDICAL DISORDERS
Wayne J. Katon, Psychiatry and Behavioral Medicine, University of Washington Medical School, Seattle, WA

Approximately one-third to one-half of all visits to primary care physicians are for medically unexplained physical symptoms. This presentation will describe the association between anxiety and depressive disorders and medically unexplained symptoms such as headache and abdominal pain as well as the association of anxiety and depressive disorders with medically unexplained syndromes such as irritable bowel, fibromyalgia and chronic fatigue. In addition, this presentation will describe a recent review of 31 studies that examined the impact of anxiety and depression comorbidity in patients with chronic medical illness on medical symptom burden. This review showed that anxiety and depressive disorders were at least as highly associated with medical symptom burden as physiologic measures of medical disease severity.

Individual Abstract Number: 1097

PSYCHOSOMATIC REHABILITATION AND PSYCHOTHERAPY IN GERMAN HOSPITALS AND REHABILITATION CENTRES
Heinz Rueddel, Medicine and Psychosomatic Medicine, University of Trier, Bad Kreuznach, Germany

Psychosocial medicine in Germany is characterized by well established outpatient services for psychiatry, psychosomatic medicine and psychotherapy and an extensive inpatient service in psychiatry or psychosomatic medicine. Patients with mental disorders who are not admitted into psychiatric services are either treated in one of the 81 departments of psychosomatic medicine and psychotherapy of the public hospitals (25,000 patients per year) or rehabilitated in one of the 175 psychosomatic rehabilitation centres (140,000 patients per year). Average duration of inpatient therapy is 41 days. Psychotherapy is of crucial importance for those patients in the hospital setting and in the rehabilitation centres. Treatment is very clearly structured and well documented. Several studies have revealed that such therapy is particularly effective for patients with affective disorders, somatisation, and
Individual Abstract Number: 1098

PROGRESS TOWARDS DEFINING PSYCHOSOMATIC ILLNESSES IN THE DSM-V
Joel E. Dinsdale, Psychiatry, University of California, San Diego, La Jolla, CA

In the next few years a revised psychiatric nomenclature (DSM-V) will be developed. This presentation will discuss how these efforts are being focused in terms of defining the scope of psychosomatic illness. In September, 2006 an international group met in Beijing to discuss different international perspectives on such disorders. This presentation will describe the Beijing deliberations and will discuss some of the workgroup provisional recommendations. Input from the audience is sought in terms of the directions proposed for psychosomatic disorders in the new nomenclature.

Symposium 1330

CONNECTING DEPRESSION TO THE BIOLOGY OF CARDIOVASCULAR RISK
Brenda W. Penninx, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands, Mini Bhattacharyya, Epidemiology and Public Health, University College London, London, United Kingdom, Jeanne McCaffery, Weight Control and Diabetes Research Center, Brown Medical School, Providence, RI, Sophie Freeburg, Psychiatry, VU University Medical Center, Amsterdam, NH, The Netherlands, Stefan Wüst, Psychobiology, University of Trier, Trier, Germany, Carmilla Licht, Psychiatry, VU University Medical Center, Amsterdam, NH, The Netherlands, Eco De Geus, Biological Psychology, VU University, Amsterdam, The Netherlands

The available evidence for a connection between depression and cardiovascular disease is convincing. However, it remains to be determined which biological pathways may be involved in linking depressed mood with cardiovascular pathology. This symposium brings new findings from various clinical and epidemiological studies that have explored the potential involvement of impaired autonomic cardiac control and disturbed hypothalamic-pituitary-adrenal activity. In addition, there will be attention paid to the potential for common genetic factors to underlie, in part, the association between depression and cardiovascular pathology. The first presentation has used data from a clinical sample of patients with suspected coronary artery disease to examine the association between depression score and heart rate variability and saliva cortisol levels. Subsequently, two presentations show data from a large (n=1000) on-going Dutch study including major depression patients as well as controls, in which the associations between major depression and various measurements of saliva cortisol and ambulatory heart rate and heart rate variability were examined. The final two final presentations use genetic data from various studies to show evidence that certain genetic variations (e.g. genes coding for von Willebrand factor and HPA-axis modulation) may contribute to the association between depression and cardiovascular pathology.

Individual Abstract Number: 1333

BIOLOGICAL PATHWAYS ASSOCIATED WITH DEPRESSED MOOD AND POSITIVE AFFECT IN PERSONS WITH SUSPECTED CORONARY ARTERY DISEASE
Mini Bhattacharyya, Epidemiology and Public Health, University College London, London, United Kingdom, Andrew Septoe, Department of Epidemiology and Public Health, University College London, London UK.

The biological mechanisms linking depressed mood with cardiovascular pathology may include impaired autonomic cardiac control and disturbed hypothalamic-pituitary-adrenocortical activity. The relationship between trait measures of depressed affect, day-to-day mood state, heart rate variability (HRV) and cortisol was investigated in 51 patients with suspected coronary artery disease, defined by clinical symptoms plus positive EKG exercise tests or myocardial perfusion scans. Ambulatory Holter monitoring was carried out for 24 hours, during which salivary cortisol was sampled 9 times. Participants used Kahneman Day Reconstruction Method (DRM) to recall the measurement period, and rated positive and negative affect for all episodes during the day and evening. Depressed mood was assessed using the Beck Depression Inventory (BDI). The patients included 36 men and 15 women ranging in age from 36-77 years (mean 61.8 years). Heart rate variability (HRV) was analyzed with frequency domain measures, and high frequency (HF) power, low frequency (LF) power and the HF/LF ratio were computed. BDI scores were not associated with HRV, but more depressed patients had flatter cortisol slopes over the day and evening. The decrease in cortisol averaged 7.39 nmol/l in patients with BDI>9, compared with 11.9 nmol/l for those with low BDI scores, adjusted for gender, age, smoking and the use of beta-blockers (p=.021). Positive affect assessed with the DRM was positively associated with the HF/LF ratio at night independently of gender, smoking status, use of beta-blockers, and BDI scores (Beta=-0.32, p=.035). These data suggest that both negative states (e.g. depressed mood) and positive affective states are associated with biological function in patients with coronary artery disease, and that detailed evaluation of affect over the day may identify patterns that are biologically significant.

Individual Abstract Number: 1338

DEPRESSION IS ASSOCIATED WITH DECREASED PARASYMPATHETIC ACTIVITY
Carmilla Licht, Psychiatry, VU University Medical Center, Amsterdam, The Netherlands, Eco De Geus (2), Richard van Dyck (1), Witte Hoogendijk (1), Brenda Penninx (1). (1) Department of psychiatry, VU University Medical Center (2) Department of Biological Psychology, VU University, Amsterdam, The Netherlands

Evidence exists that dysfunction of the autonomic nervous system (ANS) plays a role in depression. Several studies indicate that depression is associated with decreased parasympathetic and increased sympathetic tone, as indicated by an increased heart rate (HR) and decreased heart rate variability (HRV). However, the association between ANS and depression has not been
tested in a large adult sample representative for the general population. This study examines HR and a measure of HRV (RMSSD) in a large adult sample of persons with and without major depression (MDD). Cross-sectional data are from 1084 persons (18-65 years) of an ongoing longitudinal cohort study: Netherlands Study of Depression and Anxiety (NESDA). Autonomic function was determined using the VU-Ambulatory Monitoring System (ECG and thorax impedance registration). HR and RMSSD were registered continuously during ~3 hours. Psychiatric diagnoses were determined according to DSM-IV using the CIDI interview. Three MDD groups were distinguished: a current MDD diagnosis group (n=375), a non-current lifetime MDD diagnosis group (n=357) and a control group without MDD symptoms/diagnoses or anxiety disorders (n=352). The average age of the cohort was 42.0 years and 67% was female (no group differences). After adjustment HR did not differ between the three MDD groups (p=.86). However, RMSSD did differ between groups (p=.012). The control group had a higher RMSSD (mean ± SE = 34.8 ± 0.8ms) than the MDD lifetime group (33.2 ± 0.8ms) and the MDD current group (31.3 ± 0.8ms). Additional analyses showed inverse association between RMSSD and depression severity. Data from this large cohort study confirm that MDD is associated with decreased heart rate variability.

Individual Abstract Number: 1334

GENETIC PREDICTORS OF DEPRESSION IN CORONARY ARTERY DISEASE

Jeanne McCaffery, Weight Control and Diabetes Research Center, Brown Medical School, Providence, RI; Marie-Pierre Dubé, Qingling Duan, Francois Lespérance, Pierre Théroux, Guy Rouleau, Nancy Frasure-Smith, McGill University/Université de Montréal/Centre Hospitalier de l'Université de Montréal, Montreal, QC, Canada.

It is well established that depressive symptoms (DEP) and coronary artery disease (CAD) often co-occur. However, little attention has been paid to the potential for common genetic mechanisms to underlie, in part, the association between DEP and CAD. In a pilot study, we examined nearly 700 single nucleotide polymorphisms (SNPs) within genes coding for key elements of biological pathways thought to contribute to the association between DEP and CAD in 110 patients and 110 control subjects of French-Canadian ethnicity from the ESCAPE (N = 596) and POLYMORPHISME cohorts (N = 484). Evidence of CAD was ascertained using hospital records, which indicated that the patients had >50% blockage in at least one major coronary artery or a documented myocardial infarction, and DEP was defined using transformed Beck Depression Inventory-II scores. The results of the project identify for the first time replicated genetic associations with DEP in CAD. Specifically, SNP variation in the gene coding for von Willebrand factor (VWF) was strongly associated with DEP in the two independent cohorts of French-Canadian cardiac patients (p < .005). In addition, in exploratory analyses combining across cohorts, a VWF SNP continued to be significantly associated with DEP (p = 0.00006). Other genes were also strongly indicative of association with depressive symptoms (p’s < .001) but did not survive the conservative correction for multiple comparison used in this pilot study. These results point to novel mechanisms that may underlie depression in CAD (e.g., neurological effects of endothelial dysfunction in the case of VWF) and suggest that genetic variation may indeed account in part, for some of the observed association between depression and CAD.

Individual Abstract Number: 1337

COMMON CORTICOSTEROID RECEPTOR GENE VARIANTS ARE ASSOCIATED WITH ACTH, CORTISOL AND HEART RATE RESPONSES TO PSYCHOSOCIAL STRESS


In response to stress, a spectrum of adaptive responses is triggered, including an activation of the hypothalamus-pituitary- adrenal (HPA) axis. HPA axis dysregulation has been implicated in the susceptibility for several pathologies including depression and cardiovascular disease (CVD). In two independent cohorts we investigated if common variants of the mineralocorticoid (MR) and the glucocorticoid (GR) receptor genes modulate HPA axis activity and how they function in response to challenge. In 110 healthy males, carriers of the minor allele of the MR gene variant I180V showed higher salivary and total cortisol as well as heart rate responses (all P<0.05) to the Trier Social Stress Test (TSST) than non-carriers. In 206 healthy males and females we assessed four GR gene polymorphisms (ER22/23EK, N363S, Bcll, 9beta). Male 9beta AG carriers displayed the highest ACTH and total cortisol levels after TSST exposure, while male Bcll GG carriers showed diminished responses (P<.05 for ACTH). Remarkably, the Bcll GG genotype in women was associated with the highest total cortisol TSST responses, resulting in a significant sex by genotype interaction (P<.05). Following the dexamethasone suppression test, only male 9beta AG carriers had elevated ACTH levels (sex by genotype P<.05). Our data suggest an association between an MR gene variant and HPA axis as well as cardiovascular responses to psychosocial challenge. This finding supports the view that the MR is substantially involved in the regulation of acute stress responses. GR gene polymorphisms have previously been associated with depression as well as CVD. Our findings document an association between GR gene variants and HPA axis regulation and they suggest a sex specific impact on responses to psychosocial stress as well as on GC sensitivity.

Symposium 1068

HEALTH CONSEQUENCES TO DISTURBED SLEEP: BASIC AND CLINICAL RESEARCH PERSPECTIVES.

Michele L. Okun, Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, PA; Mark R. Opp, Anesthesiology, University of Michigan Medical School, Ann Arbor, Michigan, Jussi Vahtera, Unit of Excellence in Psychosocial Factors, Finnish Institute of Occupational Health, Turku, NA, Finalnd, Torbjorn Akerstedt, IPM, IPM & Karolinska Institutet, Stockholm, NA, Sweden, Sotyan Dimitrov, Department of Neuroendocrinology, Medical University of Luebeck, Luebeck, Germany, Michele L. Okun, Psychiatry, University of Pittsburgh Medical Center, PITTSBURGH, PA; Christer Hnilb, Unit of Excellence in Psychosocial Factors, Finnish Institute of Occupational Health, Turku, NA, Finalnd, Martica Hall, Psychiatry, University of Pittsburgh Medical Center, PITTSBURGH, PA.

Although we spend one-third of our lives asleep, the functions of sleep are not well understood. Demographical studies have found associations between poor sleep continuity and short sleep duration with increased development of medical and psychiatric morbidity and all-cause mortality. Other studies have shown that physical, psychosocial and social stressors are significant correlates of sleep. This symposium will highlight the diverse health consequences of disturbed sleep. The first presentation will describe how viral infections induce fatigue in mice via an inflammatory pathway and how this may apply to human studies. The second presentation will discuss how sleep can effectively enhance adaptive immune responses in humans by enhanced distribution of appropriate immune cell populations. The final three presentations will describe the potential consequences of ‘stressful’ situations on sleep. The third presentation will provide evidence that ruminating about daytime stress prior to bedtime is associated with altered physiological sleep. The fourth presentation will describe sleep in three groups of elders (vulnerable, insomnia and healthy) and how psychological, social or physiological stress can affect sleep. The final presentation will provide longitudinal data suggesting that high stress sensitivity and exposure to stressful events are independent risk factors for the onset of insomnia among men and women.

Individual Abstract Number: 1402

CHRONIC VIRAL INFECTION, SLEEP, AND FATIGUE.

Mark R. Opp, Anesthesiology, University of Michigan Medical School, Ann Arbor, Michigan, Mellissa D. Olidovadi, Neuroscience Graduate Program, University of Michigan, Ann Arbor, Michigan, Linda A. Toth, Pharmacology, Southern Illinois University, Springfield, Illinois.

Human gammaherpesvirus (GHV) infections, such as Epstein Barr Virus (EBV), are associated with chronic fatigue and elevated cytokine levels. Murine GHV-68 (MuGHV) infection has been used as a mouse model of EBV. MuGHV initially produces an active infection in the lung, and later becomes latent in the spleen. We hypothesized that MuGHV infection would induce fatigue and after sleep of mice. In addition, we hypothesized that chronic viral infection would alter the impact on sleep of subsequent immune challenge. Mice (n=13) were surgically implanted with isoflurane anesthesia, with transmitters to record body temperature and EEG. Animals were kept on...
a 12:12 h LD cycle and housed in cages with running wheels and infrared detectors. Experiment I: Mice were administered vehicle at dark onset for control recordings. Four days later they were inoculated with 400 PFU MuGHV and recordings made for 30 days. Wheel running activity during the second half of the dark period decreased during infection. Body temperatures of infected mice were reduced during the dark period. Sleep was significantly fragmented during the late portion of the dark period. Experiment II: These same mice were injected at dark onset during latent MuGHV infection with vehicle and 24 h control recordings obtained. IP injections of 10 ug bacterial LPS were given the next day and recordings made for five days. During latently infection, LPS induced a profound and long lasting hypothermic response: healthy uninfected mice exhibit a transient hypothermic response to this dose of LPS followed by a fever. LPS-induced increases in sleep were protracted, lasting for 48 h. These results suggest that mice become chronically fatigued during MuGHV infection. The timing of this fatigue mimics some facets of human chronic fatigue. In addition, chronic MuGHV infection exacerbates the impact of a secondary immune challenge.

Individual Abstract Number: 1695
NUMBER AND FUNCTION OF CIRCULATING HUMAN IMMUNE CELLS REGULATED BY SLEEP
Soyean Dimitrov, Jan Benes. Department of Neuroendocrinology, Medical University Lubeck, Lubeck, NA, Germany

There is evidence that sleep enhances the adaptive immune response to infectious agents, and thereby supports immunological memory. The effect might be attained by sleep-induced changes in the distribution of immune cells (T cells, NK cells and antigen-presenting cells, i.e., APCs) and their cytokine production. During one second of the circadian sleep T cells, NK cells and APC precursors of tissue dendritic cells (DCs), i.e. naïve and effector T cells, CD16-CD56bright and CD16+CD56dim NK cells, CD14+CD16- and CD14dimCD16+ monocytes, myeloid dendritic cell precursors (pre-mDC) and plasmacytoid dendritic cells (PDC) can be identified in the blood. We examined circulating numbers of these cells together with two key cytokines produced by the DC precursors, i.e., IL-12 and IFN-γ, in healthy humans during a regular sleep-wake cycle and during 24 hours of sustained wakefulness. Importantly, compared with sleep, wakefulness, sleep induced throughout the night a striking increase in the number of pre-mDC producing IL-12, which is a main inducer of Th1 responses. In addition, sleep slightly decreased PDC counts, but did not affect IFN-γ production by PDC. Sleep, however, substantially decreased numbers of CD16+CD56dim NK cells and CD14dimCD16+ monocytes probably reflecting increased margination of the cells upon a sleep-related drop in catecholamine release. Independent of sleep, percentages of circulating naïve and effector T cells showed clear-cut circadian rhythms, reaching peak values, respectively, during night-time and daytime. Our data identify pre-mDC producing IL-12 as a target of sleep most closely related to mature APC function, whereby sleep can effectively enhance adaptive immune responses. The wake-associated mobilization of CD14dimCD16+ monocytes and CD16+CD56dim NK cells, in parallel with the circadian mobilization of effector T cells during daytime, presumably acts to strengthen effector immune defense against potential tissue damage and infection encountered during the active phase.

Individual Abstract Number: 1694
SLEEP AFTER LOW AND MODERATE LEVELS OF BEDTIME STRESS AND WORRIES
Torbjorn Akerstedt, Göran Kecklund, John Axelsson. Institute for Psychosocial Medicine, Karolinska Institute, Stockholm, NA, Sweden

The connection between stress and impaired sleep is part of the diagnosis of insomnia and often taken for granted. However, there are very limited empirical data on the effect of everyday stress sleep polysomnography (EEG, EMG, EOG). The present study evaluated data from 33 normals who had their sleep recorded on three nights in their homes. They made daily ratings of the level of stress/worries at bedtime using a 5 level scale (from no stress/worries to very high stress/worries). In addition, 3-hourly ratings of stress (scale 1-9) during the day before and after the sleep recording were used. From the three sleep recordings those individuals were selected for analysis that showed a difference of at least 1 unit on the 5-level stress/worries scale. This left 16 subjects for analysis. The two sleep recordings were compared using t-tests. The results showed a significantly lower sleep efficiency (85.2±2.0% vs 81.0±2.6%; p<.05), higher percent Stage 2 sleep (15.6±3.0% vs 22.64.4%; p<.01), and lower Stage REM sleep (28.4±1.1% vs 23.9±1.1%; p<.01). None of the other polysomnographical variables were affected. In addition, the diurnal mean of the 3-hourly stress ratings were significantly increased before and after the sleep recordings. However, using the mean diurnal three-hourly stress measure to select high and low stress days no significant differences between days were seen. The correlation between the two stress indices was r = .46 before the recorded sleep and .49 (p<.05) for the day following the recorded sleep. It was concluded that moderate increases in stress/worries at bedtime are associated with impaired sleep continuity and reduced REM sleep. Since no significant differences were seen when the mean 3-hourly stress ratings were used to select high and low stress days it is suggested that a moderate increase in diurnal stress levels is not sufficient to cause disturbed sleep unless bedtime stress/worries is also increased. This agrees with studies of the relation between rumination and impaired sleep.

Individual Abstract Number: 1697
SLEEP DURING LATE-LIFE: INFLUENCE OF VULNERABILITY AND CO-MORBIDITY
Michele L. Okun, Martica Hall, Psychiatry, University of Pittsburgh Medical Center, PITTSBURGH, PA

Changes in sleep quality, continuity, duration and architecture are a consequence of the aging process. Two hallmarks of age-related changes in sleep are a decrease in slow-wave sleep (SWS) and increased nocturnal awakenings. Recent studies have demonstrated that medical comorbidity and emotional and/or physical challenges for spouses (i.e. bereavement or caregiving) contributes significantly to disturbed sleep in the elderly. Despite this literature, few studies have described sleep in a sample of healthy elders, absent of any comorbid disease. In the present study, we assessed subjective sleep complaints (PSQI) and polysomnographically (PSG) recorded sleep in three categories of late-life adults: vulnerable (bereaved spouses (N = 17, 69.1 ± 6.4 yrs) and spousal caregivers of patients with dementia (N = 29, 74.1 ± 7.9 yrs)), patients with insomnia and comorbid medical conditions (N = 32, 70.7 ± 7.4 yrs) and healthy elder controls (N = 33, 79.6 ± 3.3 yrs). All analyses included age, sex and race as covariates. The healthy elders and the vulnerable groups were significantly older than the other groups (F = 17.60, p < .001), yet they had fewer sleep complaints (2.7 ± 1.5) than the vulnerable group (7.0 ± 3.5) or the insomnia group (9.8 ± 3.2) (F = 32.4, p < .001). By PSG measures, sleep was more disturbed in the vulnerable group including longer time spent awake at night (F = 3.431, p < .05) as compared to elders with insomnia or healthy elders. Similar to other reports, the healthy elders spent less time in delta sleep (6.76 ± 11.2 min) compared to the vulnerable group (17.9 ± 24.7 min) or the insomnia group (17.9 ± 11.2) (F = 6.2, p < .01). Epidemiological data suggest that disturbed sleep is associated with medical morbidity, such as cardiovascular disease or diabetes, and all-cause mortality. Sleep disturbances that are consequences of distress, stemming from losing a spouse or taking care of a spouse with dementia, may place these vulnerable groups at increased risk for developing comorbid disease and experience poorer overall health.

Individual Abstract Number: 1692
STRESS SENSITIVITY AND SEVERE LIFE EVENTS AS PREDICTORS OF NEW-ONSET INSOMNIA
Jussi Vahtera, Chuter Hablin, Mika Kivimäki, Katariina Korkeila, Sakari Suominen, Tiina Paunio. Unit of Excellence in Psychosocial Factors, Finnish Institute of Occupational Health, Turku, NA, Finland

It has been suggested that psychophysiological traits that predispose an individual to heightened arousal or reactivity increase the overall risk of insomnia, whereas negative life events have been assumed to act as factors precipitating the onset of insomnia. This study examined the effects of stress sensitivity and stressful life events on the onset of insomnia in a population sample of 6414 men and 10 213 women. Stress sensitivity, as indicated by the Reeder stress inventory and symptoms of sympathetic nervous system (SNS) hyperactivity were assessed at baseline and the occurrence of post-baseline life events and new-onset insomnia at follow-up 5 years later. The odds ratio (95% CI) of new-onset insomnia for the highest versus lowest quartile in the stress inventory was 2.43 (1.86-3.18) in men and 2.21 (1.83-2.68) in women. The corresponding odds for the men and women with daily versus no
The results do not support the hypothesis that high stress sensitivity would be an independent risk factor for the onset of insomnia among men and women. High stress sensitivity and exposure to stressful events are associated with increased risk of insomnia in the aftermath of stressful events.

For the women, the corresponding values were 1.54-fold (1.18-2.01) after a 5-minute public speaking stress task, and a 15-minute recovery period. Trait rumination was assessed 5 and 10 minutes after the stressor using a thought report technique. State rumination was also assessed 5 and 10 minutes after the stressor using a thought report technique. The impact of rumination on biological mechanisms that ultimately lead to cardiovascular and heart disease.

Individual Abstract Number: 1573

THE INFLUENCE OF TRAIT AND STATE RUMINATION ON CARDIOVASCULAR RECOVERY FROM A NEGATIVE EMOTIONAL STRESSOR

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PURPOSE: Psychological and physiological responses to stress have been implicated in the development of hypertension. Rumination may play a role in this association by prolonging psychological and physiological arousal that accompanies stress. The purpose of this study was to evaluate the influence of trait and state rumination on cardiovascular recovery following a negative emotional stressor. METHODS: Cardiovascular data were collected from 64 undergraduate women during a 10-minute baseline period, 5-minute public speaking stress task, and a 15-minute recovery period. Trait rumination was assessed using the Stress Reactivity Ruminative Scale and state rumination was assessed 5 minutes after the stressor using a thought report technique.RESULTS: Trait and state rumination interacted such that low trait ruminators who were ruminating 10 minutes after the termination of the stressor had inferior diastolic blood pressure recovery (F(1,36) = 7.30, p = .010) and high-frequency heart rate variability recovery (F(1,36) = 7.83, p = .008) compared to low trait ruminators who were not ruminating. State rumination was not associated with cardiovascular recovery in high trait ruminators.

Individual Abstract Number: 1526

EFFECTS OF INDUCED RUMINATION ON AMBULATORY BLOOD PRESSURE


PURPOSE: Last year at this meeting we reported the effects of an anger manipulation, using the Type A Structured Interview (SI) as the stimulus, on self-reported affect in the field. We now report on new data, ambulatory blood pressure (ABP) measurements taken in the field, immediately following the laboratory-based anger-provocation (AP). The purpose was to test the hypothesis that sustained BP elevation would be observed in the hours following AP, compared to a Neutral Control (NC); and that these effects would interact with levels of trait rumination. METHODS: We used a hybrid stressor in which the stimuli are delivered under controlled conditions, but the outcome measurements are taken in the natural environment, beginning when participants depart from the laboratory. Participants were brought into the laboratory on 2 occasions, 1-month apart, and, in counterbalanced order, exposed to AP, or to NC, in which a non-provocative administration of the SI was given. RESULTS: Last year we saw that, as predicted, higher self-reported anger following the SI persisted in the field during the 4 hours of the ambulatory period, compared to the same period following NC. We now see that ABP follows the same pattern; the elevation over the 4 hrs following SI is significantly higher (about 5 mmHg systolic) than that following NC during the same period. Moreover, as predicted, the effect on BP was moderated by trait rumination status, such that high ruminators had the highest BP levels. CONCLUSIONS: In spite of the relatively mild nature of the anger provocation, and the powerful distractions ordinarily encountered in the real world, AP had a surprisingly robust effect on self-reported anger and ambulatory BP, measured in the natural environment. These data suggest a key role of rumination in sustained BP, and possibly in the development of hypertension.

Individual Abstract Number: 1720

MOMENTARY ASSESSMENTS OF WORRY EPISODES, STRESSORS, AND CARDIAC ACTIVITY IN DAILY LIFE

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The reactivity hypothesis holds that frequent physiological reactions to stress lead to pathogenic physiological changes and disease. This hypothesis has recently been criticized on the grounds that stressors are of insufficient duration. However, when stressors are cognitively represented beyond their actual occurrence of stressors, such as in worry and rumination, physiological activation might become sufficiently prolonged to endanger health. Laboratory studies suggest that worry is related to increased cardiac activity, including low heart rate variability (HRV) but these findings have not yet been replicated in real life. Therefore, we hypothesized that in daily life worry is associated with increased heart rate (HR) and decreased HRV independent of the effects of stressors. Ambulatory HR and HRV (Mean square of subsequent differences in heart period) of 73 employees of secondary schools were recorded for 4 days, during which they reported stressors and worry episodes, and characteristics of stressors and worry episodes. Multilevel regression models were used controlling for effects of age, gender, body mass index, alcohol consumption of coffee, alcohol and cigarettes. Compared to neutral periods stressors and worry episodes were related to increases in HR of 3.00
(z=3.75, p<.01) and 2.02 (z=1.84, p<.05) beats per minute (bpm) respectively, and a decrease in HRV of 1.05 (z=1.66, p<.05) and 1.06 (z=2.21, p<.01) msec, respectively. Interestingly, worry about future issues was associated with a HR increase of 5.30 (z=3.07, p<.01) bpm. Concluding, worry might have substantial cardiac effects, in addition to those of stressors, especially in the form of anticipatory stress, a type of stress that has been largely neglected in stress research.

Individual Abstract Number: 1550
CORTISOL RESPONSES AS A FUNCTION OF POST-STRESS RUMINATION
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Responses to stress, and thus long-term health outcomes, appear to depend not only on the nature of the stressor, but also on the way that stressor is interpreted and processed. These thoughts, importantly, occurs both during the event and afterwards. With cardiovascular responses to stress, it is largely possible to separate acute responses during the stressor from the prolonged responses that arise from rumination following that stressor. Other physiological responses, however, are less tightly linked, and are likely to be a combination of the stressor and possible post-stress rumination. We explore this issue with cortisol responses to mental arithmetic. Twenty-four male and female participants sat for a 10-minute baseline at the end of which a saliva sample was obtained using pre-weighted Salivette. Participants were then exposed to a 3-minutes of mental arithmetic with harassment. Following this, they were left to sit quietly for 20 minutes. At the end of this period, another saliva sample was obtained. Subjects also were asked to report on the extent to which they thought about the prior arithmetic task during the post-stress period on a Likert-type scale ranging from "not at all" to "all of the time". Cortisol levels were determined by a competitive luminescence immunoassay. Cortisol change from baseline at 20 minutes post-stressor was positively associated with increased reports of rumination during the task (p < .05). Those who reported thinking about the task showed an elevated level, while those who did not were at baseline. The cortisol response, thus, appears to tap not the nature of the stressor, but instead whether that stressor encourages rumination. These data add cortisol responses and the hypothalamic-pituitary axis to the domain in which rumination appears to exercise its effects on physiological dysregulation.

Symposium 1252
RESPIRATORY ASPECTS OF STRESS AND EMOTION: FROM BENCH TO BEDSIDE TO COMMUNITY
David E. Anderson, Laboratory of Cardiovascular Science, National Institute on Aging, Baltimore, Maryland, Paul Grossman, Clinical Psychophysiology Research Laboratory, University of Basel Hospital, Basel, Switzerland, David E. Anderson, Laboratory of Cardiovascular Science, National Institute on Aging, Baltimore, MD, Frank H. Wilhelm, Clinical Psychophysiological Laboratory, University of Basel, Basel, Switzerland, Margaret A. Chesney, NCCAM, National Institutes of Health, Bethesda, MD

Relative to other major biological systems, respiratory adaptations to stress remain understudied. The presentations in this symposium describe recent advances in our understanding of respiratory adaptations to stress and emotion, and current use of breathing-focused stress-reduction strategies. Previous studies have recognized the role of respiration in autonomically-mediated influences on cardiac function. The first presentation shows that subtle but important respiratory effects of psychological challenges can occur in the absence of emotional arousal or cardiovascular activation. Previous studies have also shown that individuals maintain characteristic breathing profiles over time, but whether specific breathing patterns are markers for psychophysiological disorders remains to be clarified. The second presentation investigates whether aspects of blood pressure regulation can be understood in terms of breathing habits. The relevance of laboratory measurements of respiration to health is a function of their generalizability. The third presentation demonstrates that analogues of the respiratory component of panic disorder evoked in the clinical setting can be observed in the natural environment. The final presentation describes results of a large survey of the American populace that details which patients with what disorders engage in deep breathing, yoga, and meditation, and concludes that some disorders for which breathing therapies might be most useful are paradoxically under-utilized.

Individual Abstract Number: 1258
RELATIVE PREVALENCE OF DEEP BREATHING AND ITS DIFFERENTIAL PRACTICE AMONG PERSONS REPORTING STRESS-RELATED CONDITIONS
Margaret A. Chesney, NCCAM, National Institutes of Health, Bethesda, MD, Laura L. Johnson, NCCAM, NIH, Bethesda, MD

This presentation describes the prevalence of deep breathing (DB), meditation, yoga and other stress-reduction strategies among US adults with and without stress-related conditions. The 2002 National Health Interview Survey was an in-person survey conducted by the National Center for Health Statistics. The survey included an interview on complementary and alternative medicine (CAM) given to 31,044 adults. The sample had a mean age of 45 yrs, was 52% female, 80.8% White and 11.4% Black. The interview asked about CAM strategies used in the past 12 months. Of the 7 CAM strategies for stress reduction, DB was the most commonly practiced (11.4%), followed by meditation (7.5%), progressive muscle relaxation (3%), and guided imagery, tai chi and qi gong (all < 3%). After adjusting for demographic variables, persons who used DB were more likely to use other CAM stress-reduction strategies than not (p<0.001). An analysis of the extent to which DB exercises were reported by persons with stress-related conditions indicated that DB was practiced by 19.2% of those with anxiety/depression (OR = 2.26, p<0.001), 19.8% of those with insomnia/trouble sleeping (OR = 2.41, p<0.001), 20.3% of those with irritable bowel (OR = 2.06, p<0.001), and 19.6 % of those with severe headache/migraine (OR = 2.00, p<0.001). By contrast, only 10.2% of people with hypertension reported use of DB (OR =1.06, p=0.31). DB is not only the most widely practiced CAM stress-reduction strategy of those surveyed but may be a key component of other stress reduction practices. Given the findings on hyperventilation and hypoventilation, further attention needs to be paid to the role of DB and related interventions in the etiology and treatment of stress-related conditions.

Individual Abstract Number: 1856
BREATHING PATTERN AND MENTAL STATES
Paul Grossman, Clinical Psychophysiology Research Laboratory, University of Basel Hospital, Basel, Switzerland, Gerhard Stehmler, Differential and Personality Psychology, University of Marburg, Marburg, Germany

Despite the long known importance of behavioral and higher CNS control of breathing, respiration has remained under-investigated in psychosomatic medicine. With recent technological advances allowing noninvasive and ambulatory assessment of multiple respiratory parameters, investigations have indicated learning effects upon breathing and suggested central respiratory involvement in emotion and anxiety disorders. Nevertheless, our knowledge of respiratory adjustments to discrete mental states remains meager. We examined respiratory and cardiorespiratory responses to a variety of mental tasks during which emotional distress was intentionally minimized. Subjects were 54 healthy adults (20-48 years). Tasks comprised quiet rest, completion of psychological inventories, guided relaxation, reading, relaxed speaking, an auditory attention task, a memory-comparison reaction-time task, computerized mental arithmetic and a recovery phase. The following physiological parameters were included in a discriminant analysis aimed at distinguishing between conditions: respiration rate, tidal volume, minute ventilation, inspiratory flow rate, duty cycle (inspiration / total cycle time), rectilinear/abdominal contribution, functional residual capacity and respiratory sinus arrhythmia. Additional analysis of heart rate and task-specific affect inventories indicated that neither heart rate nor negative affect was altered by tasks, suggesting that respiratory responses primarily resulted from specific mental demands. The main analysis revealed three discriminant components that distinguished between types of task (p< .0001). The findings support the idea that respiration is extremely sensitive to discrete types of cognitive activity. Results are discussed in terms of the complex interaction of metabolic, behavioral, affective and cognitive effects upon breathing likely to influence health and psychosomatic disorder.
Salt sensitivity of blood pressure (BP) is only partially replicable, suggesting that other environmental and behavioral factors may also play a role in individual BP response to high salt intake at any point in time. Renal sodium excretion can be decreased and blood volume increased by stress-induced inhibition of breathing that affects blood gases and decreases plasma pH. The present study hypothesized that subjects who maintained subnormal breathing frequency at rest would show greater BP responses to changes in dietary sodium intake. Thirty-six normotensive women, ages 40-70, were placed on a 6-day low sodium/low potassium diet followed by a 6-day high sodium/low potassium diet. Breathing pattern at rest and 24-hr systolic, diastolic, and mean ambulatory BP were monitored at baseline, and after each 6-day diet period. Blood samples were obtained during each session, and 24-hr urine samples were obtained after each dietary period. Changes in dietary sodium intake had no significant effects on breathing frequency, tidal volume or minute ventilation at rest, and individual differences in breathing patterns remained stable across monitoring sessions. Breathing frequency (but not tidal volume or minute ventilation) was a significant independent predictor of magnitude of BP response to changes in dietary sodium (r = +0.45 to -0.65; p < .01). Individual breathing frequency was also positively correlated with hemoglobin (r = +0.37 to +0.49; p < 0.01), and mean hemoglobin was also a predictor of salt sensitivity of BP (r = +0.30 to -0.55; p < .01). These findings indicate that a slow breathing pattern is correlated with changes in hemoglobin, and are characteristic of salt sensitivity of BP in normotensive persons. Inhibited breathing pattern could be a correlate of emotional inhibition that characterizes hypertension, and one mechanism by which environmental stress participates in the development of salt-sensitive hypertension.

Breathing Inhibition and Salt Sensitivity of Blood Pressure
David E. Anderson, Laboratory of Cardiovascular Science, National Institute on Aging, Baltimore, MD, Jessica McNeely, Laboratory of Cardiovascular Science, NIA, Baltimore, MD

Increased evidence suggests that elderly individuals who provide care to a spouse suffering from dementia bear an increased risk of developing coronary heart disease (CHD). One means of measuring CHD risk is through calculation of the Framingham CHD Risk Score, which has been shown to predict 10-year CHD risk in a predominantly Caucasian population. We hypothesized that the Framingham score would be higher in a sample of dementia caregivers relative to non-caregiving controls. Study participants were 66 caregivers providing in-home care for their spouse with Alzheimer's disease and 41 gender-matched non caregiving controls. At study entry, all subjects (mean age 70±8 years, 94% Caucasian) had a negative history of CHD and cerebrovascular disease. The Framingham CHD Risk Score was computed for all participants as previously described (Wilson et al., Circulation 1998;97:1837). Using a separate algorithm for men and women the CHD risk score sums up individual categorical scores for age, total cholesterol, high-density lipoprotein (HDL) cholesterol, blood pressure, fasting glucose, and smoking status. The average Framingham CHD Risk Score was significantly higher in caregivers than in controls (7.6±3.1 vs. 6.3±2.6, p<0.09). Analyses of differences in individual risk factor scores between groups showed that blood pressure risk score was higher in caregivers than in controls (p<.001); controlling for the use of any antihypertensive drug did not change this relationship (p<.002). In contrast, risk scores for age (p=.61), total cholesterol (.59), HDL cholesterol (p=.93) fasting glucose (p=.18), and smoking (p=.31) were similar in caregivers and controls. Based on the CHD risk score, the potential to develop CHD in the following 10 years was predicted to be greater in dementia caregivers than in non-caregiving controls. Because caregivers did not significantly differ on scores of most individual cardiovascular risk factors, it is rather the cumulative risk of all cardiovascular factors combined placing them at danger for CHD.

Increased Coronary Heart Disease Risk in Dementia Caregivers Compared to Non-Caregiving Controls
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Sarah E. Linke, Clinical Psychology, SDSU/UCSD Joint Doctoral Program, San Diego, CA, Thomas Rutledge, Psychology, University of California, San Diego, San Diego, CA, B. Delia Johnson, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Vera Bittner, Medicine - Cardiovascular Disease, University of Alabama, Birmingham, Birmingham, AL, Leslie J. Shaw, Medicine, Emory University, Atlanta, GA, Noel B. Merz, Cardiology, Cedars-Sinai Medical Center, Los Angeles, CA, Marian B. Olson, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Carol Cornell, Health Behavior and Education, University of Arkansas for Medical Sciences, Little Rock, AR, Wafa Elsheba, Epidemiology Data Center, University of Pittsburgh, Pittsburgh, PA

This study examines the joint impact of smoking and purposeful exercise on clinical outcomes, including major cardiovascular-related events (CHF, stroke, and MI) and all-cause mortality, among women with suspected myocardial ischemia. Demographic characteristics and other risk factor data, including smoking history and recent exercise capability, of 570 women (mean age = 59.5, SD = 11.6) were gathered at baseline. The women were contacted at study-specific intervals for a median of 5.9 years to determine whether they had experienced any clinical outcomes. After adjusting for other established cardiovascular risk factors, the combination of the self-reported ability to engage in purposeful exercise and a negative smoking history predicted the lowest risk of experiencing at least one event. Women with a positive smoking history had the greatest risk of experiencing an event, regardless of reported exercise capability (HR = 10.5, 95% CI: 3.0, 36.6 and HR = 9.9, 95% CI: 3.0, 32.1). Women with a negative smoking history and a
Increased circulating cortisol levels have been associated with severity of atherosclerosis. Low-grade systemic thombogenicity plays a major role in the initiation and progression of coronary disease. We hypothesized a direct relationship between cortisol and hemostasis factors related to a prothrombotic state in coronary artery disease. We measured morning serum cortisol and coagulation factor (FVII) antigen, fibrinogen, von Willebrand factor (VWF) antigen, and plasminogen activator inhibitor (PAI)-1 activity in 285 women (56±7 years) between 3 and 6 months after an acute coronary event. To test whether the relationship between cortisol and hemostasis factors would be independent, statistical adjustment was made for demographic, biomedical, lifestyle, and psychosocial variables. Higher serum cortisol levels predicted higher fibrinogen (beta=-17, p=0.001) and VWF (beta=16, p=0.008), all independently of covariates, including CRP, which was also an independent predictor of fibrinogen (beta=20, p=0.001) and VWF (beta=16, p=0.004). Higher levels of vital exhaustion were associated with higher FVII levels independently of covariates and depression (beta=18, p=0.045). Cortisol showed crude correlations with vital exhaustion (r=0.14, p=0.022) and with depression (r=0.13, p=0.043) but did not mediate the relationship between psychosocial variables and hemostatic factors. Morning serum cortisol showed a modest but independent association with prothrombotic activity in women with coronary artery disease suggesting that increased cortisol levels might contribute to atherosclerosis via eliciting a hypercoagulable state.

Abstract 1234
EFFECTS OF CHRONIC AND PULSATILE BLOOD PRESSURE ON TACTILE SENSATION: EVIDENCE FOR INSENSITIVITY TO SENSORY NERVE STIMULATION IN HYPERTENSION
L Edwards, C Ring, D McIntyre, D Carroll, ICHER, U Martin, Medicine, University of Birmingham, Birmingham, UK

Although studies show that hypertension is characterised by reduced pain sensitivity, it's generalisability to other modes of somatosensory stimulation remains to be established. Given that nociception and pain can be modulated by arterial baroreceptor activity, it is possible that cutaneous sensitivity also varies with pulsatile blood pressure. We examined the effects of naturally-occurring variations in baroreceptor activity across the cardiac cycle on sensory detection thresholds in 29 unmedicated hypertensives and 29 normotensives: electrocutaneous stimuli (250 Hz, 60 ms) were delivered to the index finger at three intervals (0, 300, 600 ms) after the R-wave of the electrocardiogram. Three interleaving up-down staircases were used to determine a 50% detection threshold (mA) for each interval. A 2 Group (hypertension, normotension) by 2 Sex (male, female) by 3 Interval (0, 300, 600) MANCOVA revealed higher sensory thresholds (p < 0.03) in hypertensives (0.68 mA) compared to normotensives (0.50 mA), after adjusting for body mass index, age, alcohol consumption, anxiety, and depression. Sensory thresholds also varied with R-wave to stimulation interval (p < 0.005); thresholds were higher at R+0 ms (0.59 mA) and R+600 ms (0.60 mA) than R+300 ms (0.58 mA). No interaction effects emerged. The data reveal that cutaneous sensitivity is impaired in hypertension and heightened during systole compared to diastole. This tactile insensitivity, together with evidence of blunted pain perception, suggest a general insensitivity to peripheral sensory nerve stimulation in hypertension. The enhanced tactile sensitivity during systole is counter to previous reports that nociception and pain are attenuated during systole. That pulsatile increases in blood pressure during systole enhanced tactile sensation, whereas chronic elevation in blood pressure reduced tactile sensation, suggest that arterial baroreceptors do not mediate impaired cutaneous sensitivity in hypertension.

Abstract 1866
THE RELATION OF ANGER EXPRESSION-OUT TO CORONARY ARTERY CALCIFICATION IN AN OLDER SUBSAMPLE OF PARTICIPANTS AGED 50 YEARS AND ABOVE
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There is a growing body of evidence that suggests increased levels of anger expression can lead to increased cardiovascular disease. One way to measure cardiovascular disease is with the marker coronary artery calcification (CAC). It has been suggested that one of the most important predictors of CAC is age, as calcium will slowly accumulate over time. This study aimed to prospectively examine the differential effects of anger-expression in age-stratified groups – specifically in a group of participants who were aged 50 years or greater at study entry (n = 40) versus the full sample of participants (n = 185). Anger expression was measured at study entry using the Spielberger Anger Expression Inventory - which measures both anger expression-in (tendency to hold anger within) and anger expression-out (tendency to direct anger externally into the environment). CAC was measured both at study entry and approximately 9 years later using electron beam computerized tomography (EBCT) from which a total CAC score was calculated. Multivariate regression analysis was used to examine whether the anger expression variables predicted CAC, both cross-sectionally and prospectively and for both the full sample and age adjusted sample. Traditional risk factors were entered into the first step of the regression and anger expression-out and anger expression-in were entered in to the second step of separate equations. Higher levels of anger-expression out significantly predicted higher levels of CAC both cross-sectionally (Beta = 0.42, p<0.01) and longitudinally (Beta = 0.43, p<0.01) only in the age adjusted sub-sample of participants who were aged 50 or above at study entry. Higher levels of anger expression-out were not associated with higher levels of CAC in the full sample, suggesting that anger expression-out is only a risk factor for CAC in combination with high age levels. Interestingly, anger expression-out was the strongest predictor of CAC in the older sub-sample, more so than any traditional physiological risk factor.

Abstract 1300
RELATION OF MORNING SERUM CORTISOL TO PROTHROMBOTIC ACTIVITY IN WOMEN WITH STABLE CORONARY ARTERY DISEASE
Roland von Känel, General Internal Medicine, University Hospital, Berne, Switzerland, Brent T. Maushach, Psychiatry, University of California San Diego, La Jolla, CA, Brigitte M. Kudielka, Theoretical and Clinical Psychobiology, University, Trier, Germany, Kristina Orth-Gomér, Public Health Sciences, Karolinska Institute, Stockholm, Sweden

Increased circulating cortisol levels have been associated with severity of atherosclerosis. Low-grade systemic thombogenicity plays a major role in the initiation and progression of coronary disease. We hypothesized a direct relationship between cortisol and hemostasis factors related to a prothrombotic state in coronary artery disease. We measured morning serum cortisol and coagulation factor (FVII) antigen, fibrinogen, von Willebrand factor (VWF) antigen, and plasminogen activator inhibitor (PAI)-1 activity in 285 women (56±7 years) between 3 and 6 months after an acute coronary event. To test whether the relationship between cortisol and hemostasis factors would be independent, statistical adjustment was made for demographic, biomedical, life style, and psychosocial variables. Higher serum cortisol levels predicted higher fibrinogen (beta=-17, p=0.001) and VWF (beta=16, p=0.008), all independently of covariates, including CRP, which was also an independent predictor of fibrinogen (beta=20, p=0.001) and VWF (beta=16, p=0.004). Higher levels of vital exhaustion were associated with higher FVII levels independently of covariates and depression (beta=18, p=0.045). Cortisol showed crude correlations with vital exhaustion (r=0.14, p=0.022) and with depression (r=0.13, p=0.043) but did not mediate the relationship between psychosocial variables and hemostatic factors. Morning serum cortisol showed a modest but independent association with prothrombotic activity in women with coronary artery disease suggesting that increased cortisol levels might contribute to atherosclerosis via eliciting a hypercoagulable state.
Abstract 1761

WHITE-COAT HYPERTENSION IS ASSOCIATED WITH REDUCED NIGHTTIME BLOOD PRESSURE DIPPING
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White-coat hypertension denotes a subgroup of individuals who display elevated office BP, but who have normal BP outside medical settings. It has been associated with greater cardiovascular risk relative to when both in the in-office and out-of-office BP are both in the normotensive range. Impaired nighttime BP dipping has also been associated with increased cardiovascular morbidity and mortality. The goal of the present study was to examine the extent to which white-coat hypertension might be associated with blunted nighttime BP dipping in a sample of 286 healthy young undergraduate women. Blood pressure was measured in the office on two occasions, with the patient seated, using a validated automatic blood pressure monitor. Twenty-four hour ambulatory blood pressure monitoring (ABPM) was performed with units programmed to take readings every 20 min during the awake period and every 30 min during nighttime sleep, on a school day. White-coat hypertension was defined as systolic BP (SBP) levels \( \geq 140 \) and/or diastolic BP (DBP) \( \geq 90 \) mmHg repeatedly in the office and the mean ABPM readings below 135/85 mmHg. Twenty women with white-coat hypertension were identified. Compared to participants with both normotensive office and ambulatory BP levels, results of ANCOVA indicated that women with white-coat hypertension displayed less nighttime BP dipping (p < .05), even when controlling for daytime SBP, BMI, and age. The findings of the present study add to a growing body of evidence linking white-coat hypertension with increased cardiovascular risk. Future research should attempt to identify potential mechanisms linking white-coat hypertension with impaired nighttime BP dipping.

Abstract 1363

THE PREDICTABILITY OF SOCIAL SUPPORT TO CARDIOVASCULAR MORTALITY: 21 YEAR FOLLOW UP OF EPESE
Reiko Hori, Health and Psychosocial Medicine, Aichi Medical University School of Medicine, Aichi, Aichi, Japan, Lisa F. Berkman, Society, Human Development, and, Harvard School of Public Health, Boston, MA

It is well known psychological and social factors, such as negative affects and social support, predict mortality and incidence of cardiovascular disease (CAD). The purpose of this study is to examine the effect of psychosocial conditions on mortality in a 21 year longitudinal, community-based study. The subjects were 951 men and 1157 women (mean age, 73.9 ± 6.6 years) who registered for the Established Populations for Epidemiologic Studies of the Elderly program. We collected their data including smoking habit, clinical history, body mass index, education level, income grade, functional disability (FD), CES-D score, and social net index (SNI) at 1988. Follow-up interviews were conducted annually until the end of 2003. During the follow-up (9.2 ± 5.2 years) of the subjects, 876 men (92.1 %) and 937 women (81.0 %) died. Among those them, 177 men and 235 women died from cardiovascular diseases. A Cox hazard regression model indicated that aging, smoking habit, the number of chronic diseases, SNI, and interaction between SNI and FD were significant predictors of male all-cause mortality. The hazard ratio of high SNI for all-cause mortality was 0.88 in men. A Cox hazard regression model indicated that aging, current smoking, hypertension, the number of chronic diseases, SNI, interactions between CES-D and SNI, CES-D and FD, SNI and FD, and CES-D, SNI and FD were significant predictors of female all-cause mortality. The hazard ratio of high SNI for all-cause mortality was 0.83 in women. Although aging, hypertension, history of myocardial infarction, and the number of chronic diseases were significant factors in the Cox hazard regression model of male CAD mortality, SNI had no significant effect. A Cox hazard regression model indicated that aging, hypertension, the number of chronic diseases, history of myocardial infarction and diabetes, SNI and interaction between SNI and FD were significant predictors of female CAD mortality. The hazard ratio of high SNI for CAD mortality was 0.79 in women. The social net is suggested to reduce all-cause mortality in elderly men and women, and CAD mortality in elderly women.

Abstract 1833

HEART RATE VARIABILITY AND MARKERS OF INFLAMMATION AND COAGULATION IN DEPRESSED PATIENTS WITH CORONARY HEART DISEASE
Robert M. Carney, Kenneth E. Freedland, Judith A. Skala, Psychiatry, Washington University School of Medicine, St. Louis, Missouri

Depression is associated with an increased risk for cardiac morbidity and mortality in patients with coronary heart disease (CHD). Cardiovascular autonomic dysregulation, proinflammatory processes, and procoagulant processes, have been studied as possible mechanisms. Little is known, however, about relations among these mechanisms. We measured 24-hour frequency domain heart rate variability (HRV); markers of inflammation (C-reactive protein [CRP], interleukin-6 [IL-6], tumor necrosis factor alpha [TNFα]); and a marker of coagulation (fibrinogen) in a subgroup of 44 depressed patients (women, 41%; age, 59+10 years) enrolled in a larger study (n=132) of sleep disorders following an acute coronary syndrome. Most patients were moderately depressed (BDI, 20+8; HAM-D-17, 16+5), were overweight or obese (BMI, 30+6), and had one or more medical comorbidities including diabetes (30%), hypertension (66%), CHF (21%), or others. The results showed moderately large, negative correlations between fibrinogen and all four HRV indices, ranging from LnHF (r=-0.36, p<.05) to LnVLF (r=-0.55, p<.01). IL-6 correlated with total power (LnTP; r=-0.38, p<.05) and with LnVLF (r=-0.40, p<.05). CRP correlated with LnTP (r=-0.44, p<.01), LnVLF (r=-0.33, p<.05), and LnHF (r=-0.35, p<.05). TNFa did not correlate with any HRV index. These findings suggest that cardiovascular autonomic dysregulation is linked to inflammatory and coagulant processes in depressed CHD patients. These relationships should be investigated in larger mechanistic studies of depression and cardiac morbidity and mortality.

Abstract 1354

CASE-CONTROL TRIAL OF A MULTIDISCIPLINARY BEHAVIOR INTERVENTION FOR HEALTH SERVICE USE IN PATIENTS WITH COPD
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Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in North America and is associated with significant morbidity. Controlling the frequency and severity of exacerbations involves extensive behavioral self-management. Though several studies have evaluated the efficacy of patient education on COPD outcomes, few have evaluated interventions targeting patient health behaviors. The present study evaluated the efficacy of a multidisciplinary behavioral (MDB) intervention to improve the rate of COPD exacerbations as measured by health service utilization. A nurse coordinator systematically evaluated COPD patients in the Emergency Room (ER) or hospitalized and referred them to one or several MDB programs according to their needs: action plan phone follow-up; group education; respiratory rehabilitation; smoking cessation support; and/or home care. Patients with severe comorbidity or already in the phone follow-up program were excluded. A sample of 100 patients (46 women; M age 70 yrs) was selected from the MDB programs. ER visits and hospitalizations in the 12 months prior to and following the 1st program received were assessed via patient interview and verified by medical chart review. The MDB sample was compared to a control group of COPD patients from a primary care hospital who never received programs. Repeated measures one-way ANOVAs revealed that the rate and duration of hospitalizations were significantly reduced in the 12 months following the program compared to the 12 months prior (p <.01). These effects were stronger for women (rate reduction:79%; duration reduction:71%) than men (rate reduction:28%; duration reduction:58%). There were no differences in post-intervention ER rates for the intervention and control group (p>.05). Results indicate that a MDB intervention that focuses on enhancing patient health behaviors is effective at reducing the frequency and duration of COPD hospitalizations, and that these effects are stronger in women. Future studies are needed to determine the generalizability of these findings.
CHARACTERISTICS ASSOCIATED WITH PTSD SYMPTOMS IN SURVIVORS OF A LIFE-THREATENING CARDIAC EVENT - RESULTS FROM THE EXTENDED LICAD (LIVING WITH AN IMPLANTED CARDEOVERTER DEFIBRILLATOR) STUDY
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Survivors of a life-threatening cardiac event are prone to suffer from posttraumatic stress disorder (PTSD). For ICD patients, suitable psychological therapies should be developed with knowledge of those clinical and psychodiagnostic characteristics which are associated with elevated PTSD symptoms. A total of 189 survivors of a life-threatening cardiac event (125 men, 64 women) were drawn from the LICAD study treated at the outpatient clinic of the German Heart Center Munich. All patients underwent a psychodiagnostic evaluation. PTSD symptoms were measured by the Impact of Event Scale-R (IES-R) consisting of the three subscales intrusion, avoidance and hyperarousal. Patients with values above the upper distribution tertile of the total score were defined as suffering from PTSD symptoms. Multivariate logistic regression analysis with stepwise variable selection was used to determine the subgroup with an elevated PTSD risk. The PTSD group consisted more frequently of female (p < 0.001), younger (p = 0.045), low or medium educated (p = 0.011) and resuscitated (p = 0.004) patients. No association with the sociodemographic factors, the primary diagnosis or the number of shocks were observed. Moreover, PTSD sufferers expressed stronger symptoms regarding almost all psychodiagnostic parameters assessed (e.g. anxiety, depression, sleeping disorders). Multivariate logistic regression analysis revealed women (OR: 4.26, 95% CI 1.72-10.59) and resuscitated patients (OR: 3.51, 95% CI 1.03-12.00) as well as patients expressing helplessness, sleeping disorders, depressive symptoms or anxiety as significant factors for PTSD symptoms. The present study revealed risk groups for elevated PTSD symptoms for survivors of a life-threatening cardiac event. Especially women and patients with the experience of a resuscitation suffered from PTSD symptoms. Therefore, psychological treatment for these patients is recommended.

Abstract 1109
DOES VITAL EXHAUSTION PREDICT INFLAMMATORY DYSREGULATION IN CHRONIC HEART FAILURE?
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Background and purpose: The role of inflammatory factors in the etiology and progression of coronary artery disease and chronic heart failure (CHF) is beginning to be elucidated. Inflammatory factors have been related to various psychosocial constructs, and hence may partly mediate the relationships between psychological factors and prognosis in CHF. This study examined the prospective relation between vital exhaustion (VE), a precursor of cardiac episodes, and inflammatory dysregulation in CHF.

Methods: 128 Dutch CHF patients were evaluated for VE at baseline, using the Maasricht Questionnaire. Patients were followed for 12 months in relation to the pro-inflammatory cytokine tumor necrosis factor-alpha (TNF-alpha) and the anti-inflammatory cytokine interleukin-10 (IL-10). To model inflammatory dysregulation, we used the ratio of TNF-alpha/IL-10 as the outcome variable, and considered disease variables and depression as well.

Results: In the total sample, VE did not predict the TNF-alpha/IL-10 ratio. However, among CHF patients with an ischemic etiology, VE significantly predicted the TNF-alpha/IL-10 ratio, independent of age, gender, NYHA-class and depression (partial r = 0.35, p < 0.05).

Conclusions: To the best of our knowledge, this is among the first study showing that a psychological factor predicts future inflammatory dysregulation in ischemic CHF patients. Most previous studies in this domain have been cross-sectional. The ratio of TNF-alpha/IL-10 is related to decreased cardiac function. The findings have implications for understanding the mechanisms linking VE to prognosis in cardiac diseases and may guide future intervention studies for treating exhausted CHF patients.

Abstract 1587
ETHNIC AND GENDER DIFFERENCES IN SYSTOLIC BLOOD PRESSURE REACTIVITY TRAJECtORIES: RESULTS FROM A 10-YEAR STUDY IN YOUTH
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Objective: To examine the ethnic and gender differences in the trajectories of blood pressure (BP) reactivity from childhood into early adulthood and to what extent the differences can be explained by measures of obesity, SES, chronic environmental stress and stress-related coping styles. Method: Systolic BP (SBP) in response to two laboratory stressors (video game, forehead cold) was measured 5 times over a 10-year period in 728 African Americans (AA) and European Americans (EA) (age range: 6-25 years). Individual growth curves across age were created for SBP reactivity to each stressor. BMI and waist circumference were used as indices of general and central adiposity, respectively. SES was indexed by parental education level. Perceived life events were used to measure chronic stress. Two stress-related coping styles, anger expression and John Henryism, were evaluated. Results: (1) Forehead cold stressor: SBP reactivity increased with age (P<0.001). Across the whole age range, AA and males had a higher SBP reactivity than EAs (P<0.001) and females (P<0.001), respectively. (2) Video game stressor: SBP reactivity increased with age (P<0.01). No significant difference was found between AA and EA males in SBP reactivity. In females, AA showed a significantly higher SBP reactivity from age 6 to 18 than EAs (P<0.05). The ethnic difference disappeared after age 18 due to a faster decrease with age in SBP reactivity in AA females (P<0.001). (3) Subjects with higher BMI or higher waist had significant higher SBP reactivity to both stressors (P<0.001). Conclusion: Ethnic and gender differences in SBP reactivity to forehead cold stressor are already observed in childhood and remain stable across 10 years. Ethnic differences in SBP reactivity to the video game are only observed in females and this difference tends to decrease with age. These differences could not be explained by individual differences in adiposity, SES, chronic environmental stress and stress-related coping styles.

Abstract 1368
EFFECTS OF ACUTE PSYCHOLOGICAL STRESS ON VIRUS-SPECIFIC AND SKIN-HOMING T CELLS
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We have recently shown that acute psychological stress specifically leads to a redistribution of naïve and different subtypes of memory T cells. In this scenario, the stressor causes a relocation of less differentiated T cells into lymphatic tissue in order to encounter antigen, while antigen-experienced effector-type T cells are mobilized into the peripheral blood in order to, in case of local inflammation, home to different peripheral tissues. In our current study we investigated the consequences of this T cell redistribution for effector T cells mediating skin-related immune responses and anti-viral defense. We performed a FACS analysis of peripheral T cells in 20 test subjects undergoing a short laboratory mental stressor. In addition to staining for a broad range of chemokine receptors, we determined the number of potentially virus-specific and skin-homing T cells using a monoclonal antibody against cutaneous lymphocyte antigen (CLA). We used tetramers against HLA-A2-restricted epitopes of influenza, cytomegalovirus (CMV), and Epstein-Barr virus (EBV) to determine the number of virus-specific CD8+ T cells. Exposure to an acute laboratory stressor caused a prolonged and highly significant decrease of potentially skin-homing CD4+ and CD8+ T cells expressing CLA in the peripheral blood. Furthermore, the stressor led to an increase in peripheral numbers of EBV-, CMV-, and Influenza-specific CD8+ T cells in the majority of our test subjects. Our findings suggest that acute psychological stress might lead to an increased anti-viral immune defence mediated by human T cells. We suggest that this reaction represents an evolutionary conserved response preparing the organism for a potentially threatening event. On the other hand, acute psychological stress leads to a decrease of skin-homing T cells in the peripheral blood. We suggest, as has been indicated by animal studies, that these T cells relocate into the skin as a first line of defense against an attack.
from ‘outside’ the organism. However, a local enrichment of these effector-type T cells within the skin might also lead to an exacerbation of pre-existing inflammatory conditions, i.e. atopic dermatitis.

Abstract 1358

PSYCHOLOGICAL STRESS AND MOOD STATES AS AGGREGATING FACTORS OF TENSION-TYPE HEADACHE: INVESTIGATION USING COMPUTERIZED ECOLOGICAL MOMENTARY ASSESSMENT

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Psychological stress and mood states have been reported as aggravating factors of tension-type headache (THH) in some cross-sectional studies. However, there have been a few prospective studies confirming those relationships in daily lives. Recently, ecological momentary assessment (EMA) using electronic diaries, i.e., computerized EMA, has been proposed as an appropriate method to record subjective symptoms avoiding recall bias and false attribution of symptoms in their settings. Therefore, the aim of this study was to investigate the relationships between headache and preceding psychological stress or mood states prospectively in daily lives of THH patients using computerized EMA. Nine men and 22 women with THH (age 38.4 +/- 10.4 yrs) wore watch-type computers as electronic diaries for a week. Momentary headache intensity, psychological stress, anxiety and depression were tested using multilevel modeling with effects of preceding psychological stress, anxiety and depression with TL in the range of -6 <= TL < 0 were significant (beta = 0.15, p = 0.0071; beta = 0.16, p = 0.019; beta = 0.33, p = 0.0004, respectively). These results suggested that psychological stress, anxiety and depression might be aggravating factors of THH and would be support for treatment focusing on psychological stress or mood states in treating THH.

Abstract 1147

SYMPTOMS OF DEPRESSION AND CARDIOVASCULAR REACTIONS TO ACUTE PSYCHOLOGICAL STRESS

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Depression and exaggerated cardiovascular reactivity are considered risk factors for cardiovascular disease, possibly as a result of common antecedents, such as altered sympathetic nervous system function. These analyses examined the association between symptoms of depression and cardiovascular reactions to an acute psychological stress task. Participants were 1608 Scottish adults (875 women and 733 men), comprising three distinct and similarly sized age cohorts: 24-, 44- and 63-year olds. Symptoms of depression were assessed at interview using the Hospital Anxiety and Depression Scale. The stress task was the paced auditory serial arithmetic test (PASAT) and participants were instructed to maintain their own baseline score of 45. Subjects were tested on both passes of the test. Blood pressure and heart rate were measured at resting baseline and in response to the stress task. The stress task significantly (p < .001) perturbed systolic (mean change from baseline to task = 11.7 mmHg, SD = 11.72) and diastolic (mean = 7.0 mmHg, SD = 8.61) blood pressure, and heart rate (mean = 8.2 bpm, SD = 9.82). Depression scores (mean = 3.7, SD = 2.86) were negatively associated with the magnitude of systolic blood pressure (beta = -0.07, t = -2.70, p = 0.007) and heart rate (beta = -0.05, t = 2.17, p = 0.03) reactions, even after adjustment for likely confounders such as sex, cohort, occupational status, body mass index, PASAT performance score, and baseline cardiovascular activity and, additionally, for anti-depressant medication, which 4% participants were taking. In conclusion, symptoms of depression were associated with exaggerated cardiovascular stress reactivity but in a direction opposite to that which would be expected if they shared common antecedents or if excessive reactivity were to mediate the association between depression and cardiovascular disease outcomes.

Abstract 1416

DOES PSYCHOLOGICAL DISTRESS PREDICT BLOOD PRESSURE RECOVERY FROM STRESS IN HEALTHY MEN AND WOMEN?

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Prolonged cardiovascular (CV) recovery from stress, in addition to CV reactivity, has been proposed as an independent risk factor for CV disease. Depression and hostility have also been implicated in the CV disease process. Some evidence suggests heightened CV reactivity may mediate the linkage between depression and hostility and CV pathology. However, the role of CV recovery from stress has not been well examined in this context. The present study investigated whether self-reported indices of anger, anxiety, depression, and hostility predicted blood pressure (BP) recovery from acute stress. The 339 normotensive healthy individuals (52% men) were 18–55 years of age (M= 35.5, SD= 9.1). Subjects participated in a study assessing the relationship of CV reactivity with indices of CV disease risk. The BP response to the 2 min foot-immersion cold pressor task was measured at baseline, during, and after the stressor. The State Trait Anger Expression Inventory, Spielberg Trait Anxiety Inventory, Beck’s Depression Inventory, and Cook-Medley Hostility Scale were used to assess psychological distress.

A structural equation model (SEM) was specified to test whether two latent variables derived from the psychological measures (i.e., anger/hostility, anxiety/depression) predicted a linear latent growth model of BP recovery over 12 min post stressor, while controlling for sex. The fit for the final model (Chi-square(27)= 36.4, p= .11) and indicated that greater anger/hostility was associated with slower systolic (SBP) recovery (Z= 1.92, p= .054), whereas higher anxiety/depression was associated with faster SBP recovery (Z= -1.9, p= .057). Men had higher initial SBP levels during the recovery than women (Z= -6.67, p=.05), but women had a larger SBP decrease during the recovery than men (Z= 2.32, p< .05). However, psychological factors did not predict diastolic BP recovery from stress. The findings indicated that following the stress-induced BP elevation, the SBP recovery was more prolonged in individuals who reported greater anger and hostility and was more rapid in individuals who reported more anxiety and depression. Thus, the influence of psychological distress on CV recovery may be mediated by cardiac mechanisms.

Abstract 1521

ENDOTHelial FUNCTION AND STRESS-INDUCED ISCHEMIA

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Mental stress may act as a trigger of myocardial infarction, and has been shown in laboratory settings to induce ischemia. However, the underlying mechanisms of stress-induced ischemia remain to be determined. Stress-induced impairment of endothelial function (EF) has been implicated as a mechanism. The current study examined the effects of mental stress on EF and its association with mental stress-induced ischemia. EF was measured during rest and during a 6 min mental stress task on separate days in twenty-nine male patients (age (SD) = 60 (15) years) who underwent a nuclear imaging exercise test. EF was assessed with a non-invasive measurement of flow-mediated dilatation technique. 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. Myocardial perfusion was assessed using SPECT 45 minutes following the injection of Myoview. Overall, there was no significant change in EF during mental stress (F (1,27) = 0.03, p= .87), with 50% of the patients showing a decrease in EF and 50% of the patients showing an increase in EF. In 50% of the patients there was evidence of mental stress-induced ischemia. Additional analyses were conducted to examine if those patients that showed a decrease in EF were more likely to display mental stress-induced ischemia. However, no significant association was found (Chi square= 0.67, p=0.41). In conclusion, this study showed no significant association between changes in EF function during mental stress and stress-induced ischemia, and as such, does not show evidence for EF impairment as a mechanism for ischemia during mental stress.
In conclusion, the results of the study are consistent with previous knowledge regarding the health detrimental effect of job insecurity. Nevertheless, in the second phase, the first phase was examined prospectively via daily diary assessment of social interactions and salivary cortisol. In the second phase, daily social contacts were manipulated using a within-subjects design. 53 females experienced both high and low social contact conditions in the lab while continuing to collect ambulatory data on their social interactions and cortisol levels. Data from both phases were analyzed using a mixed-models approach, such that cortisol production on days with more social contacts was compared with cortisol production on days with fewer social contacts. Results from the first phase suggested that more social contact is associated with steeper cortisol slopes on the current and subsequent days. Steeper cortisol slopes may indicate better HPA axis function and predict better health outcomes. Results from the second phase show that the manipulation altered social contacts but had no significant effect on cortisol slope. Within-person cortisol slope differences were greatest among participants who interacted with someone they had known a long time or someone they had close daily contact. Enduring social relationships that provide daily contact may have the strongest links to cortisol rhythms. Cumulatively, these findings suggest that in addition to previously articulated pathways, social relationships may influence health via a direct effect of social contact on physiology.

Abstract 1328

**DAILY SOCIAL CONTACTS AND DIURNAL CORTISOL LEVELS: RESULTS FROM A DAILY DIARY STUDY AND WITHIN-PERSON MANIPULATION**

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Social relationships have been linked with health across decades of research. Although stress buffering and health behavior models are well understood pathways for this effect, the direct effects of social contact on physiology have received less attention. Previous research in our lab suggests that the social contact necessitated by routine daily activities may help to regulate the diurnal pattern of cortisol secretion. The current study investigated the relationship between daily social contacts and diurnal cortisol secretion in two phases. In the first phase, the association was examined prospectively via daily diary assessment of social interactions and salivary cortisol. In the second phase, daily social contacts were manipulated using a within-subjects design. 53 females experienced both high and low social contact conditions in the lab while continuing to collect ambulatory data on their social interactions and cortisol levels. Data from both phases were analyzed using a mixed-models approach, such that cortisol production on days with more social contacts was compared with cortisol production on days with fewer social contacts. Results from the first phase suggested that more social contact is associated with steeper cortisol slopes on the current and subsequent days. Steeper cortisol slopes may indicate better HPA axis function and predict better health outcomes. Results from the second phase show that the manipulation altered social contacts but had no significant effect on cortisol slope. Within-person cortisol slope differences were greatest among participants who interacted with someone they had known a long time or someone they had close daily contact. Enduring social relationships that provide daily contact may have the strongest links to cortisol rhythms. Cumulatively, these findings suggest that in addition to previously articulated pathways, social relationships may influence health via a direct effect of social contact on physiology.
Abstract 1539

ALCOHOLISM RISK FACTORS AND EMOTION MODULATED STARTLE RESPONSE: FINDINGS FROM THE OKLAHOMA FAMILY HEALTH PATTERNS PROJECT

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Diminished eye blink responses to affectively negative stimuli have been found in healthy individuals with a family history (FH) of alcoholism suggesting that diminished startle reflex may serve as a risk marker for the development of substance use disorders. Other work shows diminished startle in relation to antisocial and psychopathic features in incarcerated and nonincarcerated males as well as alcoholics with Antisocial Personality Disorder. This raises the question of whether diminished startle to negative stimuli is a characteristic of substance abuse risk, psychopathic characteristics, or both. We examined emotional-modulated startle eye blink response to a series of positive, neutral, and negative slides from the International Affective Picture System in 173 healthy participants (101 Females; 72 Males) with and without a FH of alcoholism (86 FH+; 87 FH-) in relation to disinhibition characteristics (California Personality Inventory; Sociability subscale) and psychopathy (Psychopathic Personality Inventory; PPI Factor I). Participants were enrolled in the Oklahoma Family Health Patterns Project, a long-term study on risk for substance abuse. A Repeated Measures Analysis of Variance indicated that startle magnitude differed across the three valences (F = 95.84, p < .0001), but did not differ by FH of substance use. Stepwise regression revealed two variables that accounted for 7% of the variance in startle eye blink responses to negative stimuli (F = 6.93, p = .0013): 1) Sociability (β = .18, p = .0138) and 2) PPI Factor I (β = -.20, p = .0075). Diminished startle response to negatively affective stimuli is not associated with FH independent of psychopathic and disinhibitory traits.

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Abstract 1549

THE IMPACT OF DEPRESSIVE SYMPTOMS ON THE EFFICACY OF NALTREXONE IN SMOKING CESSATION


Purpose: Given the theory that the endogenous opioid system may be involved in the affect regulating properties of nicotine, we investigated the role of depressive symptoms on response to naltrexone in a smoking cessation trial. Sample and Methods: Participants were 110 nicotine dependent, non currently depressed smokers who were randomly assigned to the naltrexone (n=52) or placebo group (n=58). Subjects began taking their study medication at a 25 mg dose daily three days prior to the quit date and increased to 50 mg on the quit date and the remaining eight weeks. All subjects received six weekly behavioral counseling sessions and nicotine patches for one month (21 mg for two weeks, 14 mg for one week, and 7 mg the last week). Negative affect was assessed at each weekly visit by the Beck Depression Inventory. Quit rate success was defined by not smoking or one more days in two consecutive weeks and not smoking daily for one week at any point in the trial (confirmed by expired air carbon monoxide tests). Results: The groups did not differ on any major demographic or baseline smoking characteristic. Quit rate success was directly higher for the naltrexone (60%) compared to placebo group (53%). Logistic regression analyses indicated an interaction between depressive symptoms and naltrexone. Naltrexone was related to better quit rates than placebo at higher levels of depressive symptoms [Odds ratio = 4.61, p < .05], but not at medium or lower levels. Further, higher depression scores predicted lower quit rates in the placebo group [Odds ratio = 0.77, p < .05], but not in the naltrexone group. Controlling for history of major depression (present in approximately one third of the sample) did not alter the results. These findings suggest that individual differences in depressive symptoms may be important determinants of clinical response to naltrexone, and may help to clarify discrepancies in prior studies of naltrexone and smoking cessation.

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Abstract 1823

IMPULSIVE ERRORS ON A GO-NOGO REACTION TIME TASK IN PERSONS WITH A POSITIVE FAMILY HISTORY OF ALCOHOLISM

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The Oklahoma Family Health Patterns Project has previously reported that individuals with a positive family history (FH+; N = 126) for alcoholism, compared to FH- (N = 125), display greater behavioral disinhibition in the form of low scores on the sociability scale of the California Psychological Inventory (CPI-soc), (t = 6.93, p < .0000001). This behavioral disinhibition, preferentially seen in males, appears to contribute to risk for alcoholism. A primary example of behavioral disinhibition is impulsivity. Therefore, we examined impulsivity in relation to FH, gender, and disinhibited temperament by applying signal detection analysis to a Go-NoGo reaction time task, administered to 230 18-30 year old non-alcoholics. Impulsivity was defined by an increased number of false alarms.

As hypothesized, a multiple regression analysis of FH, gender, and behavioral disinhibition predicted increased false alarms, F (3, 226) = 3.89, p=.0097, accounting for 4.9% of the variance. With no interaction effects, statistical significance was found in main effects for behavioral disinhibition, F (1, 226) = 5.15, p = .024, and gender, F (1, 226) = 6.27, p = .013, but not in FH. An additional partial correlation analysis was conducted, controlling for FH. Results showed a statistically significant correlation between false alarm rate and behavioral disinhibition, r = -.153, p = .021, and gender, r = .16, p = .015. Converging with previous results, behavioral disinhibition and male gender predicted greater impulsivity in the form of increased false alarms on the go-nogo reaction time task. These findings suggest that impulsivity may represent a behavioral risk for future alcoholism.

Abstract 1612

HEART RATE VARIABILITY AND MOOD STATE IN ENDURANCE ATHLETES WITH OVERTRAINING SYNDROME

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The aim of the study was to assess heart rate variability (HRV) and mood state of endurance athletes with overtraining syndrome against a background of training regimen and diet. HRV, nutritional intake per kg body weight, average training hours per week and mood state of 10 endurance athletes with overtraining syndrome (OTS) were compared to that of 20 endurance athletes without overtraining syndrome (NOTS). RR intervals were recorded and interbeat variability calculated by means of time domain and frequency domain analysis in the supine position and after an orthostatic stressor. The Profile of Mood State Test (POMS) was employed. The computer program Food Finder was used to estimate nutritional intake and training hrs were noted. Resting and stress HRV data were recorded. Results showed no significant difference in nutritional intake per kg body weight of total energy, total protein, total carbohydrate, total fat or micronutrient intake between the groups. There were significant differences between hours of training per week (OTS: 17.5 hrs vs. NOTS: 11.5 hrs; p = .0031), and between energy intake (per kg body weight) divided by hours of weekly training (p = 0.0423). In the NOTS group 27.7% used recovery meals compared to 41.6% of the OTS group. Significant differences were found between the groups for all the POMS variables except tension: Depression (p=0.0014); Anger (p<0.0001); Vigour (p<0.0001); Fatigue (p=0.0001) and Confusion (p=0.0038). The resting and stress RR intervals were significantly lower in the OTS group (p=0.0010 and p=0.0014). Stress LF values and LF/HF were significantly higher (p = 0.0276 and p = 0.0387) in OTS.In conclusion, the OTS group had more strenuous training programs with less attention to recovery meals. The OTS group rated higher in depression, anger, fatigue and confusion, lower in vigour and had lower RR intervals. Sympathetic outflow to the heart during orthostatic stress was higher in the OTS than in NOTS group.
CORRELATION BETWEEN MOOD STATUS AND PLASMA ACYLATED GHELIN LEVELS IN ANOREXIC AND BULIMIC PATIENTS
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The pathogenesis of anorexia nervosa (AN) and bulimia nervosa (BN) remains still unclear. It has been reported that neuropeptides such as leptin and ghrelin may play a role not only in the control of appetite and body weight, but also in determining mood status. However, little study has investigated the correlation between plasma leptin, ghrelin, and psychological variables in eating disorders (ED). Therefore, in this study, to determine the possible correlation between psychological variables and neuropeptides in ED, Profile of Mood Status (POMS), Eating Attitude Test-26 (EAT-26), Eating Disorder Inventory-2 (EDI-2), and Bulimic Inventory Test of Edinburgh (BITE) were performed in 18 female patients with AN [age, 23.5 +/- 7.1 yr; body mass index (BMI) 14.5 +/- 1.8 kg/m2], 17 female patients with BN (age, 26.7 +/- 4.7 yr; BMI 19.3 +/- 2.6 kg/m2), and 17 age-matched female controls (age, 25.8 +/- 3.9 yr; BMI 20.2 +/- 1.6 kg/m2). We also collected blood samples after overnight fast, and measured the plasma levels of leptin and acylated ghrelin. We found a significant difference in AN patients compared with BN patients and controls (p < 0.001) while plasma acylated ghrelin levels were not significantly different among the three groups. After controlling for BMI, plasma acylated ghrelin levels were significantly correlated with the scores on Tention-Anxiety, Depression, Fatigue, Confusion, and Total Mood Disturbance subscales of POMS (r = -0.54, p < 0.03; r = -0.51, p < 0.04; r = -0.70, p < 0.01; r = -0.50, p < 0.05; r = -0.57, p < 0.02, adjusted for BMI, respectively) in ED while plasma leptin levels were not correlated with any psychological variables. In conclusion, plasma acylated ghrelin levels might be related to the mood status in ED although the precise mechanism has to be investigated in further studies.

POOR SLEEP INDEPENDENTLY PREDICTS ELEVATED PLASMA FIBRINOGEN LEVELS IN PATIENTS WITH VENOUS THROMBOEMBOLIC DISEASE
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Rheological changes of the blood are thought to increase the risk of venous thromboembolism (VTE). Plasma fibrinogen contributes to blood viscosity. Poor sleep has been shown to be associated with elevated fibrinogen levels. The role of sleep in the thrombophilic state of patients with VTE has not been investigated so far. We hypothesized that poor sleep quality would be associated with plasma fibrinogen levels in patients with VTE. We consecutively enrolled 62 patients (52% men; mean age 44±13 years; mean body mass index (BMI) 26±5 kg/m2) who had thrombophilia work-up because of a history of an objectively diagnosed spontaneous VTE (e.g. deep venous thrombosis of the lower limb, pulmonary embolism) and who had no permanent risk factor for VTE (e.g. cancer). Subjective sleep quality was scored by the Jenkins Sleep Questionnaire summing up responses on four items asking for a) difficulty in initiating sleep, b) awakening during the night, c) awakening during sleep with difficulty maintaining sleep, and d) awakening exhausted in the morning despite having slept as usual. Plasma fibrinogen levels were determined by an automated Clauss assay using a coagulometer. Age, gender, and BMI were controlled for in hierarchical linear regression analysis. Independently of these covariates, poor sleep quality predicted higher plasma fibrinogen levels (beta=0.23, p=0.050, dR²=0.050). Additional adjustment for aspirin use rendered this relationship even stronger (beta=0.25, p=0.033, dR²=0.055). In patients with a history of spontaneous VTE, poor sleep quality was an independent predictor of plasma fibrinogen levels. Future studies need to show whether such a rheological mechanism could possibly increase the risk of VTE.

RESTLESS LEGS SYNDROME (RLS) AND DEPRESSION ARE ASSOCIATED IN PATIENTS AFTER RENAL TRANSPLANTATION
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There is little information on the prevalence and clinical correlates of sleep disorders in kidney transplanted patients. Epidemiological studies showed an association between RLS and depression in the general and in the dialysed population, but none of them analyzed the association between RLS, insomnia and depression. The aim of the study was to investigate the relationship between RLS, insomnia and depression. Patients who had received renal transplant (n=1067) and were followed at a single outpatient transplant center at Semmelweis University, Budapest have been approached to participate in a cross-sectional study. Demographic information was collected at enrollment. The patients completed a battery of validated questionnaires including the Athens Insomnia Scale, Center for Epidemiologic Studies-Depression Scale (CES-D), and Restless Legs Syndrome Questionnaire (RLS-Q). 788 patients completed the CES-D scales. 59% of patients were male, mean age was 48 ±13 years. Prevalence of depression was 22.2%. We found a significant difference in the prevalence of depression in patients with RLS compared to those without the condition (49% vs 21%; p<0.001). The median insomnia score was also significantly higher in patients with RLS vs without RLS (median (IQR): 6 (6.5) vs 2 (4); p<0.001). RLS was independently associated with the presence of depression in multivariate analysis after controlling for several important co-variables. RLS remained an independent predictor even after entering the insomnia scale score in the model (OR=2.293; 95% CI=1.024-5.136; p=0.044).

We found that the presence of RLS is an independent and significant predictor of depressive symptoms in kidney transplanted patients, and this relationship is not exclusively mediated through insomnia.

NEW PREDICTOR OF MORTALITY IN KIDNEY TRANSPLANTED PATIENTS: RESTLESS LEGS SYNDROME
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Previous studies showed significant association between the presence of restless legs syndrome (RLS) and mortality in population with kidney disease. The association between cardiovascular risk, which is the leading cause of death in transplanted patients, and RLS was also indicated, and RLS was associated with higher mortality in the dialyzed population. However, no prospective study to date has demonstrated the association between the presence of RLS and mortality in kidney transplanted patients. In our prospective cohort study (TransQol-HU Study) we tested the hypothesis that the presence of RLS predicts mortality in transplanted patients. Data from more than 1000 transplanted patients, followed at a single outpatient transplant center, were analyzed. Socio-demographic parameters, laboratory data, medical history were collected at baseline. Data on 4-year mortality were collected prospectively from the patients’ charts. Mortality at 4 years was significantly higher in patients who had RLS at baseline (for presence of RLS versus absence of RLS in patients, respectively: mortality 26% vs 11%; p=0.05). In multivariate Cox proportional hazard model the presence of RLS significantly predicted mortality (HR = 2.011; 95% CI: 1.032-3.918) after adjustment for several co-variables. RLS, which is a treatable disorder, is a significant and independent predictor of mortality in kidney transplanted patients.
Abstract 1788

CARDIOVASCULAR DISEASES IN SNORERS: A POPULATION SURVEY
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Snoring is a frequent complaint in the adult population and in some studies snoring has been associated with increased risk of hypertension, ischemic heart disease and stroke. The purpose of the study was to assess the prevalence of self-reported snoring in the Hungarian population and to find out whether the different types of snoring are associated with cardiovascular disorders. Data were collected within the framework of a large-scale survey of health behavior of the Hungarian population (Hungarostudy 2002). This cross-sectional survey enrolled a nationally representative sample of the Hungarian population which represented 0.16% of the population over the age of 18 years according to age, sex and 150 sub-regions of the country. We used the National Population Register as the sampling frame and implemented a clustered, stratified sampling procedure. Self-reported information on snoring, hypertension, myocardial infarction and stroke were collected. Interviews were carried out in the homes of 12,643 persons. Forty-five percent of the total study population were males. Thirty-seven percent of males and 21 % of females reported loud snoring with breathing pauses. Hypertension, myocardial infarction and stroke were reported by 26%, 3% and 4% of the respondents, respectively. There was a significant increasing trend in the prevalence of hypertension, myocardial infarction and stroke between non- snorers, quiet and loud snorers. Multivariate analysis showed association of loud snoring with hypertension (Odds ratio [OR]:1.42 [95%CI:1.27-1.61]), myocardial infarction (OR:1.34 [95%CI:1.04-1.72]) and stroke (OR:1.67 [95%CI:1.33-2.09]) after statistical adjustment for age, gender, body mass index, level of education, smoking and alcohol consumption. Snoring is frequent in the Hungarian adult population and loud snoring with breathing pauses, in contrast to quiet snoring, is associated with an increased risk of cardiovascular diseases.

Abstract 1531

DECREASED FATIGUE SYMPTOMS ARE ASSOCIATED WITH IMPROVED CARDIAC FUNCTIONING IN TREATED SLEEP APNEAS
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Fatigue is associated with many illnesses including obstructive sleep apnea (OSA). Fatigue along with daytime sleepiness are 2 of the hallmarks of OSA. Abolishing the disrupted sleep and establishing a normal sleep pattern is associated with decreased fatigue and improved daytime cardiac functioning. Previous studies have demonstrated that OSA patients have impaired hemodynamic responses to stressors. We examined the change in fatigue associated with improved cardiac functioning in treated and untreated OSA. Seventy-three subjects were treated for OSA with continuous positive airway pressure (CPAP), oxygen supplementation to bring nighttime O2 saturation above 90%, or sham CPAP for 2 weeks. Fatigue was assessed before and after treatment with Profile of Mood States fatigue subscale. Cardiac functioning was assessed with impedance cardiography at rest and in response to a speech stressor. The dependent variables were stroke volume (SV) and mean arterial pressure (MAP). The change in the POMS fatigue score was determined and a fatigue grouping was made by dividing the fatigue change into tertiles. There was a significant Treatment X Fatigue X stress interaction for SV (p = 0.027). Neither the control group nor the O2 group showed any change in stroke volume in response to the stressor. Among the subjects receiving CPAP, SV was higher than in the other groups and was also more responsive to the challenge (p < .002). Furthermore, in the patients who reported the largest decrease in fatigue during treatment, SV was the most responsive (p < 0.013. For MAP there was a main effect for stress (p = 0.001) and a main effect for fatigue (p = 0.03) such that blood pressure increased in response to the stressor and was higher in the subjects reporting increased fatigue. CPAP appears to affect the relationship between fatigue and cardiovascular function in OSA patients. Specifically, patients with more responsive cardiac and reduced fatigue symptoms were those treated with CPAP. Those patients who had the largest increase in SV in response to CPAP also had the largest decrease in fatigue. These observations imply that links between fatigue and cardiac functioning need to be studied further.

Abstract 1560

PSYCHOSOCIAL CORRELATES OF ADHERENCE TO COLORECTAL CANCER SCREENING GUIDELINES
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This population-based study used a biopsychosocial framework to identify psychosocial correlates of adherence to colorectal cancer (CRC) screening guidelines in average-risk residents of Newfoundland, Ontario, Saskatchewan and British Columbia. Study subjects were respondents (aged 50 years and older, without past or present CRC) to the 2003 Canadian Community Health Survey Cycle 2.1. Psychosocial characteristics included perceived stress, perceived work stress, life satisfaction and perceived mental health. Three adherence outcomes were defined: i) having a FOBT in the past 2 years, ii) having a screening endoscopy (colonoscopy/ flexible sigmoidoscopy) in the past 10 years, and iii) adhering to CRC screening guidelines, defined as either (i) or (ii). A generalized estimating equations approach was employed to identify socio-demographic, lifestyle, clinical, psychosocial and environmental correlates of the 3 outcomes. Results showed that of the 17,646 respondents, 70% were non-adherent to CRC screening guidelines. Specifically, 85% and 79% were non-adherent to FOBT and endoscopy screening, respectively. Across provinces, self-perceived stress was the only psychosocial characteristic associated with higher odds of adherence to endoscopy screening and of adherence to CRC screening guidelines (OR= (ii) 1.07; (iii) 1.06). Additional correlates included having a regular physician (OR= (i) 2.67; (ii) 1.90; (iii) 2.38), getting a flu shot (OR= (i) 1.59; (ii) 1.50; (iii) 1.56), and having a chronic condition (OR= (i) 1.32; (ii) 1.48; (iii) 1.43). In conclusion, individuals with increased stress, who may seek frequent health care, were more likely to have been screened for CRC according to current guidelines.

Abstract 1598

HIV/AIDS: EXAMINATION OF CONSPIRACY IN DIFFERENT ETHNIC GROUPS
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Previous research has documented the existence of conspiracy beliefs related to HIV/AIDS (e.g., that AIDS was produced in a government laboratory). Such beliefs are typically endorsed more frequently by African Americans than Caucasians in the United States. Belief in AIDS conspiracies has been shown to be related to lower levels of self-protective sexual behaviors, such as consistent condom use. The present research assessed conspiracy beliefs among three different ethnic groups of patients seeking STD clinic services (N=367). Participants completed measures assessing sexual risk behavior, substance use, education, and HIV/AIDS conspiracy beliefs. Conspiracy beliefs differed significantly among different racial groups (F (2, 361) = 13.48, p <.001). Post-hoc analyses indicated that African American participants scored significantly higher on the conspiracy belief measure than Caucasian or Latino participants. Conspiracy beliefs were negatively correlated with education among Caucasian participants. However, education was not associated with conspiracy beliefs among Latinos or African Americans. High-risk sexual behavior was associated with conspiracy beliefs among Caucasians but not among the other racial groups surveyed. In the sample as a whole, conspiracy beliefs were associated with higher levels of substance use. Future research should examine if education related to conspiracy beliefs might increase adherence to safer-sex practices.
Abstract 1767

COULD LASTING REDUCTIONS IN NATURAL KILLER CELL CYTOTOXIC ACTIVITY IN WOMEN WITH OLDER AGE OF FIRST FULL TERM PREGNANCY CONTRIBUTE TO THEIR INCREASED RISK OF BREAST CANCER?
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The protective effect of having a child on a woman's risk of developing breast cancer is preceded by a period of increased risk. The period of increased risk becomes progressively longer for women who are older at the time of their first full-term pregnancy (FFTP), exceeding 20 yrs for those over 30. The mechanisms responsible for this pregnancy-associated breast cancer risk are poorly understood. Possible immunologic mechanisms are suggested by a large literature documenting changes in systemic immune function during pregnancy, including reduced natural killer cell cytotoxicity (NKCC). The present study explored the possibility that older age at FFTP may be associated with lasting reductions in NKCC independent of potential psychological and behavioral covariates. A convenience sample of 58 healthy parous women (age: 41±8, 26-63) was scheduled for study during the luteal phase of their menstrual cycles. Participants completed validated questionnaires, including the Brief Symptom Inventory, the Perceived Stress Scale, the Profile of Mood States, and a Demographic/Health Behavior Questionnaire. Blood was collected between 8-11AM by venipuncture for blind assessment of NKCC using standard Cr-release whole blood protocols with K562 targets. Consistent with the study hypothesis, NKCC was found to be negatively related to age at FFTP (p<.005). This relationship remained significant (p<.01) after inclusion of current age and number of children (mean=2.1) in the model. When analysis was limited to premenopausal women, similar results were found. Psychological, demographic, and health behaviors did not account for significant effects. Results suggest that the suppressive effects of pregnancy on NKCC may be particularly severe and/or long lasting in women with older ages at FFTP. Findings stress the importance of additional research to explore the contribution of reduced NKCC to pregnancy-associated risk of breast cancer.

Abstract 1196

PATTERNS OF BRAIN ORGANIZATION AND PREVALENCE OF ASTHMA
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The author has hypothesized that patterns of brain organization are related to health outcomes. The present study is a preliminary test of this hypothesis as it may apply to asthma. The hypothesis predicts that individuals with brains characterized by a large number of anomalous brain conditions (ABCP) will have an increased prevalence of many disorders including asthma. The present study attempts to test this prediction in a group of 436 females with a lifetime diagnosis of major depression from the author's private psychiatric practice (1961-2005). ABCP are behavioral phenomena that deviate from the statistical norm of the general population (eg, speech disorders, left or mixed handedness, left-right differentiation difficulties). Twenty ABCP were used as "markers" to designate 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 delineates different patterns of brain organization.

Sixty-eight (15.6%) of the patients had a lifetime diagnosis of asthma. Index age and years of education of the groups with and without asthma were not significantly different. The prevalence of asthma was found to be significantly correlated with the number of ABCP (r=.12, p<.05). Analyzing the same data with the Mantel-Haenszel Chi-Square, this relationship was significant (6.09, p<.01). The prevalence of asthma in patients with 0-1 ABCP (N=37) was 8%, while that in patients with 8 or more ABCP (N=41) was 21.9%. Using logistic regression, the number of ABCP were found to make an independent contribution to the prevalence of asthma when family history of asthma was controlled (p<.01). These data lend support to the hypothesis.

Abstract 1061

PLACEBO ANALGESIA AND HEART RATE VARIABILITY
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The present experiment investigated whether administration of placebo affected heart rate variability during heat pain. It was hypothesized that the ratio of low frequent to high frequent (LF/HF) heart rate variability would decrease after administration of an inert substance together with information that it was a powerful painkiller. In a within subjects design, 20 participants (10 females) were tested on two separate days, one day for the placebo condition and one day for control. In the placebo condition, the participants received two capsules containing 75mg lactose each during the second of five pain tests, with information that the pills were a high dose of a standard over-the-counter analgesic with high pain analgesic effect on heat pain. In the control condition, the same subjects underwent the same five pain tests, but without placebo administration. Pain tests consisted of heat pain (46°C, duration 240 seconds) to the forearm. ECG was recorded continuously for spectral analysis of heart rate variability. Subjective pain intensity, pain unpleasantness, stress and arousal were measured on VAS scales during each pain test. In addition, mood was measured by the SAM. Results revealed that the LF/HF ratio during painful stimulation decreased significantly in the placebo condition compared to the control condition after placebo administration (F(1,19)=8.76, p<.01), but this effect was only significant for the first two pain tests after placebo administration. Moreover, a main effect of placebo on heart rate variability was found (F(1,19)=8.43, p<.01), with lower ratio of LF/HF in the placebo condition. There was lower pain intensity (F(1,19)=14.99, p<.01) and pain unpleasantness (F(1,19)=7.47, p<.04) in the placebo condition compared to the control condition. Subjective stress during pain was decreased after placebo administration, and there was lower subjective stress in the placebo condition compared to the control condition (F(1,19)=13.06, p<.01). There were no significant effects on arousal or mood. The results from the present experiment suggest that placebo analgesia is accompanied by a reduction in cardiac autonomic activation and a reduction of subjective negative emotions.

Abstract 1805

PERSONAL CONTROL IN CHRONIC PAIN SUFFERERS DURING ACUTE INTERPERSONAL STRESS
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Among individuals with Rheumatoid Arthritis (RA), pain-associated stress can severely impact wellbeing. Psychological attributes, such as a sense of personal mastery, may attenuate the effects of chronic pain on life quality. We tested the hypothesis that a high sense of mastery would predict lower pain, perceived stress, fatigue, and mean arterial pressure (MAP) than would a low sense of mastery during an acute, interpersonal stressor. Seventy-four individuals with RA completed a psychophysiological laboratory session involving MAP measurements, as well as self-ratings of stress, joint pain, and fatigue. Measurements were collected before, during, and after an interpersonal stressor. To assess personal mastery, exploratory and confirmatory factor analyses were conducted on the Pearlin Mastery Scale based on recommendations by Reich and Zautra (1991). The Pearlin Mastery Scale yielded two distinct factors: familialism and control. Both fatalism and control were significant predictors of the wellbeing variables. Individuals with a highly fatalistic style demonstrated higher general levels of mean arterial pressure (F(1) = 3.41, p<.1) and reported greater joint pain (F(1) = 4.72, p<.05) across all periods. Individuals with a high sense of control also evidenced lower MAP (F(1) = 3.73, p<.1) and reported less stress (F(1) = 7.44, p<.01) and fatigue (F(1) = 5.16, p<.05).

Neither fatalism nor control were related to objective measures of disease severity (r's = -.10, p=NS and -.02, p=NS, respectively). RA patients with a high level of personal mastery, as evidenced by scores on two distinct indices, experience lower MAP, and report less pain, stress and fatigue. Although fatalism and control were not related to objective disease state, they seem to play an important role in the experience of wellbeing for people with RA.
Abstract 1129

ASSOCIATIONS BETWEEN DEPERSONALIZATION, MINDFULNESS AND CHILDHOOD ADVERSITIES IN PAIN-PATIENTS AND NON-PATIENTS

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Depersonalization (DP) can be considered as a form of mental escape from the full experience of reality. This mental escape is thought to be etiologically linked with maltreatment during childhood. Phenomenologically, DP represents the opposite of a mindful state of consciousness. Against this background, the present paper looks to examine connections between DP severity, mindfulness and childhood trauma. The sample consisted of 163 subjects, 102 consecutive patients of a pain-outpatient-clinic and 61 non-patients. We administered the German version of the Cambridge Depersonalization Scale (CDS-9, short version of the CDS), the Mindfulness Attention and Awareness Scale (MAAS), the Symptom-Check-List-27 and the Childhood Trauma Questionnaire (CTQ). We found a strong inverse correlation between DP severity and mindfulness (r=-0.56, p<0.001), which persisted after partialing out the general psychological distress and age (rGSI&Age=-0.45, p=0.001). Additionally we found a significant correlation between emotional a history of maltreatment/neglect with DP and MAAS in the non-patients: CDS-9 with MAAS (rGSI&Age=-0.45, p<0.001), CDS-9 with emotional abuse (rGSI&Age=-0.43, p<0.001), CDS-9 with CTQ-total (rGSI&Age=-0.37, p=0.03), MAAS with emotional abuse (rGSI&Age=-0.38, p<0.003), MAAS with emotional neglect (rGSI&Age=-0.36, p=0.04) and MAAS with the CTQ-total (rGSI&Age=-0.38, p<0.003). The results are in line with a view of depersonalization as the antithesis of mindfulness and support trials on mindfulness-based interventions for DP. The findings further throw light on potential developmental factors contributing to mindfulness.

Abstract 1146

DIURNAL CORTISOL RHYTHMICITY IN CHRONIC PAIN SYNDROME

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Despite increasing interest in the role of cortisol rhythmicity in health and disease, there is a lack of empirical data specifically examining diurnal cortisol patterns in chronic pain. The aim of this study was to examine diurnal functioning of the hypothalamic-pituitary-adrenal (HPA) axis in chronic pain patients. The sample consisted of 33 adults with non-inflammatory chronic pain syndrome (CPS) and 40 healthy controls. All participants completed a consecutive two-day cortisol sampling schedule, providing saliva samples at awakening, 30 minutes post awakening, pre lunch, pre dinner and pre bed on both days. All participants completed self report questionnaires of anxiety/depression and anxiety sensitivity. In addition, patients also reported pain experience and fear and anxiety relating to chronic pain. The chronic pain group were found to have a significantly lower overall mean of cortisol across the day when compared to the control group (p<0.01) but no significant time by group interaction emerged. Assessed independently, time of cortisol sampling was significantly lower in patients compared to controls at 30 minutes post awakening (p<0.05), pre lunch (p<0.05) and pre dinner (p<0.05) sampling points and marginally significant at awakening. No significant effects were found for the awakening cortisol response or for diurnal cortisol slope. Greater anxiety in controls was associated with a higher 30 minute post awakening cortisol level but conversely, for patients, greater anxiety was associated with a lower cortisol level at this diurnal point (p<0.05). Results suggest an altered pattern of diurnal cortisol in chronic pain, providing important information in establishing a baseline assessment for endocrine alteration following psychosocial intervention.

Abstract 1271

ASSOCIATIONS OF A REGULATORY POLYMORPHISM OF THE MONOAMINE OXIDASE-A GENE PROMOTER (MAOA-UVNTR) WITH SYMPTOMS OF DEPRESSION, SLEEP QUALITY, BODY MASS INDEX, AND LIPOPS


Purpose: The monoamine oxidase-A (MAOA) gene, which plays a vital role in degradation of neurotransmitters such as serotonin, norepinephrine, and dopamine, contains a polymorphism in its promoter region (MAOA-uVNTR) that affects transcriptional efficiency. We examined relations among MAOA-uVNTR allelic variation and symptoms of depression, sleep quality, body mass index (BMI), and lipid levels. Methods: The sample consisted of 74 males from a case/control study of caregivers for dementia patients. Age and race adjusted regression models were used to model the relation between low vs high MAOA-uVNTR activity alleles and: depressive symptoms (affective, interpersonal, well-being, and somatic), the Pittsburgh Sleep Quality Index, BMI, and lipids. Results: Stress (caregiver vs control) did not moderate MAOA-uVNTR effects. MAOA-uVNTR alleles were associated with (adj.mean [Stand. Error]): somatic symptoms of depression less active alleles =5.9(6.8) vs more active alleles =3.1(5.0), p<0.01; worse sleep less active alleles = 7.4(8.2) vs more active alleles = 5.5(6.0), p<0.04; higher total cholesterol less active alleles =200(6.6) vs more active alleles =185(15.2), p<0.04; LDL/HDL less active alleles = 5.1(2.2) vs more active alleles = 2.5(1.8), p<0.01; and triglycerides less active alleles = 165(24.6) vs more active alleles =119(19.2), p<0.02. HDL (p<0.08), and LDL (p<0.14) were unrelated to MAOA transcription, but the observed trend was in the same direction. BMI was unrelated to MAOA activity (p=0.71), as were other depressive symptoms (p=0.62). Summary: The relation of less active MAOA-uVNTR alleles with adverse levels of somatic depressive symptoms, sleep quality, and lipid levels.
suggests that less active MAOA-uVNTR alleles may exert a pleiotropic influence on behavioral and physiological outcomes—putting individuals with less active alleles at increased health risk.

Abstract 1298
NEURAL BASIS OF IMPAIRED EMPATHY IN ALEXITHYMIA
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Alexithymia, originally found in psychosomatic diseases, is a difficulty in identifying and expressing one's own emotional states. Alexithymia is also related to many psychiatric disorders such as autism and Asperger syndrome, schizophrenia, borderline and psychopathic personality, where there are deficits in empathy. Since awareness of emotional states in the self is a prerequisite to recognizing such states in others, alexithymia should involve impairment in empathy. Using functional magnetic resonance imaging (fMRI), we compared an alexithymia group (n=16) and a non-alexithymia group (n=14) for their regional hemodynamic responses to the visual perception of pictures selecting human hands and feet in a functional connectivity (Jackson, Meltzoff and Decety, 2005). Subjective pain ratings of the pictures and empathy-related psychological scores (Interpersonal Reactivity Index; IRI) were also compared between the two groups. The alexithymia group showed less cerebral activation in the left dorsolateral prefrontal cortex (DLPFC; T=4.73, Z=4.02), the dorsal pons (T=4.50, Z=3.87), the cerebellum (T=4.98, Z=4.18), and the left caudal anterior cingulate cortex (ACC; T=3.42, Z=3.10) compared to the pain matrix. The alexithymia group showed decreased activation in the right anterior insula (T=3.49, Z=3.15), right posterior insula (T=4.26, Z=3.71) and inferior frontal gyrus (T=5.48, Z=4.48). All the regions were statistically significant (p<0.001, uncorrected). Furthermore, alexithymic participants scored lower on the pain ratings of the task pictures (T=2.08, p=0.05) and on the psychological scores related to mature empathy (IRI perspective taking; T=2.61, p=0.05, empathic concern; T=2.48, p=0.05), and scored higher on the trait anxiety (STAI) (T=4.14, p<0.05). In conclusion, the hypofunction in the DLPFC, brainstem, cerebellum and ACC, and the lower pain-rating and mature empathy-related scores in alexithymia are related to cognitive impairments of emotional processing, particularly executive and regulatory aspects, which also highlights the importance of self-awareness in empathy.

Abstract 1719
LINKS BETWEEN ALEXITHYMIA, EMOTIONAL AWARENESS AND IMPULSIVITY:SUBJECTIVE REPORT AND HEART RATE MEASURES OF EMOTIONAL RESPONDING.
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The construct of alexithymia is thought to reflect a deficit in the processing and regulation of emotional states. It is not clear yet that the reduced affective awareness in alexithymia is related to varieties of autonomic activity or/and the cognitive processing of bodily signals accompanying emotional arousal. Impulsivity is associated with the reduced activity and appropriate use of emotional somatic markers in self-regulation. The aim of the present study was to explore the relations between alexithymia, impulsivity, self-regulation and objective and subjective emotional measures of emotional responding. The sample consisted of 52 university undergraduate students (mean age 22.08,73% female) who completed a self-administered battery of questionnaires examining alexithymia (TAS-20) impulsivity (BIS-10) emotional awareness (LEAS) self-control (SCS; Rosenbaum, 1980) and anxiety (STAI) before emotional responding task. Standardized emotional eliciting color slides selected from IASP were presented to subjects while heart rate activity was recorded. Stimuli were shown second time while subjects provided emotional self reports reflecting to the slides using the self-Assessment Manikin (SAM) of the IASP. Results indicated that higher alexithymia scores were related to increased impulsivity (p<.001) measured in the total score of BIS-10. The Planning (p<.001) and Cognitive (p<.001) subscales of BIS-10 were positively associated with alexithymia too. Alexithymia related to reduced self control (p<.001 for SCS) and increased trait anxiety (p<.001 for STAI). Heart rate measures did not differ either in the resting and emotional processing condition between alexithymia groups. Independently from recorded physiological arousal subjective reports of emotional experience vary along alexithymia scores. Subjects with high alexithymia reported more intense feelings, perceived arousal and control regardless of the valence of the slides (p<0.05). These findings suggest that the objective and subjective measures of emotional arousal and emotional reactivity are dissociated in alexithymia and it may be related to reduced self regulation and impulsivity.

Abstract 1702
VICERAL FAT AND GLUCOSE HOMEOSTASIS IN FEMALES WITH BORDERLINE PERSONALITY DISORDER AND A HISTORY OF SUSTAINED CHILDHOOD ABUSE OR COMORBIT DEPRESSION

Purpose of study: Increased visceral fat (VF) is an important antecedent of type 2 diabetes and cardiovascular diseases, and high volumes of VF have been demonstrated in psychiatric disorders associated with an activation of the HPA-system (major depression, schizophrenia). Enduring changes of the HPA-system activity have also been described in patients with sustained childhood abuse (SCA). Therefore our study aimed to examine the contributions of depression and SCA on SOM parameters could be detected at the level of glucose homeostasis in a sample of patients with borderline personality disorder (BPD). Subject sample and methods: 67 females with BPD and 36 healthy women were included. 31 BPD patients suffered from a current comorbid major depressive episode (MDE), and 33 had a history of SCA. VF areas at the level of the first lumbar vertebra and two adjacent sections were assessed by means of MRT, and glucose homeostasis was determined by using the homeostasis model assessment. Summary of results: BPD patients with comorbid MDE and a history of SCA had significantly increased amounts of VF and increased relative insulin resistance compared to healthy women. Analysis of variance controlled for the covariates weight and height revealed significantly higher amounts of VF in BPD patients with depression (df=1; F=4.9, p<0.05) as well as in BPD patients with childhood abuse (df=1; F=3.99, p<0.05). Relative insulin resistance was significantly increased in patients with a history of childhood abuse (df=1; F=5.39, p<0.05), but not in patients suffering from comorbid MDE. We conclude from our results that a history of SCA may be an important independent risk factor for visceral obesity and the later development of diabetes mellitus.

Abstract 1818
CHILDHOOD SOCIOECONOMIC STATUS COVARIATES WITH NEURAL REACTIVITY TO EMOTIONAL FACIAL EXPRESSIONS.
J Horenstein, S Cohen, Psychology, Carnegie Mellon University, Pittsburgh, PA, K Matthews, A Hariri, L Sheu, P Gianaros, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Lower childhood socioeconomic status (SES) increases risk for a range of medical and psychiatric illnesses in adulthood. An empirically supported hypothesis is that children from lower SES backgrounds become less optimistic and more mistrusting, cynical, and hostile because of their chronic exposure to stressful, unsafe, and unpredictable environments. At the behavioral level, such tendencies are expressed by individuals from lower SES backgrounds in their threatening interpretations of ambiguous (but not explicitly negative) social situations (Chen & Matthews, 2001: Ann Behav Med; 23: 101-11). We tested if such tendencies could be detected at the neural level by examining whether childhood SES covaries with alterations of VF and parameters of glucose homeostasis in a sample of patients with borderline personality disorder (BPD). Subject sample and methods: 67 females with BPD and 36 healthy women were included. 31 BPD patients suffered from a current comorbid major depressive episode (MDE), and 33 had a history of SCA. VF areas at the level of the first lumbar vertebra and two adjacent sections were assessed by means of MRT, and glucose homeostasis was determined by using the homeostasis model assessment. Summary of results: BPD patients with comorbid MDE and a history of SCA had significantly increased amounts of VF and increased relative insulin resistance compared to healthy women. Analysis of variance controlled for the covariates weight and height revealed significantly higher amounts of VF in BPD patients with depression (df=1; F=4.9; p<0.05) as well as in BPD patients with childhood abuse (df=1; F=3.99; p<0.05). Relative insulin resistance was significantly increased in patients with a history of childhood abuse (df=1; F=5.39; p<0.05), but not in patients suffering from comorbid MDE. We conclude from our results that a history of SCA may be an important independent risk factor for visceral obesity and the later development of diabetes mellitus.
results showed that lower childhood SES predicted increased subgenual cingulate reactivity to neutral faces and increased midcingulate reactivity to surprised faces; conversely, lower childhood SES predicted diminished subgenual cingulate reactivity to angry faces, ts > 3.15, ps < 0.001 (uncorrected). These patterns of reactivity in the cingulate cortex, a brain area important for emotion and social behavior, may reflect an SES-related desensitization to explicitly threatening social cues and a heightened processing of ambiguous social cues.

Abstract 1459
CONCEALING DIAGNOSTIC INFORMATION FROM CANCER PATIENTS: EMOTIONAL AND PHYSIOLOGICAL ASPECTS
Efth Panagopoulou, Social Medicine, Aristotle University, Thessaloniki, Thessaloniki, Greece, Gefsi Mincziori, Physiology, Aristotle University Thessaloniki, Thessaloniki, Thessaloniki, Greece

Despite current guidelines in medical practice, studies reveal that the rate of withholding diagnostic/prognostic information concerning terminal conditions ranges from 15% to 80%. This study was designed to examine the emotional and physiological impact on doctors of withholding information concerning cancer diagnosis. Sixty male, medical students participated in the study (mean age: 27). Students were randomly assigned in 3 groups. All students were informed that they were about to have a 5 min consultation with a 26-year-old woman with non-operable brain tumour. They were also given information about prognosis and treatment. Group A (disclosure group) was instructed to reveal the truth concerning the diagnosis. Group B (concealment group) was instructed to hide the truth concerning the diagnosis, while students in group C (control group) were instructed to conduct a structured interview concerning dietary habits. Mood, and cortisol were assessed at baseline (T1); 30 minutes after receiving the instructions (T2), and immediately after the consultation (T3). Heart rate variability (HRV) was assessed during the consultation using a digital signal extraction pulse oximeter. ANOVA for repeated measurements indicated that compared to the control group, negative affect increased significantly in both experimental groups, from T1 to T2. However in the concealment group negative affect at T3 returned to baseline levels (p=.007). Compared to the control group positive affect significantly decreased in both experimental groups from T1 to T2. However, in the concealment group positive affect at T3 returned to baseline levels (p=.004). In the concealment group there was a significant decrease of HRV from the beginning to the end of the consultation (p=.011). Research should examine whether the observed beneficial effects of withholding diagnostic information in a lab setting will be replicated in clinical settings.

POSTER SESSION I

Abstract 1645
MAN’S JOB, MAN’S DISEASE
Eva Susanszky, Zsuzsa Szanto, Behavioral Sciences, Semmelweis University Budapest, Budapest, Hungary

Society associates most occupational roles with gender-defined psychological attributes. The contrasting images of risk-taking, autonomy-demanding entrepreneurs and careful, security-seeking employees mirror traditional male and female gender roles. Women-entrepreneurs perform jobs corresponding not only with men’s work load but also with the male gender role expectations; presumably the effects of this can be detected in their health.<br>Our research is based on the database of the population health survey Hungarostudy2002. We analysed the health status of entrepreneurs and employees among the working-age population (N=5746). We examined the factors that may play a role in the diseases typical in the group of female entrepreneurs (myocardial infarction, circulatory diseases, and cancers) with logistic regression. In the regression models we included gender, age, and education, type of the occupational status, the effects of smoking, alcohol consumption, and obesity. <br>Gender distribution, average age, education level, and family status significantly differ in the analysed groups. In contrast to the employees, among entrepreneurs there are more males (66%); they are 2.5 years older; have higher education, live more frequently with a spouse, and have better self-rated health. The proportion of diabetics is higher among male entrepreneurs than among employees; female entrepreneurs reported significantly more circulatory disease and cancer than female employees. Male employees have more locomotion and digestive problems and more accidents. The combined effects of gender and occupational status are connected to certain diseases. Being female and entrepreneur quintuples the risk of the myocardial infarction, doubles the risk of other circulatory diseases, and quadruples the risk of cancer. Women who work as entrepreneurs, which in the Hungarian society typically associated with male role, face an increased risk of life threatening diseases comparing to males and to employees.

Abstract 1116
SIMILARITIES AND DIFFERENCES IN COPING AND DISTRESS IN AFRICAN-AMERICAN, ASIAN, HISPANIC, AND NON-HISPANIC WHITE MEDICAL AND GRADUATE STUDENTS
Sara D. Barrett, Angela F. Pfammatter, Noelle Pontarelli, Sandra G. Zakowski, Psychology, Rosalind Franklin University of Medicine and Science, North Chicago, IL

Coping research has used mostly Caucasian samples. However, studies examining the coping behaviors of other groups have provided evidence that African American and Hispanic participants may exhibit a different pattern of coping than that of Caucasian participants. Thus, the purpose of the current study is to further investigate the generalizability of past research by examining coping in a sample of African American (N=12), Asian (N=44), Hispanic (N=12), and Caucasian (N=55) students. Participants completed measures of coping in response to 4 stressful scenarios and a measure of distress. African-American participants reported significantly greater use of religious coping than Hispanic and Caucasian participants, F (3, 119) = 3.59, p = .016, more avoidant coping than Caucasians, F (3, 119) = 2.671, p = .051, and more problem-focused coping than all other groups, F (3, 119) = 3.33, p = .022. There were no other significant group differences in coping. Additionally, there were no significant group differences in levels of distress. The greater use of religious and avoidant coping by African Americans replicates some past research, however group differences between Hispanics and Caucasians were not replicated. Sample characteristics which may have contributed to the findings will be discussed.

Means and Standard Deviations of Coping Subscales by Group

<table>
<thead>
<tr>
<th></th>
<th>AFRICAN-AMERICAN</th>
<th>ASIAN</th>
<th>HISPANIC</th>
<th>NON-HISPANIC WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELIGIOUS COPING</td>
<td>23.17 (1.14)</td>
<td>16.86 (1.28)</td>
<td>13.50 (2.44)</td>
<td>14.96 (1.14)</td>
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<tr>
<td>PROBLEM FOCUSED COPING</td>
<td>132.33 (17.90)</td>
<td>113.73 (24.63)</td>
<td>107.50 (28.30)</td>
<td>113.40 (16.65)</td>
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<tr>
<td>AVOIDANCE</td>
<td>48.42 (19.68)</td>
<td>38.89 (15.16)</td>
<td>36.50 (9.62)</td>
<td>35.55 (13.61)</td>
</tr>
<tr>
<td>HUMOR</td>
<td>13.67 (1.60)</td>
<td>14.57 (0.84)</td>
<td>15.67 (1.60)</td>
<td>15.52 (0.75)</td>
</tr>
<tr>
<td>WISHLFUL THINKING</td>
<td>53.83 (16.11)</td>
<td>50.55 (19.20)</td>
<td>47.25 (21.93)</td>
<td>43.42 (19.12)</td>
</tr>
<tr>
<td>SOCIAL SUPPORT</td>
<td>47.17 (8.36)</td>
<td>41.64 (11.16)</td>
<td>38.17 (11.16)</td>
<td>44.02 (10.69)</td>
</tr>
<tr>
<td>SELF-BLAME</td>
<td>11.25 (7.35)</td>
<td>11.95 (5.76)</td>
<td>12.50 (7.35)</td>
<td>10.95 (4.68)</td>
</tr>
</tbody>
</table>
RELIGIOUS COMMUNITY SOCIAL SUPPORT AND HEALTH STATUS IN A DIVERSE POPULATION
Sara K. Levin, Medicine, UCSF, SF, CA; Joshua P. Metlay, Medicine, VAMC, Phi., PA; Judith H. Maselli, Medicine, UCSF, SF, CA; Carlos A. Camargo Jr., Emergency Med, Mass General, Boston, MA; Ralph Gonzales, Medicine, UCSF, SF, CA.

Typical social support measures reference friends, family or significant partners, and have shown associations with health status and clinical outcomes. We examined the characteristics of a new scale to assess social support from a religious community as an additional domain of social support, including a test of its association with self-rated health status.

We performed a cross-sectional analysis of a convenience sample of patients seeking care for cough illness in US emergency departments. The 12-item Multidimensional Scale of Perceived Social Support (4 items per each domain of family, friends, special person) was administered with 4 similarly framed items designed to assess social support from a religious community (church, mosque, synagogue, temple, or other religious community center); higher scores indicated more support (7-point Likert). Self-rated health was based on a single question (scaled excellent to poor).

Surveys were completed by 484 subjects: mean age 46 years; 59% male; 46% White, 27% Black, 18% Hispanic; 81% medically-insured. Factor analysis showed the religious community items correlated with each other, and were distinct from the other domains. Among the 4 domains of social support, only the religious community support domain was significantly associated with better overall health status (using multivariable ordinal logistic regression analysis: OR: 1.34 [95% CI: 1.13-1.60]). In addition, support from a religious community was more strongly associated with health status in blacks than in whites (blacks: OR: 2.54 [95% CI: 1.55-4.16]; whites: OR 1.24 [1.01-1.52]).

The religious community support questions measure a distinct domain of social support, separate from measures of support from family, friends or significant others. Future studies of social support and health should take into account the significance of support from a religious community, especially among black patients.

ETHNIC SELF-IDENTIFICATION PARTITIONS HEALTH RISK AMONG US RESIDENTS OF MEXICAN DESCENT
Steven D. Barger, Psychology, Northern Arizona University, Flagstaff, AZ

Some literature shows a health advantage among Hispanics (the "Hispanic paradox") while other studies find no such advantage. The incoherence of this literature may in part result from aggregation of heterogeneous Hispanic subgroups. Individuals of Mexican ancestry represent the largest US Hispanic subpopulation, but it may be possible to discriminate among this putatively coherent subpopulation and therefore more precisely identify health risk among Hispanics. I evaluate the utility of self-reported ethnic identity (Mexican vs. Mexican-American) to partition health risk among a probability sample of US residents of Mexican descent in the 2000-2002 National Health Interview Survey.

Surveys were completed by 5434 Mexican (N=5434) and 4170 Mexican-American (N=4170) US residents. The NHIS is a yearly in-person interview with a probability sample of US households. Relative to Mexican-Americans, self-identified Mexicans were less likely to have a high school education or more (34% vs 68%, p<.001), to own their own home (46% vs 64%, p<.001), and to make >$20000 a year (66% vs 76%, p<.001). Mexicans were also less likely to be US-born (16% vs 86%, p<.001) and to speak English during the interview (36% vs 84%, p<.001). US residents of Mexican descent show substantial heterogeneity in key SES indices such as education, income, and wealth, as well as in markers of acculturation such as nativity and language use. Although it is common practice to consider individuals of Mexican descent a unitary subpopulation, these analyses reveal important within-group heterogeneity which may contribute to apparent inconsistencies in health outcomes among Hispanics.

ETHNICITY AND HISTORIES OF MOOD DISORDERS MODULATE EXPERIMENTAL PAIN TOLERANCE IN WOMEN
Rebecca R. Klatzkin, Beth Mecklin, Psychology, Robertas Bunevicius, Susan S. Girdler, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC

Thirty-two African American and 23 non-Hispanic White women were compared for experimental pain tolerance to thermal, ischemic, and cold pressor pain. Approximately half of each group had prior mood disorders (17 African Americans, 13 non-Hispanic Whites), though all were free of current mood disorders. Controlling for blood pressure, African Americans had lower thermal (p<.05), ischemic (p<.001), and cold pressor (p<.001) pain tolerance than non-Hispanic Whites. Women with prior mood disorders had higher thermal pain tolerance (p<.05) and tended to have higher ischemic pain tolerance (p<.001) than women with no prior mood disorders. The effect of prior mood disorders on cold pressor pain tolerance was only evident in non-Hispanic Whites (p<.05), since cold pressor pain tolerance was higher only in non-Hispanic Whites with a prior mood disorder. These results indicate that experimental pain tolerance in women is influenced by both ethnicity and histories of mood disorders and may have implications for the development of subsequent mood disturbance in women.

COPIING DIFFERENCES IN RESPONSE TO EXPLICIT, IMPLICIT, AND AMBIGUOUS RACISM
Elizabeth Brondolo, Daniel J. Libby, Juhee Jhalani, Jahanara Garcia-Ullah, Department of Psychology, St. John's University, Queens, NY

Interpersonal racism has been hypothesized to serve as a stressor increasing risk for hypertension (HTN). This study investigated psychological correlates of different types of racism. We examined how variations in the degree to which racial bias is made explicit during episodes of maltreatment influences coping responses to these episodes. The 302 participants (including 146 Blacks, 103 Latino(a)s, 27 Whites, 8 Asians, 3 Native Americans; 83 Men) were asked to describe 4 episodes of maltreatment they had experienced that varied in the degree to which they were perceived to involve explicit racism (i.e., racial/ethnic bias was overtly stated), implicit racism (i.e., racial/ethnic bias implied, but not specifically
stated), ambiguous racism (i.e., racial/ethnic bias was a possible source of motivation), and non-race-related maltreatment. The independent variables also included lifetime perceived racism (assessed with the Perceived Ethnic Discrimination Questionnaire) and affective response (i.e., anger, sadness, fear). The dependent variables included rumination (from the Behavioral Anger Response Questionnaire) and racism-specific coping (from a modified Spielberger State-Trait Anger Expression Inventory).

Proc Mixed analyses indicated participants were more likely to ruminate about either explicit or implicit versus ambiguous racism (F(3,636) = 5.02, p < .002). There were no differences among situations in the type of anger coping employed. However, the degree to which the situations evoked sadness (B = .25, p < .001) and fear (B = .10, p < .04) was associated with the tendency to suppress anger; whereas the degree to which the situation evoked anger (B = .35, p < .001) was associated with the tendency to aggressively express anger. Lifetime racism was associated with greater anger and sadness in response to episodes of explicit and ambiguous racism. The data provide insight into the ways episodes of racism tax coping resources, eliciting negative affect and coping responses that have been recognized as risk factors for HTN.

Abstract 1446

INFLUENCE OF RACE AND GENDER ON HEALTH-RELATED DISPARITIES AMONG ADOLESCENTS ENTERING SUBSTANCE ABUSE TREATMENT

Kelly D. Taylor-Richardson, Human and Organizational Development, Vanderbilt University, Nashville, Tennessee

The racial, ethnic and gender health disparities that exist in the United States in health status and health care are the topic of a vast body of research and are of public health concern. The primary focus of researchers in this area has been on health services for adults. This poster will focus on behavioral health services for adolescents. The relationship of race and gender to mental and physical health status and substance use are examined in a sample of 258 adolescents entering publicly-funded substance abuse services. Youth were 62% Caucasian, 29% African-American and 76% male. Differences between gender and race on mental health and substance use variables were examined using chi-square, one-way ANOVA and t-tests. Lifetime racism was associated with multiple variables: WHO Well-being Index, independent variables: self-assessed health, compared with controls, alone). The results of statistical analyses indicate differences in substance abuse treatment by gender, but not by race in this sample of adolescents.

Findings indicate that gender has a greater impact on the health of adolescents in this sample than race and ethnicity. Two important findings emerged from regression analyses: 1) girls were being admitted to substance abuse treatment with more psychosocial problems than boys and 2) blacks were being admitted to treatment with fewer alcohol and other drug dependencies.

Despite the growing information on race and gender issues in child and adolescent behavioral health, there has been little systematic study of the interaction between race and gender in this group. These results warrant additional study to determine if these differences are true of other child and adolescent populations as the findings are contrary to the adult literature in the area of health disparities.

Abstract 1836

MEASUREMENT DIFFERENCES IN DEPRESSION: CHRONIC HEALTH CONDITIONS AND SOCIOCULTURAL EFFECTS IN OLDER AMERICANS

Frances M. Yang, Psychiatry, Richard N. Jones, Medicine, Harvard Medical School, Boston, MA

This study simultaneously examines the effect of common chronic medical conditions (high blood pressure, heart condition, stroke, diabetes, and lung disease) and sociocultural characteristics (age, gender, education, and race/ethnicity) on the measurement properties of depressive symptoms in a nationally representative sample. The 2004 Health and Retirement Study panel of adults aged 65 and older (N=9,378) living in the United States were asked nine items from a modified Center for Epidemiological Studies-Depression (HRS/CES-D) Scale. Both exploratory and confirmatory factor analyses were conducted to determine the dimensionality of the HRS/CES-D. Measurement differences attributable to health and sociocultural variables were assessed with a hierarchical multidimensional model using the multiple indicators, multiple causes (MIMIC) model framework. Results showed three dimensions of the HRS/CES-D: 1) Dysphoria (depressed, lonely, and sad), 2) Psychosomatic (trouble getting going, no energy, everything was an effort, and restless sleep), and 3) Positive affect (happy and enjoy life). A second-order general latent factor was significantly related to each of the health conditions and the background variables (p<.05). The latent psychosomatic factor was significantly related to chronic health and the positive affect factor was significantly related to a subset of background variables (p<.05). Differences attributable to chronic health may reflect distinct phenomenological features of depression experienced by persons with specific health conditions. However, because the effects are limited to the psychosomatic factor, we infer that these effects reflect variance irrelevant to general depression. Therefore, the detected differences attributable to both health and sociocultural variables reflect measurement bias. Failure to control for this measurement bias leads to an over-estimation of depression among those with chronic health conditions and an under-estimation of depression among African-Americans.
dysfunctional attitudes, life purposes, social support, negative life events, sleep disturbances.

The three variables that have the strongest association with quality of life in the population older than 65 years are: vital exhaustion, self-assessed general health state and working disability. Vital exhaustion is the most important factor in the middle-aged and young age groups, as well, that is followed by anxiety symptoms. Effective coping with everyday life problems is more significant for the younger population. As life is going ahead, the impact of factors connected to health and illnesses - like general health state, working disability, pain symptoms - is getting stronger, and depression becomes a more significant factor, as well. Gender and social support also have an increasing importance by age: women and those without sufficient social support are more likely to report worse general quality of life. The impact of negative life events is among the significant factors associated with the general well-being only in the ageing population. However vital exhaustion is the leading phenomenon that worsens the quality of life of the Hungarian population in all age groups, the significance of the different bio-psycho-social background factors changes by age, which should be considered when community based quality of life and health promotion programs are designed and implemented.

**Abstract 1601**

RELATIONSHIPS AMONG LIFE EVENTS, ATTRIBUTIONS, SELF-ESTEEM AND DEPRESSION IN CHINESE STUDENTS OF GRADUATING CLASS OF HIGH SCHOOL IN NEW YORK

Mingyu Deng, Psychology, Chinese Community Counseling Center, Kew Gardens Hills, New York

Objective: To explore relationships among life events, attributions, self-esteem and depression in Chinese students of a New York high school graduating class. Methods: 126 students in the graduating class were asked to complete the investigation. Results: (1) Life events, attributions, and self-esteem were significantly correlated with depression, while significant correlations were obtained among attributions, self-esteem and life events; (2) self-esteem is a mediator in attribution influence on depression. Conclusions: it is advisable to carry out mental health education for Chinese students in the graduating class, especially self-confidence training and attribution training.

Key words: Depression; Attribution; Life events; Self-esteem

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**Abstract 1144**

WHAT DO YOU THINK, WHAT HAPPEN TO PEOPLE, WHO NEVER GO OUT TO OPEN AIR? EXPERIENCES OF A QUESTIONNAIRE ON "DRAW-AND-WRITE" TECHNIQUE

Zsuzsanna F. Puhar, Behavioral Sciences, University of Szeged, Szeged, Hungary, Annamaria Uzzoli, Regional Geography, Eötvös Loránd University, Budapest, Hungary, Bettina F. Piko, Behavioral Sciences, University of Szeged, Szeged, Hungary

In this questionnaire on the Draw-and-Write technique, we aimed to study the experiences of Chinese students of a New York high school. Methods: 126 students in the graduating class were asked to complete the investigation. Results: (1) Life events, attributions, and self-esteem were significantly correlated with depression, while significant correlations were obtained among attributions, self-esteem and life events; (2) self-esteem is a mediator in attribution influence on depression. Conclusions: it is advisable to carry out mental health education for Chinese students in the graduating class, especially self-confidence training and attribution training.

Key words: Depression; Attribution; Life events; Self-esteem

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**Abstract 1257**

WHEN IS UNCERTAINTY A GOOD THING? THE IMPACT OF TRAIT AND STATE DIFFERENCES IN UNCERTAINTY ON WORRY AND HEALTH MONITORING

Natalie O. Rosen, Bärbel Knäuper, Psychology, McGill University, Montreal, Quebec, Canada

Previous research shows that higher intolerance of uncertainty leads to higher health monitoring (seeking threat-relevant information, e.g., getting tested for a sexually transmitted infection [STI]). The purpose of this study was to examine the interaction between intolerance of uncertainty (IU) and situational uncertainty (SU) in its causal effect on worry and health monitoring. Experimentally manipulating low/high IU and low/high SU is the most direct way to clarify the causal relationships between IU, SU, worry and monitoring. The study employed a 2 (IU condition: high vs. low) x 2 (SU condition: high vs. low) design. The study was conducted within the context of testing for human papillomavirus (HPV) because HPV is affected by many sources of uncertainty and the potential health risks can be reduced through cervical cancer screening (monitoring). University students, 28 men (mean age = 23.61 years, SD = 8.28) and 125 women (mean age = 20.80 years, SD = 2.11), were randomly assigned to condition. IU was manipulated through a linguistic manipulation coupled with written false feedback. SU was manipulated by modifying the information participants read about a fictitious STI with similar uncertain properties as HPV (i.e., to provoke or reduce uncertainty about whether or not one has the infection). Results showed individuals in the high IU and high SU condition monitored (M = 1.19, SD = 2.83) and worried (M = 2.67, SD = 1.63) most, compared to people in the low.
IU and low SU condition who monitored (M = -0.93, SD = 1.77) and worried (M = 1.40, SD = 0.71) least, (monitoring: F(1, 139) = 3.89, p = .05; worry: F(1, 139) = 4.00, p = .04). Consistent with prior research, the motivation to reduce uncertainty was an independent predictor of monitoring as indicated by co-variance analysis, F(1, 139) = 39.94, p < .01. The findings suggest that the impact of individual differences in IU on people's ability to choose appropriate coping mechanisms changes according to the perceived level of situational uncertainty (SU). Individuals with high IU who are faced with high SU may in fact engage in more adaptive health behaviours, such as adherence to screening, compared to individuals with a low IU who have a lower tendency to monitor.

Abstract 1217

REPRESSIVE COPERS SHOW SIGNIFICANTLY BETTER PSYCHOLOGICAL HEALTH THAN NON-REPRESSORS, BUT NO DIFFERENCES IN PHYSIOLOGICAL OR BEHAVIORAL TRAITS

Maike E. Dehus, Psychology, Technical University of Braunschweig, Braunschweig, Germany, Margit Burmeister, Molecular & Behavioral Neuroscience Institute, Randolphi M. Nesse, Psychiatry, ISR, Sandra Villafuerte, Molecular & Behavioral Neuroscience Institute, Alan Weder, Lillian Gleiberman, Internal Medicine, University of Michigan, Ann Arbor, MI

Although there is evidence that repressive individuals are at greater risk than non-repressors for a variety of illnesses, studies concerning physical and behavioral measures of health have yielded inconsistent results. In order to further understand and clarify this literature, we tested the hypothesis that repressors are psychologically healthier than non-repressors but have significantly more physical illnesses. We used data from a sample of 602 subjects participating in the National Heart, Lung, and Blood Institute's Family Blood Pressure Program at the site in Tecumseh, MI. We examined the relationship of repression with the health indicators blood pressure, heart rate, smoking and drinking habits. We also looked at subjective questionnaire measures (Big Five; Satisfaction with Life Scale; State-Trait Anger Expression Inventory) to confirm previous findings on self-report measures. The repression coping style was operationalized by giving subjects the Marlowe-Crowne Social Desirability Scale and a short form of the Taylor Manifest Anxiety Scale and combining them into four coping styles at the median split. Consistent with our hypothesis, repressors scored significantly lower on neuroticism (p<.001), depression (p<.001), anger suppression (p<.001), and anger expression (p<.001). Repressors scored significantly higher than the other groups on extraversion (p<.01), agreeableness (p<.001), conscientiousness (p<.001), satisfaction with life (p<.001) and anger control (p<.001). Repressors did not differ from others on systolic blood pressure, diastolic blood pressure, heart rate, cancer risk, smoking or drinking status. Our results concerning subjective measures support previous findings in which repressors appear more psychologically healthy. The analysis of objective health measures showed no greater health risk for repressors, a finding inconsistent with previous reports, which could be due to a publication bias wherein negative results tend not to be published.

Abstract 1385

TYPE-D PERSONALITY MEDIATES THE RELATIONSHIP BETWEEN REMEMBERED PARENTING AND PERCEIVED HEALTH

Krista C. van den Broek, Kim G. Smoldersen, Susanne S. Pedersen, Johan Denollet, Medical Psychology, Tilburg University, Tilburg, The Netherlands

The distressed (Type-D) personality, or the joint tendency to experience negative emotions and to inhibit self-expression, has been identified as an important psychological risk factor for adverse outcomes across cardiovascular diseases. However, little is known about the genesis of Type-D, with acquired epiphenomena. However, little is known about prevalence, gender differences and characteristics of Type D in the general population. We studied Type D in a large scale population based KORA study in southern Germany including 2,698 subjects in the age group of 35 to 75 years. The prevalence in the community sample was 24.5% (95% CI 22.2 to 26.9) for men and 27.5% (95% CI 25.1 to 29.8) for women and increased significantly with age (test of trend, p<0.001). For both sexes, Type D was associated with social impairment (lower net income, living alone). Type D was not associated with severe somatic morbidity or with classical risk factors despite nicotine dependency in men (OR 2.16 95% CI 1.09-4.28, p<0.03). However, Type D subjects report substantially impaired self perceived health, somatic complaints and a broad spectrum of affective parameters. In the full adjusted multivariate model, depressed mood exhibits the strongest impact on Type D with an OR of 2.94 in men and 2.79 in women. Type D is a newly coined personality type which is likely to signal a higher risk than traditional negative affectivity and social inhibition. Type D is a newly coined personality type which is likely to signal a higher risk than traditional negative affectivity and social inhibition. The pathways through which cardiovascular risks might be mediated in Type D persons have to be determined.

Abstract 1627

THE COST OF ADAPTING TO HIGH WORKLOADS AND STRESSORS IN THE WORK PLACE.

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The aim of the study was to evaluate stress levels and responses in train control officers (TCOs) and to correlate it to work intensity. Twenty TCOs (age range 20-49, mean age 42.4±14.0 years, height =173±0.9cm, body mass index BMI=29.8±6.2 kg/m², 17 males and 3 females) were monitored over 8 hour shifts. Saliva cortisol (ELISA) and blood pressure measurements were done every 2hrs. Continuous RR-interval recordings were made from 06:00 to 14:00. Heart rate variability (HRV) analysis was done with software obtained from the Biomedical Signal Analysis Group, Finland. Activities of TCOs were recorded by time line analysis and a Mental Work Load (MWL)-index compiled, consisting of three weighted task factors i.e., numbers of captured data transactions, authorisations and telephone communications. Results showed that the means of the physiological parameters for the total population tested were: cortisol (4.6±1.7 mg/l), BP (BPdias = 85±10 mmHg, BPsys = 122±14 mmHg, MAP = 97±11 mmHg and pulse pressure = 37±8 mmHg) and HRV (LF = 665.5±489.0 ms2, HF = 209.4±201.8 ms2, total power = 864.3±665.5 ms2 and LF/HF = 4.9±3.9). Subsamples were subdivided into high and low stress groups on the basis of physiological stress index (cortisol, BPdias, BPsys, BMI and heart rate). MWL-index subdivided stations into
high and low workload venues. Heart rate variability indices confirmed the validity of the above physiological index as stress indicator. A 60% correlation was found between MVL-index and the stress loads of workers at corresponding stations. There were no significant increases in the values of physiological stress levels with increases in workload over the shifts. Conclusions: Although workers adapt to high work intensity and do not show overt acute physiological stress responses to increases in workload over the work shift, they do, however, pay a price in terms of physiological wear and tear, i.e., increased allostatic loads.

Acknowledgements to LT Hazlhurst, J van Tonder, A Pretorius, H Lemmer

Abstract 1303

THE EFFECT OF WORK RELATED STRESS ON HEALTH IN OCCUPATIONAL CLASSES FROM A HUNGARIAN SAMPLE

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The effect of work stress on health may differ between occupational classes. Higher occupational class may buffer against the health damaging effects of work stress. The aim of this cross-sectional study is to analyse the relationship between work stress and health in occupational classes in a preliminary sample taken from the Hungarian working population (n=1707). As measuring tools for this study we used the Effort-Reward Imbalance (ERI) questionnaire shortened version, the Patient Health Questionnaire (PHQ), the Beck Depression Inventory (BDI) shortened version, the WHO well-being questionnaire, and the Self-Rated Health (SRH) Questionnaire. Binary logistic regression adjusted for age and sex was used to determine the relation between work stress and levels of health in manual, lower non-manual and managerial occupational groups. The results showed ERI significantly predicted poor health for all the health measures (p<0.01). A significant interaction effect between work stress and occupational class was found in relation to BDI (p=0.01) and PHQ scores (p=0.05). In addition, the odds ratios of poor PHQ (OR=4.8, p<0.01) and BDI (OR=5.3, p=0.01) health for managers with work stress was more than double that of manual workers with work stress.

There was little evidence for the buffering hypothesis. The negative effect of work stress among higher classes needs to be verified from other studies.

Abstract 1515

GENETIC FACTORS, JOB-RELATED STRESSORS AND ENDOCRINE PATHWAYS-PULLING THE PIECES TOGETHER

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Aim of the presented study was to investigate possible mechanisms underlying the association between genetic factors, job-related stressors and impaired health. We suggest that the diathesis-stress model provides a useful theoretical framework for these associations. Accordingly, genetic predisposition could enhance the individual's susceptibility to job-related stressors and in the long run result in an increased risk for illness. Moreover, endocrine pathways might link genetic risk factors and job-related stressors to illness. To test our assumptions we analyzed a common polymorphism in the promoter region of the serotonin transporter gene (5-HTT-polymorphism) representing the genetic predisposition. According to previous research individuals carrying the short allele seem to reveal higher depression and anxiety scores than those carrying the long allele. Stress was operationalized by job-related stressors, i.e. high work load, low control, low reward and the lack of social support at work (measured by standardized questionnaires of Fritz et al., 2004; Siegrist, 1996; Rimann & Udris, 1999; Frese & Zapf, 1987). In a sample of 60 employees we investigated whether we can detect first hints concerning the impact of genetic predisposition and to job-related stressors on endocrine responses (cortisol response to awakening or diurnal cycle of cortisol), depression (German version of the CES-D, Radloff, 1977) and anxiety (Patient Health Questionnaire, Loewe et al., 2002). We will present the results obtained stressing the relation between genetic predisposition, job-related stressors and impaired health.

Abstract 1548

EMOTION WORK AS A SOURCE OF STRESS AMONG BUS-DRIVERS

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Many professions require face to face interactions with clients. These interactions present wide range of emotions. Some of them can be displayed, while others have to be suppressed or concealed in terms of display rules. The concept of emotion work can be defined as the emotional regulation required of the employee in the display of organizationally desired emotions (Zapf, 1999). Emotion work has different impact on physical and mental health and well-being.

Zapf et al. have developed a questionnaire for measuring emotion work. The purpose of the study is to elaborate the Hungarian version of FEWS. To investigate the construct validity of the instrument, the Shortened Version of BDI (Beck, 1972; Kopp, 1990) was completed. One hundred and nineteen bus drivers have answered the questions until now. The mean age of the respondents was 44 years, their qualification is relatively low. Due to their job they were male (100%).

Discussing four scales in the present study the following indicate satisfactory reliabilities: Display of Positive Emotions (9items, Cronbach Alpha=0,84), Display of Negative Emotions (8items, Cronbach Alpha=0,73), Display of Neutrile Emotions (4items, Cronbach Alpha=0,63), Display of Certain Emotions (12items, Cronbach Alpha=0,66). BDI (M=6,06 SD=6,18 Cronbach Alpha=0,75) shows significant correlation only with the Display of Negative Emotions Scale of FEWS, but this correlation is not so high (r=0,228 p<0,05).

Due to the results of Display of Certain Emotions Scale bus-drivers think, the crucial emotions they have to express are friendliness, fondness and liking, joy and sympathy in their job nevertheless they can not display aggression and anger. The question is: how treating negative emotions if they can not be displayed in order to meet the demands and expectations of the company in the service sector.

Abstract 1430

WORKPLACE STRESS AND SOCIAL SUPPORT IN TWO GROUPS OF NURSES

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The physical and psychological condition of health care professionals dealing with the seriously ill is worse than that of those caring for not seriously ill patients, but is there a difference between two groups of nurses in similar position?

The aim of the survey is to comparatively investigate hospice nurses and nurses caring for elderly patients. Hypothesis: due to interdisciplinary approach of the service and regular supervisions hospice nurses are in a more favorable situation than nurses caring for elderly patients in terms of vital exhaustion, social support and the degree of workplace stress.

A cross-sectional study was performed among hospice nurses (N=25) and nurses caring for elderly patients (N=50) using a self-assessment questionnaire which comprised test battery satisfaction (Rahe, Tolles, 2002), vital exhaustion (Appels, Mulder, 1988), social support (Caldwell, 1987), and workplace stress (Siegrist, 1996) questionnaires.

In terms of social support hospice nurses are in a more favorable position (P=0.048). Vital exhaustion tended to be higher among nurses caring for elderly patients (P=0.068), and the values of workplace stress are significantly higher for them than for hospice nurses (P=0.035 on inner effort scale, P=0.034 on outer effort scale)

Interdisciplinary approach of hospice, regular trainings and supervisions may promote nurses acceptance and appreciation, and greater social support may reduce nurses vital exhaustion and the degree of workplace stress. This model might be applicable for other groups of nurses as well.
Abstract 1792
THE EFFECT OF LEADERSHIP PRACTICE ON WORKING CONDITIONS, STRESS, AND HEALTH IN HOTEL EMPLOYEES IN SWEDEN, POLAND, AND ITALY
Anna Nyberg, National Institute for Psychosocial Medicine, Stockholm, Sweden; Staffan Akerblom, Stockholm School of Economics, Stockholm, Sweden; Peggy Bernin, Tores Theorell, National Institute for Psychosocial Medicine, Stockholm, Sweden

The aim of this cross-sectional questionnaire study is to investigate a broad spectrum of leader characteristics and behaviours in relation to subordinate iso-strain, stress, and health in Sweden, Poland, and Italy. 554 questionnaires have been collected from employees in the hotel industry. The employees have been asked to evaluate their present superior, their working conditions, and their health. The response rate is 45%. Leadership dimensions are measured by the GLOBE questionnaire. Iso-strain (high demands multiplied by low control and poor social support), stress, and health are measured by the Copenhagen Psychosocial Questionnaire. The material has been analysed with ANOVA, multilevel analyses, and logistic regressions. Italian managers are evaluated significantly more autocratic and less diplomatic than Swedish and Polish managers. Swedish leaders are reported to show more integrity and team orientation than Polish leaders, and less malevolent behaviours than both Italian and Polish leaders. There are significant associations between most positive leadership dimensions and good health, and between most negative leadership dimensions and bad health. A higher risk for behavioural stress in Poland and Italy, compared to Sweden, can partly be explained by more malevolent leadership. Autocratic leadership can explain differences in iso-strain between hotels. Conclusion: Swedish managers show less of the stress inducing characteristics and behaviours than Italian and Polish managers. More malevolent leadership can explain a higher level of behavioural stress in Polish and Italian employees compared to Swedish. The degree of iso-strain in an organisation appears to be quite strongly associated with how autocratic managers in that organisation generally are.

Abstract 1374
WORK STRESS PRECIPITATES DEPRESSION AND ANXIETY IN YOUNG, WORKING WOMEN AND MEN.
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Rates of depression have been rising, as have rates of work stress. We tested the influence of work stress on diagnosed depression and anxiety in young working adults. Participants are enrolled in the Dunedin Study, a 1972-73 longitudinal birth cohort assessed most recently in 2004-2005, at age 32 (n=972, 96% of 1,015 cohort members still alive). Work stress (psychological job demands, work decision latitude, low work social support, physical work demands) was ascertained by interview. Major depression and generalized anxiety disorder were ascertained using the Diagnostic Interview Schedule and diagnosed according to DSM-IV criteria. Participants exposed to high psychological job demands (excessive workload, extreme time pressures) had a twofold risk of major depression or generalized anxiety disorder compared to those with low job demands (Relative Risks adjusting for all work characteristics: women: 1.90 (95% CI 1.22-2.98); men: 2.00 (95% CI 1.13-3.56). The association between work stress and psychiatric disorder was not accounted for by study members' socioeconomic position, a personality tendency to report negatively, or a history of psychiatric disorder prior to labor-market entry. Prospective longitudinal analyses showed that high-demand jobs were associated with the onset of new depression and anxiety disorder in individuals without any pre-job history of diagnosis or treatment for either disorder.

Abstract 1681
MARITAL STRESS AND HYPERTENSION IN MEN
Piroska Balog, Mária S. Kopp, Institute of Behavioral Sciences, Semmelweis University, Budapest, Hungary

Society associates most occupational roles with gender-defined psychological attributes. The contrasting images of risk-taking, autonomy-demanding entrepreneurs and careful, security-seeking employees mirror traditional male and female gender roles. Women-entrepreneurs perform jobs corresponding not only with men’s work load but also with the male gender role expectations; presumably the effects of this can be detected in their health. Our research is based on the database of the population health survey Hungarianstuty2002. We analysed the health status of entrepreneurs and employees among the working-age population (N=5746). We examined the factors that may play a role in the diseases typical in the group of female entrepreneurs (myocardial infarction, circulatory diseases, and cancers) with logistic regression. In the regression models we included gender, age, and education, type of the occupational status, the effects of smoking, alcohol consumption, and obesity. Gender distribution, average age, education level, and family status significantly differ in the analysed groups. In contrast to the employees, among entrepreneurs there are more males (66%); they are 2.5 years older, have higher education, live more frequently with a spouse, and have better self-rated health. The proportion of diabetics is high among male entrepreneurs than among employees; female entrepreneurs reported significantly more circulatory disease and cancer than female employees. Male employees have more locomotion and digestive problems and more accidents. The combined effects of gender and occupational status are connected to certain diseases. Being female and entrepreneur quintuples the risk of the myocardial infarction, doubles the risk of other circulatory disease, and quadruples the risk of cancer. Women who work as entrepreneurs, which in the Hungarian society typically associated with male role, face an increased risk of life threatening diseases comparing to males and to employees.

Abstract 1636
A STRUCTURED COMMUNITY BASED INTERVENTION PROGRAM TO IMPROVE STRESS MANAGEMENT IN HUNGARY
Adrienne Stauder, Institute of Behavioral Sciences, Semmelweis University Budapest, Budapest, Hungary; Virginia Williams, Williams LifeSkills Inc., Durham, NC, Redford B. Williams, Behavioral Medicine Research Center, Duke University Medical Center, Durham, NC

Chronic stress due to the rapid social and political changes is an important background factor of increased middle-aged morbidity and mortality in Hungary. We adapted and implemented a structured stress management program (Williams LifeSkills©) and studied its effectiveness in various populations.

The adaptation process consisted of 4 steps: WLS training for the Hungarian workgroup in English, translation, linguistic adaptation and cultural adaptation. Since November 2004 more than 300 persons participated in the program (students, health care professionals, people with stress related symptoms, "normal" working people, and oncology patients; 76% females, 24% males; mean age 36.5, sd=13.9). Questionnaires were completed by 115 persons before and right after the intervention. Outcome measures were: Cohen Perceived Stress scale (PSS14), Siegrist Work-Stress Questionnaire (WSQ), Spielberger Trait Anxiety Inventory (STAI), shortened Beck Depression Inventory (BDI), shortened Cook-Medley Hostility (HOST), Patients Health Questionnaires (PHQ15), Illness Intrusiveness Rating Scale (IIRS), WHO Well-being (WWB5), Rahe Life Meaning (MEAN), happiness, life-satisfaction.

We found a significant improvement according to all measures for the whole sample (paired sample T-test p<0.05). We found greater improvement in people with high symptom scores at baseline, their scores approached normal ranges following the training. Even in "healthy" population groups PSS14, STAI and WSQ over-commitment scores decreased, well-being and satisfaction increased.

The Hungarian adaptation and implementation of the Williams LifeSkills Program© was successful. Participants are satisfied and the program helps both high distress and normal groups to cope more effectively with chronic everyday stress. Randomized controlled trial will be done including medical endpoints as well.
Does A Home Exercise Program With Telephone Counseling Improve Walking Performance In Patients With Peripheral Vascular Disease?

Jane Irvine, Psychology, Paul Rivo, Kinesiology & Health Sciences, York University, Toronto, On, Canada, Peter Kalman, Surgery, Loyola University Medical Center, Maywood, IL, Robert McKelvie, Medicine, McMaster University, Hamilton, On, Canada, Thomas Lindsay, Surgery, University Health Network, Toronto, On, Canada, Joel Katz, Psychology, York University, Toronto, On, Canada, Nicole Beaulieu-Piotrowski, Sabine Johnson, Ana Bilanovic, Research, University Health Network, Toronto, On, Canada

Patients with peripheral vascular disease (PVD) must maintain a regular walking regimen, ideally 3-5 times a week for 40 minutes per day, to prevent disease progression. While supervised on-site exercise programs significantly improve walking performance, they have practical limitations due to participation duration constraints and geographical barriers. Home exercise programs have demonstrated some success but evaluations of these are limited by brief follow-up and very small sample sizes. The purpose of this randomized controlled trial is to determine whether a home exercise program supported by 6-months of telephone counseling (TC condition) results in improved walking performance at 12-months follow-up in patients with mild to moderate PVD compared with usual care (UC) (i.e., physician advice to walk and modify risk factors). Of the 73 participants (participation rate of 49%; 60% male, mean age 68.9 ± 9.3), 45 completed 6 and 12-months treadmill testing (62%). Both efficacy analysis (completers analyzed only) and effectiveness analysis (values for drop-outs replaced with last known value) employing repeated measures analyses of variance revealed greater improvements in treadmill-measured maximum walking time in the TC condition compared with UC over 6 to 12-months follow-up (p < 0.05). These results should be interpreted cautiously as the data are preliminary and data from the control groups are not yet available.

Effect Of A Mindfulness Based Stress Reduction Program On Hemodynamic Response To Mental Stress In Patients With Coronary Artery Disease

David S. Sheps, Kaki M. York, Mustafa M. Hassan, Medicine, Qin Li, Haihong Li, Epidemiology and Health Policy Research, Angela McClellan, Medicine, University of Florida, Gainesville, FL

Mindfulness Based Stress Reduction (MBSR) is an intervention designed to improve overall health and coping and has been used in a variety of medical and psychological populations. It is believed that MBSR works by changing participants’ response to stress. Hemodynamic response to stress in the laboratory is an important predictor of response to stress in daily life in some heart disease patients. The purpose of this study was to evaluate the effect of MBSR on hemodynamic response to stress in patients with coronary artery disease (CAD). Forty-four individuals (mean age = 63) with a documented history of CAD were recruited for inclusion in this study. Participants underwent an 8 week MBSR intervention. The intervention consisted of 8, two-hour, weekly group sessions, plus a single, 8 hour, group retreat. A battery of questionnaires assessing demographic and psychological characteristics was administered at baseline and immediately after the intervention. The battery included the Beck Depression Inventory (BDI), Brief Symptom Inventory (BSI), Cook-Medley Hostility Scale, Life Orientation Test Revised (LOT-R), State-Trait Anxiety Inventory (STAI) and the State-Trait Anger Expression Inventory (STAXI). Baseline values were compared to post intervention using a series of paired sample t-tests. Results of this study indicate that participants experienced a reduction in current distress (BDI, t(42) = 2.32; p = 0.03) and anger (STAXI Anger Expression t(44) = 2.35, p = 0.02). However, no changes in depression (BDI t(42) = 0.34; p = 0.73), state (STAI State t(41) = −1.55; p = 0.13) or trait anxiety (STAI Trait t(41) = 1.44; p = 0.16), hostility (Cook-Medley t(41) = 0.55; p = 0.59), or optimism (LOT-R t(41) = −0.95; p = 0.35) were noted. Results of this study suggest that participants who underwent MBSR treatment experienced a significant reduction in current symptom distress and anger expression, though no changes in depression, state or trait anxiety, hostility, or optimism were noted. These results should be interpreted cautiously as the data are preliminary and data from the control groups are not yet available.

Effect Of A Mindfulness Based Stress Reduction Program On Daily Life Stress In Patients With Peripheral Vascular Disease

Kaki M. York, Mustafa M. Hassan, Medicine, Qin Li, Haihong Li, Epidemiology and Health Policy Research, Melinda Bestland, David S. Sheps, Medicine, University of Florida, Gainesville, FL

Mindfulness Based Stress Reduction (MBSR) is an intervention designed to improve overall health and coping and has been used in a variety of medical and psychological populations. The purpose of this study was to examine the effect of MBSR on psychological factors in patients with coronary artery disease (CAD). Forty-five individuals (mean age = 63) with a documented history of CAD were recruited for inclusion in this study. Study participants underwent an MBSR intervention consisting of 8, two-hour, weekly group sessions, plus a single, 8 hour, group retreat. A battery of questionnaires assessing demographic and psychological characteristics was administered at baseline and immediately after the intervention. The battery included the Beck Depression Inventory (BDI), Brief Symptom Inventory (BSI), Cook-Medley Hostility Scale, Life Orientation Test Revised (LOT-R), State-Trait Anxiety Inventory (STAI) and the State-Trait Anger Expression Inventory (STAXI). Baseline values were compared to post intervention using a series of paired sample t-tests. Results of this study indicate that participants experienced a reduction in current distress (BSI, t(44) = 2.32; p = 0.03) and anger (STAXI Anger Expression t(44) = 2.35, p = 0.02). However, no changes in depression (BDI t(42) = 0.34; p = 0.73), state (STAI State t(41) = −1.55; p = 0.13) or trait anxiety (STAI Trait t(41) = 1.44; p = 0.16), hostility (Cook-Medley t(41) = 0.55; p = 0.59), or optimism (LOT-R t(41) = −0.95; p = 0.35) were noted. Results of this study suggest that participants who underwent MBSR treatment experienced a significant reduction in current symptom distress and anger expression, though no changes in depression, state or trait anxiety, hostility, or optimism were noted. These results should be interpreted cautiously as the data are preliminary and data from the control groups are not yet available.
MINDFULNESS-BASED STRESS REDUCTION (MBSR), BLOOD PRESSURE, AND PSYCHOLOGICAL FUNCTIONING IN WOMEN WITH CANCER
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OBJECTIVE: Reducing symptoms of stress and the risk of cardiovascular morbidity through the delivery of psychosocial interventions is of particular importance for women with cancer. A longitudinal waitlist-controlled trial was conducted to investigate the impact of an MBSR program on blood pressure (BP), and psychological functioning in women with cancer.

SAMPLE AND METHODS: Twenty nine women with a diagnosis of cancer (mostly breast) were recruited from the Tom Baker Cancer Centre. Participants were either registered for immediate MBSR participation (n=18), or were waiting for the next program (n=11). Resting blood pressure was assessed weekly at home over the 8-week study period in both groups. Psychological functioning was assessed via questionnaires, before and after the intervention or waiting period.

RESULTS: To analyze resting blood pressure, participants were divided into high or normal blood pressure groups, based on a median split conducted on systolic blood pressure at week 1. For participants with relatively high levels of baseline systolic BP at entry to the study, participation in the MBSR program was associated with a significant decrease in resting systolic BP over the 8 weeks relative to the control group, F(1,27) = 4.51, p < .05. In addition, MBSR participation was associated with decreased self-reported symptoms of stress, F(1,27) = 5.18, p < .05, depression, F(1,27) = 4.56, p < .05, rumination, F(1,27) = 4.77, p < .05, and increased mindfulness-attention-awareness, F(1,27) = 10.02, p < .01 in program participants compared to waiting controls.

CONCLUSION: This study is the first to demonstrate that the MBSR program may be efficacious in reducing resting BP. Consistent with previous research, psychological functioning improved for MBSR participants.

PSYCHOLOGICAL INTERVENTION FOLLOWING IMPLANTATION WITH AN IMPLANTABLE DEFIBRILLATOR: A SYSTEMATIC REVIEW
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The medical benefits of the implantable cardioverter defibrillator (ICD) are unequivocal, but a subgroup of patients experience emotional difficulties following implantation, which may lead to an enhanced risk of life-threatening arrhythmias. This group may benefit from psychological intervention. The objective of this systematic review was to provide an overview of evidence on the efficacy of psychological intervention in ICD patients and to provide recommendations for future research. We searched PubMed and PsychInfo databases in the period between January 1980 - June 2006, using a set of a priori determined keywords. Based on the search and a hand search of the reference lists of the included articles, 9 studies qualified for inclusion. The majority of studies used a randomized controlled trial design, but studies varied considerably in sample size, response and attrition rate, and type of intervention. However, most interventions were multifactorial, using cognitive behavioural therapy as one of the mainstays of treatment. Overall, psychological interventions seem to have little impact on shocks and heart rate variability. Some studies found a decrease in depressive symptoms and gains in quality of life, but the most notable effect is seen for improvements in exercise capacity and reductions in anxiety. Effect sizes for changes in anxiety in the intervention group ranged from small to large compared to small in the usual care group, using Cohen's effect size index. Preliminary evidence from small-scale intervention trials suggests that psychological intervention in ICD patients is worthwhile, in particular with a view to reducing anxiety and concerns about the ICD.

COLLABORATIVE MENTAL HEALTH CARE IN A PRIMARY CARE SETTING
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This 15 month demonstration project evaluated the outcomes of a multidisciplinary mental health team composed of a psychiatrist, psychologist, nurse and social worker managing patients in a primary care setting in collaboration with their family physician. There were 256 patients seen by the team members. Baseline quality of life rated by the SF-12 questionnaire demonstrated a mean mental health component scale score of 32 (SD=12) which is considerably below the normative mean of 50. Diagnoses at baseline generated by the Patient Health Questionnaire revealed 34% of patients had somatic symptoms as part of their mental health problem, 36% met criteria for major depression, 25% reported a panic attack in the previous 4 weeks, and 21% had problems with alcohol abuse or dependence. Severity of illness at baseline evaluated by the Threshold Assessment Grid demonstrated approximately 40% of patients were rated as having moderate to severe psychological distress and 40% having social isolation or impaired relationships. Notably there were few patients rated at risk for self-harm or harm to others. Patient care provided by the team included assessment and management of somatic symptoms, diagnostic clarification, medication management, and short-term supportive or cognitive-behavioral therapy. Outcome measurement after treatment from the team was completed showed significant improvements in SF-12 scores in the domains of physical functioning, physical role, general health perceptions, vitality, social functioning, role emotional and mental health (p<0.05 for all t-tests). Other patient outcomes showed similar improvements in scores, however in the absence of a randomized controlled study, changes cannot be ascribed to the mental health intervention alone. Eighty percent of patient rated their care as excellent or very good, scored by the Client Satisfaction Questionnaire. This demonstration project revealed that multidisciplinary collaborative mental health care for primary care patients is feasible and well-received by most patients. This clinical setting is appropriate for research in the area of the interaction of somatic symptoms, anxiety and depression and quality of life.

PSYCHOSOMATIC INTERVENTION FOR PATIENTS WITH MULTISOMATOFORM DISORDER IN DIFFERENT SOMATIC SPECIALTIES (PISO) - A RANDOMIZED CONTROLLED TRIAL
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Purpose
Patients with medically unexplained physical symptoms are 'high utilizers' of the health care system with high psychiatric co-morbidity and severe impairments in quality of life (QoL). There is preliminary evidence that psycho-dynamic-interpersonal therapy (PIT) is beneficial as it reduces the intensity of physical symptoms and increases quality of life. The trial interventions so far lacked generalizability over a larger clinical spectrum of disabling somatoform symptoms. In 2006 we started an ongoing multi-centre two-arm randomized controlled trial with QoL as primary end point at the final assessment at 3 months and follow-up after one year.

PISO has two new aspects:
- PISO uses a diagnostic category that is independent of the type of currently dominant symptom and therefore serves as a common point of reference.
- PISO uses a manualized psychotherapeutic intervention that is adapted to the specific lead symptom in the beginning, but later on emphasizes more general aspects of experiencing unexplained physical symptoms across single functional syndromes and somatic specialties.

Main inclusion criteria are a diagnosis of pain-predominant multi-somatofor disorder in different somatic specialties and a clinically relevant impaired QoL.

The experimental intervention consists of a manualized phase defined 12 session intervention based on the principles of PIT. The control intervention provides enhanced medical care of the symptom leading to current health care utilisation.
In the trial, we test a bio-psycho-social model of change including psychobiological parameters like heart rate variability. The study follows the guidelines of Good Clinical Practice (GCP), reporting will follow the CONSORT rules.

Summary
If the PIT-approach proves to be efficacious as compared to enhanced medical care it will be useful as an economic and versatile tool that is applicable in cooperation with psychosomatic medicine across a range of somatic specialties. Perspectives and limitations of the presented approach will be discussed based on first case reports.

Abstract 1213
EFFECTS OF AN INNOVATIVE TRAINING FOR GENERAL PRACTITIONERS ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC HEART FAILURE - RESULTS OF THE TRAIN THE TRAINER (TTT) - STUDY
Thomas Müller-Tasch, Psychosomatics, Frank Peters-Klimm, General Practice, Dieter Schellberg, Psychosomatics, Annika Barth, General Practice, Nicole Holzapfel, Psychosomatics, Andrew Remppis, Cardiology, Jana Jünger, Psychosomatics, Joachim Szecsenyi, General Practice, Wolfgang Herzog, Psychosomatics, University of Heidelberg, Heidelberg, Germany
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Patients with chronic heart failure (CHF) have a severely restricted quality of life (QoL), care in General Practice is complex. The objective of the train the trainer (TTT) study was an improvement of QoL and quality of care for CHF patients by an innovative training concept for patients’ treating General Practitioners (GPs) in a cluster-randomized clinical trial. In 37 GP practices, n=167 patients with CHF, NYHA II-IV, LVEF<40% were recruited. A comprehensive clinical status, QoL (SF-36, KCCQ), depression (PHQ-9), compliance (EHFSBS, CMB), and treatment satisfaction (EUROPEP) were assessed using the respective instruments. GPs in the intervention group then participated in an interdisciplinary didactic training course with two full-time workshops and two quality circle meetings. GPs in the control group obtained a state of the art-lecture teaching heart failure guidelines. After 6 months, the second assessment was conducted. Primary outcome measure was QoL, secondary outcome measures were depression status, heart failure severity (measured by NT-proBNP), self-reported compliance, hospital admission rate and mortality. GPs were evaluated concerning their adherence to treatment guidelines and a self-assessment of knowledge.
Data entry will be finished up to November 2006. Results will be presented at the APS meeting. Dependent on the results, conclusions can be drawn regarding psychosocial care for CHF patients in General Practice and the effectiveness of different methods of medical education, respectively.

Abstract 1688
NO FEAR OF CHRONIC ARTERY DISEASE - ANXIETY OF UNTREATED WOMEN SUFFERING FROM CORONARY ARTERY DISEASE IS LOW, INDEPENDENT OF AGE
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Objective: To study psychologic predictors of coronary artery disease (CAD) in women.
Method: 100 female patients (age 63.8±9.6) without prior diagnosis of CAD requesting cardiac diagnosis underwent psychological examination. Depression, Anxiety [HADS], Negative Body Image, Vital Body Dynamics [FBDR], Social Support [ESSI] and heightened bodily awareness [MSQO] were measured. Stepwise logistic regression was used to determine predictors of subsequent positive CAD diagnosis.
Results: Only anxiety (p<0.001) and the interaction of anxiety by age (p=0.001) were significant (R²=0.32). Higher anxiety predicted normal coronary angiograms, whereas the interaction of anxiety*age was positively associated with CAD. A linear regression of anxiety on age, conditional on CAD diagnosis, showed a decreasing linear trend (p=0.001) in the non CAD group and no trend (p=0.925) in the CAD group with mean values of 6.6±4.9 in the non CAD group and 5.8±3.0 in the CAD Group.
Conclusion: Untreated female CAD patients show low anxiety values independent of age while non CAD Patients show higher values declining with age. Though our data do not provide conclusive evidence, it may be speculated that natriuretic peptides (NAP) play an important role to explain the differential effect. NAP levels are high in untreated CAD, increase with age and have been reported to be anxiolytic. The decline of anxiety with age may thus be explained by the age specific effect of NAP. In CAD patients an asymptote of the anxiolytic effect is reached already earlier in life, thus anxiety and age are independent.

Abstract 1249
DEPRESSION AND HEALTH-RELATED WORRY IN RELATION TO PHYSICAL FUNCTIONING IN PATIENTS WITH PULMONARY HYPERTENSION
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Pulmonary hypertension (PH) encompasses a group of uncommon disorders of the pulmonary circulation characterized by increased pulmonary artery pressure causing right heart failure. The predominant symptom is shortness of breath and patients have a progressively decreased physical functioning and high rate of mortality. Few studies have investigated psychological factors in PH and their relationship to illness outcomes. The goal of our study is to identify the association of depression and health-related worry with physical functioning in patients with PH.
Patients with PH undergoing right heart catheterization were recruited from a teaching hospital in Montreal. Forty-two participants completed self-report questionnaires including the Beck Depression Inventory, a worry scale developed by the authors, and the physical functioning subscale of the Medical Outcomes Survey SF-36. Haemodynamic variables including mean pulmonary artery pressure (PAP) and right atrial pressure (RAP) were assessed.
81% (34) of participants were female, the mean age was 61.9 (SD=13.86) years and the mean PAP was 45.2 (SD=14.0) mmHg. Physical functioning was correlated (p<0.05) with mean PAP (r=-0.39), mean RAP (r=-0.33) and depression (r=-0.42), but not with health-related worry (r=0.25, p=0.12) on bivariate analysis. Depression was found to be an independent predictor of physical functioning in PH patients (F(6, 35)=4.1, p<0.01) on multivariate analyses, controlling for age, gender, health-related worry, as well as mean PAP and mean RAP. In this model, depression explained 19% of the variance in physical functioning. This indicates the importance of depression in relation to physical functioning over and above the effects of the haemodynamic measures in PH patients.

Abstract 1851
PSYCHOMETRIC PROPERTIES OF THE MEDICATION ADHERENCE SELF-EFFICACY SCALE (MASES) IN HYPERTENSIVE AFRICAN AMERICANS
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The purpose of this study was to examine the reliability and validity of the Medication Adherence Self-efficacy Scale (MASES), a patient-derived, self-report measure designed to assess efficacy beliefs regarding adherence to prescribed anti-hypertensive medications in African Americans. Study sample included 188 African Americans followed in a New York primary care practice. Mean age was 53.58 (SD=11.96); 85% of the sample was female; and over 50% of sample reported high school education or greater. Participants completed the 26-item MASES, which asks patients to indicate confidence in their ability to take their medication in different situations, and to report their confidence in ability to carry out tasks related to adherence. Items are scored on a 4-point Likert-type scale, and a total score is calculated by averaging across scores on all 26 items. Higher scores reflect a greater sense of self-efficacy regarding adherence to medication. Mean score on MASES for the total sample was 3.47 (SD = .47). Reliability was assessed with a measure of internal consistency, Cronbach's alpha, and results supported the reliability of the measure with an alpha of 0.92. Confirmatory (CFA) and exploratory (EFA) factor analyses were used to test
unidimensionality of the scale. Fit indices results from CFA were as follows: Chi-square (df = 275) = 422.27, p < .001; CFI = .72; RMSEA = 0.11 (90% CI = 0.11, 0.12). Model modification analyses did not reveal a practical or meaningful set of modifications to improve model fit. Thus, EFA was used to further examine the unidimensionality of the MASES. Factor 1, the strongest factor emerging from the EFA, had an eigenvalue of 9.48 and accounted for 34.7% of variance in scale scores. Although additional factors emerged, they accounted for a small percentage of variance (4-7% each), and their eigenvalues were much smaller (1.01 to 1.83) than that of factor 1. In summary, internal consistency and factor analytic results in the current study are consistent with the original validation study of the MASES. These results provide support for the reliability and validity of this measure and its continued use with African Americans.

Abstract 1307

PARENTAL OVERPROTECTION AND CARDIAC ANXIETY IN ADULTS WITH CONGENITAL HEART DISEASE
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Caring for adults with congenital heart disease (CHD) is challenging from a mental health standpoint, as these patients face various biopsychosocial issues that may impact emotional functioning. To date, there is little data on the psychosocial functioning of these patients, and there is no data on the impact of parental care and cardiac anxiety in this population. This study investigated the relationships between parent recollections of parental overprotection, cardiac anxiety, and disease severity in adults with CHD.

A cross-sectional sample of 146 adults with CHD (52% male; mean age=32.6+/-11.5 years; participation rate: 77%) completed the Parental Bonding Instrument and Cardiac Anxiety Questionnaire. Hypotheses were tested with Pearson’s r, regression, and ANOVA. A regression model was fitted on a random 80% of the sample and cross-validated on the remaining 20%.

The results of a regression model using 80% of the sample indicate that parental overprotection is related to higher cardiac anxiety, after controlling for age, gender, and disease severity. In conclusion, the psychological functioning of ACHD patients demands continued attention as approximately half of the sample met criteria for a current or past mood or anxiety disorder. In addition, health professionals working with ACHD patients should place greater emphasis on functional status than defect severity as they increase their awareness of the psychological aspects of ACHD.

Abstract 1507

THE RESULTS OF 6-MIN WALK TEST ARE INFLUENCED BY PSYCHOLOGICAL FACTORS IN PATIENTS EARLY AFTER CORONARY ARTERY Bypass SURGERY
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The 6-min walk test (6MWT) is a simple, low-cost method for estimating physical exercise capacity of cardiac patients, when exercise test can not be performed, like in patients early after coronary artery bypass surgery. As the test requests active cooperation of patients, possibly not only somatic, but psychological factors can influence the results.

358 patients who arrived to Phase II residential cardiac rehabilitation were included in the prospective study. 6-MWT was performed at the beginning and at the end of a 3 weeks program. Hospital Anxiety and Depression Scale (HADS), Type-D personality instrument (TD14) were filled in 3 weeks after surgery.

Results: Patients characterized as Type-D personality (8.5%) covered considerably shorter distance both at the beginning (255 +/- 91 m vs. 319 +/- 106 m, p<0.01) and at the ending 6MWT (361 +/- 91 m vs. 411 +/- 106 m, p<0.05) without any substantial differences in heart rate or rating of perceived exertion. Patients with high level of anxiety (16.5%) had lower walking distance both at the beginning and the ending test (274 +/- 97 m vs. 320 +/- 106 m, p<0.01 and 374 +/- 110 m vs. 413 +/- 104 m, p<0.05), and evaluated higher rate of perceived exertion (12.5 +/- 1.1 vs. 11.9 +/- 1.4, p<0.05 and 11.7 +/- 0.8 vs. 11.3 +/- 1.3, p<0.05). Patients who were depressed according to HADS (14%) walked shorter distance both during the beginning (267 +/- 88 m vs. 320 +/- 107 m, p<0.01), and ending 6MWT (347 +/- 99 m vs. 416 +/- 104 m, p<0.001). There were no differences in somatic function of patients with and without psychological alternations.

Conclusion: Psychological factors (Type-D personality, anxiety and depression) considerably influence 6MWT walking distance after coronary artery bypass surgery.

Abstract 1442

PREDICTORS OF PERSISTENT DEPRESSION AT TWO-WEEKS POST-CABG SURGERY
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Purpose: Depression symptoms are common following coronary artery bypass graft (CABG) surgery and associated with poorer clinical outcomes, yet they often remit spontaneously. Identifying predictors of persistent depressive symptoms post-CABG may focus treatment resources on patients most likely to benefit from early detection efforts. Methods: We are using the 2-item Patient Health Questionnaire (PHQ-2) to screen post-CABG patients for the presence of mood symptoms prior to discharge home at 8 Pittsburgh area
hospitals participating in an ongoing treatment trial for post-CABG depression. If a patient endorses either PHQ-2 item or both affirmatively (screen positive), then we administer the 9-item Patient Health Questionnaire (PHQ-9) via telephone at 2-weeks following hospital discharge to assess the level of depressive symptoms. We define persistent depression as a positive PHQ-2 screen plus a PHQ-9 score >9. We also collect sociodemographic and clinical data at baseline via self-report and chart abstraction. Results: Of the 1,685 patients who completed the PHQ-2 as of 9/1/06, 844 (50%) had a positive screen and 765 (91%) were protocol-eligible and consented to enrollment into our trial. Of these, 652 (85%) remained protocol-eligible and agreed to complete the PHQ-9 at 2-weeks following hospital discharge, and 207 (32%) scored >9. Predictors of persistent depression included younger age, female gender, and presence of COPD (all P > 0.03). Conclusion: Predictors of persistent post-CABG depression can be identified prior to hospital discharge. Research is ongoing to determine whether early identification and treatment of post-CABG depression will improve clinical outcomes.

Abstract 1444

DOES THE PHQ-9 CORRELATE WITH OTHER MEASURES OF DEPRESSION AND QUALITY OF LIFE FOLLOWING CABG SURGERY? P
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Purpose: An NHLBI expert panel recently endorsed the nine-item Patient Health Questionnaire (PHQ-9) as a tool to screen cardiovascular patients for depression and help ascertain eligibility for clinical trials. Yet little empiric data is available to examine whether PHQ-9 scores correlate with more established measures used in patients with cardiovascular disease. Methods: We used the 2-item Patient Health Questionnaire (PHQ-2) to screen post-CABG individuals for depression prior to discharge home at 8 Pittsburgh area hospitals participating in an ongoing depression treatment trial. If a patient endorsed either PHQ-2 item or both affirmatively (screen positive), then we administered the PHQ-9 via telephone at 2-weeks following hospital discharge to assess the level of depressive symptoms. We also recruited a random sample of non-depressed post-CABG patients to serve as a control cohort (negative PHQ-2 screen and PHQ-9 <5). Other measures we collected at 2-week follow-up included the: (a) 17-item structured Hamilton Rating Scale for Depression from the Depression Interview and Structured Hamilton (DISH); (b) SF36 to determine generic mental and physical QoL (MCS and PCS); and (c) Duke Activity Status Index (DASI) to determine disease-specific quality of life (QoL). Results: Among the 300 patients enrolled as of 9/1/06 (54% male, 86% Caucasian, mean age 65 years (SD 10.5), the PHQ-9 correlated highly with the DISH (r=0.81) and SF-36 MCS (-0.74), but only moderately with the SF-36 PCS (0.41) and DASI (0.41) (all P<0.001). We observed similar but lower correlations among the 193 (64%) patients who scored > 9 on their 2-week PHQ-9 and we classified as depressed (PHQ-9, mean (SD): 13.8 (3.4) on the DISH (r=0.55), SF-36 MCS (-0.49), and DASI (0.26) (all P<0.003), but not SF-36 PCS (0.04; NS). Conclusion: The PHQ-9 is correlated with other established measures of depression and QoL among recently post-CABG patients.

Abstract 1029

FATIGUE, DEPRESSIVE SYMPTOMS, AND HOPELESSNESS AS PREDICTORS OF CLINICAL EVENTS FOLLOWING PERCUTANEOUS CORONARY INTERVENTION WITH PACLITAXEL-ELUTING STENTS
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We investigated the relative effect of fatigue, depressive symptoms, and hopelessness on prognosis at 2 years follow-up in percutaneous coronary intervention (PCI) patients. Consecutive PCI patients (n=536) treated with the paclitaxel-eluting stent as the default strategy completed the Maastricht Questionnaire (MQ) at baseline. Apart from an overall vital exhaustion score, the MQ also assesses fatigue (7 items; Cronbach's alpha=0.87) and depressive symptoms (7 items; Cronbach's alpha=0.87), with hopelessness (1 item) comprised in the depressive symptom items. The endpoint was adverse clinical events, defined as mortality and non-fatal myocardial infarction at 2 years. Data were analyzed with Cox regression analyses. In univariable analyses, overall vital exhaustion (p=0.02) and depressive symptoms (p=0.007) but not fatigue (p=0.36) were associated with adverse prognosis; in multivariable analysis, depressive symptoms (HR:2.69; 95%CI:1.31-5.54) remained the only predictor of clinical outcome. Of the depressive symptoms, hopelessness (HR:3.44; 95%CI:1.65-7.19) was the most cardiac-toxic symptom. The incidence of clinical events was higher in the high (11% versus 3%; p=0.001) than in the low hopeless patients. Hopelessness (HR:3.35; 95%CI:1.58-7.15; p=0.002) remained an independent predictor of clinical outcome at 2 years in adjusted analyses. Symptoms of depression, but not hopelessness predicted clinical events. Hopelessness was the most toxic symptom, associated with above a 3-fold risk of clinical events 2 years post-PCI. Screening for hopelessness may lead to the identification of high-risk patients.

Abstract 1583

PSYCHOSOCIAL FACTORS AND MORTALITY IN CABG: A PRECIS DATABASE STUDY
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This study examined the existence of life stress, time pressure, anger, or sadness prior to CABG and the predictive value of these variables on post-CABG mortality. Study size was 4166 patients admitted to the Cleveland Clinic for CABG, from March 2000 thru Sept. 2006. The mean age was 66.5 and 76 % were men. All patients completed a questionnaire about the presence of the 4 psychosocial variables prior to admission. Patient mortality, measured up to 6 years after the CABG, was assessed via the Social Security Death Index. Kaplan-Meier methods were used to compare the history or no history of the psychosocial variable.

There were 274 reported deaths. Patients who indicated a presence of any one psychosocial variable demonstrated less mortality ( p = 0.01) than those that did not endorse any variable. This trend was equal in men and women. In examining each variable separately, life stress ( p < 0.001) was associated with a protective effect in mortality, with a more robust effect in men. Time urgency also had a protective mortality effect (p < 0.01) but only in males. A history of anger did not show any effect on subsequent mortality (p = 0.53) or by gender. A history of sadness conferred no overall mortality over a 6-year follow-up period ( p = 0.16), but was statistically predictive for mortality between 30 days and 3 years, with peak mortality significance at 1-year follow-up ( p < 0.001). Sadness gender mortality was notable for men at 30 days ( p < 0.001) and at 6 months ( p = 0.03), while for women it was notable at 1 year ( p = 0.002).

This study showed that presence of life stress and time urgency prior to CABG tended to have a protective effect in follow-up mortality while the presence of anger had no effect. Conversely, the presence of sadness appeared to have an early detrimental effect on mortality. Our findings may validate previous characteristics of "Type A" personality as not being detrimental to CAD patients, while underscoring the mortality effect of depression in CABG.

Abstract 1574

PSYCHOSOCIAL PREDICTORS OF MORTALITY 5 YEARS AFTER CARDIAC CATHETERIZATION
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Purpose of the study was to evaluate the influence of psychosocial factors on mortality and quality of life in patients undergoing cardiac catheterization. In 498 patients (mean age 63.3 years, 68.7% male) anxiety and depression (HADS), stress response symptoms (PTSS-10) and health-related quality of life (SF-36) were assessed immediately before cardiac catheterization. In 59% coronary artery disease (CAD) was diagnosed by catheterization, 17% had
other heart diseases (e.g. heart failure) and 24% had no heart disease. A re- 
evaluation 5 years later found that 20 patients had died, 305 answered the 
follow up questionnaire and from 173 we got no further information. The 
deceased patients were compared with those who survived and answered the 
questionnaire. In a multiple linear regression predictors for mortality were 
assessed. All deceased patients were diagnosed with CAD or heart failure in 
catheterization. Before catheterization, the deceased patients had lower scores 
of anxiety (5.5 SD 2.1 vs. 7.08 SD 3.93; p = .016) in HADS and a lower sum 
score in the somatic scales of SF-36 (31.39 SD 7.44 vs. 38.61 SD 9.86; p = .021) 
than survivors with CAD. The deceased patients were also significantly 
older than survivors (70.7 SD 5.68 vs 64.1 SD 8.8 years; p<.001). In 
multivariate analysis, low educational status was the strongest predictor of 
mortality (R^2 = .160). This study underlines other investigations, which 
described a connection between low social status and high mortality of 
coronary patients. Furthermore low anxiety was one factors related to high 
mortality in coronary patients. One explanation for this might be that anxiety 
functions as a signal to induce protective coping and health behaviour in 
survivors with CAD. Further investigations are necessary to evaluate this 
theory.

Abstract 1778

RELATIONSHIP BETWEEN ATTITUDES TOWARD ILLNESS AND QUALITY OF LIFE IN RESIDENTIAL CARDIAC REHABILITATION

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Psychological adaptation to chronic illnesses can considerably influence patients’ quality of life as well as the course and prognosis of their disease. In our cross-sectional study, patients (n=608, 54% after bypass-graft surgery (ACBG), 46% after acute myocardial infarction (AMI)) completed a questionnaire package during participation in a residential cardiac rehabilitation program. The program was designed according to the Freiburg Questionnaire of Coping with Illness (FQCI), General Perceived Self-Efficacy (GSE), Hospital Anxiety and Depression Scale (HADS) and health related quality of life was assessed with the Short Form 36 (SF-36). We assessed predictive value of self-efficacy, depressive coping, active-problem oriented coping on the mental health SF-36 scale and anxiety and depression symptoms of the HADS using a multiple regression model, and found many similarities and some characteristic differences in AMI and ACBG groups. In both groups depressive coping and expectancy of self-efficacy were included in stepwise regression models (beta mostly above 0.3, p always < 0.001). The highest predictive value was depressive coping. Our results show that after AMI, measures of coping exerted a stronger influence on mental health, depression and anxiety symptoms than after ACBG (R Square of stepwise models = 0.3 after AMI and = 0.2 after ACBG). Our findings suggest that we could enhance quality of life with specific interventions in different patient groups during residential cardiac rehabilitation.

Abstract 1566

STRESS RESPONSE SYMPTOMS BEFORE AND AFTER CARDIAC CATHETERIZATION: INDICATIONS OF AN ADJUSTMENT DISORDER?

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Besides anxiety and depression stress response symptoms can complicate the 
process of coping with coronary heart disease. Aim of this study is to assess the 
intensity of these symptoms, the course they take and their effects on the 
patients quality of life before and in long-term course after cardiac 
catheterization. In a total of 498 patients (mean age 63.3 years, 68.7% male) anxiety and depression (HADS), stress response symptoms (PTSS-10, IES-R) and health-related quality of life (SF-36) were assessed immediately before (t0), as well as two (t1, n = 384) and five years (t2, n = 279) after cardiac catheterization. In a multiple linear regression predictors of quality of life at t2 were assessed. A sub-sample (n = 62) was examined at t2 with SKID with regard to the existence of a posttraumatic stress disorder. Even before cardiac catheterization 43.6% of the sample showed an increased sum score in PTSS-10. At t2 this percentage had increased to 48.0%. In IES-R at t2 patients had increased values with regard to avoidance (p=0.001) and hyperarousal (p=0.01) in comparison with normal population. 6.6 % showed values which exceeded the diagnostic cut off for PTB. In SKID, however, there was only one patient (1.6 %) who could be diagnosed a PTB related to the cardiac disease. In multiple linear regression PTSS-10-sum score (beta = -.408) as well as avoidance in the IES-R (beta = -.277) at t1 were significant predictors of the physical sum score of quality of life in SF-36 (R^2 = .499), whereas hyperarousal at t1 was a predictor for the psycho-social sum scale (R^2 = .253; beta = -.314). No predictive effect was found for anxiety and depression.

These results suggest to operationalize the occurrence of stress related symptoms in patients with severe heart disease as a specific kind of adjustment disorder.

Abstract 1624

POST-TRAUMATIC STRESS SYMPTOMS AFTER ACUTE CORONARY SYNDROMES: A RISK FACTOR FOR MORTALITY?

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Ten to 25% of acute coronary syndromes (ACS) patients develop symptoms of posttraumatic stress disorder (PTSD). To some extent, PTSD symptoms overlap with depressive symptoms, a known risk factor for post-ACS mortality, but no study has assessed the impact of PTSD symptoms on mortality, controlling for known medical risk factors. We enrolled 262 patients within 7 days of an ACS. At baseline, patients completed the Brandon Diagnostic Interview (BDI). Variables for the Global Registry of Acute Coronary Events (GRACE) score, a prediction model for all-cause mortality in ACS patients, were assessed from chart review. One month later, patients completed the revised Impact of Event Scale (IES-R), a widely used screening measure for PTSD, tailored to ask about the ACS as the traumatic event. The BDI at hospitalization and 1-month IES-R scale were moderately correlated at r = 0.53, 175 (69.8%) of patients had low (IES-R score 0-11), 48 (18.3%) had medium (12-25), and 39 (14.9%) had high (> 25) PTSD symptom levels. During an average follow-up of 14 months, 8 (3.1%) patients died. Significant univariate predictors of mortality were the GRACE score (p < 0.001) and the BDI (p = 0.003). In a multivariate model, controlling for gender and ethnicity, the GRACE score (p = 0.001) and the BDI (p = 0.019) were significant predictors of mortality, but not PTSD symptoms, neither as a continuous variable (p = 0.668), nor as a categorical variable (p = 0.633). Exploratory analyses with subscales of the IES-R (avoidance, intrusion, hyperarousal) revealed that hyperarousal was a significant predictor of mortality, even when controlling for the GRACE score (p = 0.028). However, when the BDI was added to the model, hyperarousal was not a significant predictor any more (p = 0.28; bivariate correlation between BDI and hyperarousal: r = .55). Despite significant correlations between depressive symptoms and PTSD symptoms, only depressive symptoms were associated with mortality. This finding needs replication in larger studies.

Abstract 1322

ANXIETY DISORDERS IN PATIENTS WITH IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD): PREVALENCE AND ACTUAL TREATMENT

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Despite its positive effect on mortality, the development of anxiety disorders is a potential side-effect of implantable cardioverter defibrillator (ICD) therapy. However, studies systematically investigating the prevalence of
anxiety disorders and treatment in patients with ICD are lacking. Therefore, this study investigated the prevalence of anxiety disorders, actual treatment and patients’ request for therapy. From July until October 2006, 138 cardiology outpatients with ICD (mean age 62.4, SD 12.0 years, 21.7% female) were included in our still ongoing cross-sectional study. Diagnosis of panic disorder (PD), generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD) were established using the Patient Health Questionnaire (PHQ), the Generalized Anxiety Disorder Scale (GAD-7), and the Posttraumatic Stress Diagnostic Scale (PDS), respectively. Furthermore, patients were asked, if they were receiving psychopharmacological medication or psychotherapy and whether they wanted professional support. Out of all patients, 6.0% suffered from PD, while 10.4% reported panic attacks in the past 4 weeks. Six percent suffered from GAD and 16.5% from PTSD. In total, 26.1% of the patients suffered from some kind of anxiety disorder. Of those, 13.8% were receiving daily medication, while none was treated by psychotherapy. In contrast to that, 73.1% wanted some treatment for their mental problems, i.e. 30.8% by psychotherapy and 3.7% by medication. Even though a substantial part of ICD-patients suffered from an anxiety disorder, 86.2% of them did not receive any evidence-based treatment. This may partially trace back to the fact that only 34.5% of them were spontaneously interested in psychotherapy or psychopharmacological treatment. There seems to be a lack of information concerning efficient treatment for anxiety disorders in ICD patients.

Abstract 1398

TOWARDS AN UNDERSTANDING OF THE MOLECULAR MECHANISMS INVOLVED IN INTERFERON-INDUCED DEPRESSION

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Depression is associated with altered neuronal gene expression and interferon causes depression when given therapeutically. Interferon exhibits its transcriptional effects in neuronal cells through activating an intracellular protein termed Signal Transducer and Activator of Transcription 1 (STAT1). After interferon-induced phosphorylation of a single tyrosine residue, STAT1 dimers translocate to the cell nucleus, where they bind to DNA recognition sites and regulate the transcription of cytokine-responsive genes until they are dephosphorylated. To better understand the functional role of STAT1 in modulating gene expression, we investigated the transcriptional effects of mutant STAT1 proteins with defects in tyrosine dephosphorylation. Different point mutations were introduced into a STAT1-coding plasmid and the recombinant proteins were then expressed in transfected human cells. A single point mutant (F77A) was identified in the amino terminus that resulted in prolonged nuclear accumulation and defective oligomerization on DNA following stimulation of cells with interferon. The mutant protein was refractory to tyrosine dephosphorylation and exhibited a defect in cooperative DNA binding, thereby modulating transcriptional activation of genes in a promoter-specific manner. Transcription from promoters with only a single discernable STAT1 binding site including several endogenous STAT1 target genes was negatively affected by this mutation. Taken together, oligomerization of STAT1 molecules on DNA appears to be a common mechanism for gene activation, irrespective of the presence of multiple strong-affinity STAT1 binding sites. Our results indicate that cooperative DNA binding of STAT1 plays an essential role in shaping the amplitude and duration of interferon signal transduction. This result may be of clinical significance in the context of interferon-induced depression.

Abstract 1804

RSA IN MAJOR DEPRESSIVE DISORDER: SLEEP QUALITY, PHYSICAL ACTIVITY AND RESPIRATION ACCOUNT FOR DEFICITS IN RSA LEVEL BUT NOT DEFICITS IN RSA REACTIVITY AND REBOUND

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Low levels of respiratory sinus arrhythmia (RSA), an index of cardiac vagal control, have been examined as a marker of depression and related increased risk for cardiovascular disease. Evidence is mixed whether depressed persons have low RSA levels relative to non-depressed samples, and at most the effect size is modest. Further, virtually no work has examined the hypothesis that depression involves abnormalities in RSA reactivity to and recovery from challenging tasks. RSA and respiration were measured in depressed (N=25) and healthy control (N=25) participants during rest and two reactivity tasks, each followed by a recovery period. Physical activity and sleep quality were also assessed with standardized questionnaires. Relative to controls, depressed persons exhibited lower overall levels of RSA (F's > 5.07, p's < .05) and higher respiration rates (F's > 3.93, p's < .055), as well as poorer sleep quality (t = -11.25, p < .001) and less physical activity (t = 4.31, p < .001). Covariate analyses indicated that group differences in RSA level were accounted for by respiration, sleep quality and physical activity. Significant group differences were also found for speech task RSA changes (F = 4.23, p < .05), primarily characterized by a relative lack of task-related RSA suppression and post-task rebound in depressed persons. In contrast to the findings for RSA level, respiration and physical health variables did not account for the group differences in reactivity and rebound. Results suggest that the more commonly studied deficits in RSA level may be accounted for by confounding physical factors. Further, task-related changes in RSA may be a more informative depression-related deficit in cardiac vagal control than low RSA levels.

Abstract 1191

THE EFFECTS OF DEPRESSION ON CARDIOVASCULAR RECOVERY AFTER EXERCISE IN MEN AND WOMEN

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Post-exercise cardiovascular (CV) recovery has been shown to be an independent predictor of CV morbidity. While depressed patients have generally been found to have impaired CV recovery, the interaction of sex and depression on CV recovery remains virtually unexplored. This study examined the effects of depression and sex on post-exercise heart rate and blood pressure recovery. A total of 334 patients, 100 women and 224 men (mean age = 60), underwent an exercise stress test. Heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were measured at rest, every 2 minutes during exercise, and five minutes post-exercise. CV recovery was defined as the 5-minute post-exercise measure minus the resting baseline measure. Depression was defined as the presence of a mood disorder (major depressive disorder, minor depressive disorder or dysthymia) as determined using a structured psychiatric interview (PRIME-MD). 15% of patients were found to have a mood disorder. General linear model analyses, controlling for peak level, age, total treadmill time, and medication usage revealed a significant main effect of sex on HR recovery (F=5.83; p=.02) with men showing an impaired heart rate recovery (mean = 14.9±1.45 beats/min) compared to women (mean = 10.6±1.45 beats/min). There were no other significant main effects of sex, nor any main or interaction effects of mood disorders. These results suggest that regardless of the presence or absence of a mood disorder, men have worse cardiovascular recovery than women. As men are generally at an increased risk of worse cardiovascular disease, this study suggests one possible mechanism to explain such a phenomenon. Further studies are needed to assess the long-term prognostic impact of this delayed HR recovery.
Abstract 1182

EFFECTS OF MOOD DISORDERS AND ENDOTHELIAL FUNCTION ON EXERCISE-INDUCED BLOOD PRESSURE ELEVATIONS
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Background: Both mood disorders (MDs) and impaired endothelial function (EF) have been linked to worse cardiovascular disease (CVD) outcomes, though the mechanisms remain poorly understood. Previous reports suggest that impaired EF may influence CVD outcomes by altering arterial responses (e.g., blood pressure (BP) reactivity) during exercise. In addition, MDs (e.g., depression) have been associated with increased sympathetic reactivity during exercise. However, the extent to which having impaired EF and a MD are associated with greater alterations in BP responses during exercise is not known. This study evaluated associations between EF, MDs, and BP responses during exercise stress testing. We hypothesized that having impaired EF and a MD would be associated with paradoxical increases in DBP at peak exercise. Method: 255 patients undergoing myocardial perfusion (SPECT) exercise stress testing underwent a brief, structured psychiatric interview (PRIME-MD) and completed the Beck Depression Inventory II (BDI-II) immediately before testing. EF was assessed using a brief treadmill Bruce protocol testing yielding baseline and peak SBP and DBP measures. On the following day, patients underwent EF testing using an adapted nuclear medicine version of the flow-mediated-dilatation protocol. In this procedure, the rate of uptake ratio (RUR) between hyperaemic and non-hyperaemic arms was used as an index of EF. Results: Having a MD was associated with having impaired EF (F = 7.06, p< 0.01). 2 (MD) X 2 (EF) general linear models revealed a significant main effect of EF on exercise-induced DBP reactivity; patients with a MD exhibited greater DBP during exercise than patients without a MD (F = 4.25, p< 0.05). However, there were no other main or interaction effects on BP responses to exercise. Conclusion: In this study, only MD and not EF was associated with paradoxical increases in DBP during exercise. These findings suggest that impaired EF and increased DBP reactivity may underlie the link between MD and worse CVD outcomes. Prospective studies are needed to confirm this hypothesis.

Abstract 1085

HIGHER CATECHOLAMINE EXCRETION RATES IN DEPRESSED COMPARED TO NON-DEPRESSED PARTICIPANTS ONLY AMONG THOSE WHO ARE NORMAL WEIGHT
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Results on the association between sympathetic nervous system (SNS) activity and depressive symptoms are inconsistent. Overweight/obesity is known to enhance cardiac sympathetic drive. To explore the relevance of body mass index (BMI) in the depression-SNS relationship, we compared logarithm-transformed daytime and nighttime urinary catecholamines among 202 participants without depressive symptoms (Beck Depression Inventory [BDI] total score <10) and 78 participants with depressive symptoms (BDI total score >10) controlling for age, sex, ethnicity, and BMI. Overall, norepinephrine (NOR) during sleep was 26% greater (p<0.03) in depressed participants, but depression status was not related to daytime NOR and epinephrine (EPI) (p=0.09 and p=0.88, respectively). When analyses were performed separately for normal weight (BMI<25, n=64), overweight (25<BMI<30, n=114), and obese (BMI>30, n=102) participants, the normal weight depressed individuals had 46% and 56% higher daytime NOR and EPI, and 53% higher nighttime NOR (all p<0.05) than the non-depressed. Depression status was not related to any of the catecholamine measures in either the overweight or obese participants (all p>0.20). Partial correlations between BDI total score and catecholamine levels among normal weight individuals were 0.35, 0.35, and 0.24 for daytime EPI, daytime NOR, and nighttime EPI, respectively. These partial correlations were 0.37, 0.34, and 0.30 for overweight and obese participants. A formal test of the BDI by BMI interaction was marginally significant for daytime EPI (p<0.06; for daytime NOR, p=0.15). These results indicate that overweight/obesity may conceal the depression-SNS relationship.

Abstract 1648

PREDICTING SHORT-TERM OUTCOME IN WELL-BEING FOLLOWING SUICIDAL BEHAVIOUR: THE MODERATING EFFECTS OF SOCIAL PERFECTIONISM AND POSITIVE FUTURE THINKING
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Public concern with the increasing suicide rates in many Western countries is reflected in the publication in the USA and UK of national suicide prevention strategies. As a result, much attention has focused on suicide attempt history as it is the best predictor of subsequent completed suicide. There has also been increased recognition that we need to move beyond the classic psychiatric diagnostic categories if we are to further understand the aetiology of suicidal behaviour. Consequently, there is growing evidence for diathesis-stress models of mental disorder and, more recently, of suicidality. To this end, one such vulnerability trait, perfectionism, has been shown to be associated with psychological distress. The present study, therefore, investigated an integrative, psychological model of suicidality involving the relationship between perfectionism and future thinking (a recognised risk factor for distress) to predict short-term outcome in well-being following a suicidal episode. We recruited 267 patients from a general hospital following a self-harm episode and they completed a range of clinical and psychological measures in hospital and were followed up approximately two months after discharge. These measures included assessments of mood, well-being, cognitions and personality factors. Hierarchical regression analyses confirmed that, among the suicidal self-harmers who had a history of repetitive self-harm, outcome among low social perfectionists changed as a function of positive future thinking such that outcome was better for those high on positive thoughts compared with those low on positive future thoughts. There was no such positive change in outcome among the high social perfectionists. There were also no significant interactions between the non-repetitive self-harmers. These findings extend recent research to suggest that social perfectionism and positive future thinking (but not negative future thinking) are implicated in outcome following repetitive suicidality. Implications for theory and clinical practice are discussed, including how these findings may help to increase the likelihood that self-harm patients move from the hospital bed to the community.

Abstract 1345

ASSOCIATION BETWEEN SEROTONIN TRANSPORTER GENE AND ALEXITHMIA
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Background: Alexithymia is considered to be a risk character of stress-related disorders. Recently a lot of studies have reported that the stress-related disorders are associated with serotoninergic (5-HT) dysfunction. A common regulatory variant (5-HTTLPR) in the human serotonin transporter gene (5HTT) results in altered expression and transporter availability. Purpose: The aim of our study was to determine whether the 5-HTTLPR polymorphism is related to alexithymia by measuring with a 20-item Toronto Alexithymia Scale (TAS-20). Subjects and Methods: Three hundred and four (148 males and 156 females) subjects aged 18 to 52 were selected from the general population. The subjects performed TAS-20, State-Trait Anxiety Inventory (STAI) and Self-rating Depression Scale (SDS) to assess the emotional tendency. DNA was extracted from the peripheral blood. Genotyping of 5-HTTLPR was performed using polymerase chain reaction. The associations between TAS-20, STAI, and SDS scores and genotype were analyzed by one-way analysis of variance (ANOVA). Results: Genotype indicated 187 (61%) s/s, 92 (30%) s/l, 17 (6%) l/l, 5 (2%) extra-l/l, and 3 (1%) extra-l/s. The averaged TAS-20 score for s/s, s/l, extra-l/l and extra-l/s was 49.3 ± 10.36, 50.0 ± 9.4, 56.4 ± 11.4, 61.4 ± 3.8 and 48.0 ± 14.1 (mean ± SD), respectively. Atypical 8 (3%) extra-l/l or s
disorders) are associated with worse EF. The extent to which worse EF effects of anxiety disorders. These findings suggest that in patients undergoing with a mood disorder had worse EF than those without a mood disorder (mean general liner model analyses controlling for age and sex indicated a main disorder (ADD, n=10; 4%), or no disorder (ND, n=191; 80%). Results of

DIMENSIONS AND VULNERABILITY TO STRESS

Abstract 1556

THE DIFFERENTIAL IMPACT OF DEPRESSIVE AND ANXIETY DISORDERS ON A NOVEL MEASURE OF ENDOTHELIAL FUNCTION

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Both depressive (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 precise 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. Interestingly, there is preliminary data suggesting an association between psychological factors (e.g., anxiety and depressive symptoms) and impaired EF. However, the differential impact of depressive vs. anxiety disorders on EF has not been explored. The present study assessed EF using a single-photon-emission-computed-tomography (SPECT) variation of the well-established flow-mediated dilation technique in 240 patients (77% men; mean age = 60 yrs) referred for myocardial perfusion (SPECT) exercise testing. The rate of uptake ratio (RUR) between hyperaemic and non-hyperaemic arms was used as our measure of EF. All patients underwent a sociodemographic and medical history interview, followed by a brief, structured psychiatric interview (PRIME-MD) the day prior to undergoing the EF test (hyperaemic challenge). Psychiatric interview results classified patients as having an anxiety disorder only (AD, n=15; 6%), a depressive disorder only (DD, n=24; 10%), both an anxiety and a depressive disorder (ADD, n=10; 4%), or no disorder (ND, n=191; 80%). Results of general liner model analyses controlling for age and sex indicated a main effect of mood disorder on EF function (F=4.31, p<0.05), such that patients with a mood disorder had worse EF than those without a mood disorder (mean (SE) RUR = 3.55 (0.12) vs 4.35 (0.22)). There were no main or interaction effects of anxiety disorders. These findings suggest that in patients undergoing diagnostic exercise stress testing, depressive disorders (but not anxiety disorders) are associated with worse EF. The extent to which worse EF observed in patients with depressive disorders leads to worse CVD outcomes remains to be determined.

Abstract 1556

SYMPTOMS OF ANXIETY AND DEPRESSION IN MEDICAL STUDENTS: RELATIONSHIP WITH BIG-FIVE PERSONALITY DIMENSIONS AND VULNERABILITY TO STRESS

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In this study we assessed the prevalence of symptoms of anxiety and symptoms of depression in medical students, and relationship of these symptoms with Big-Five personality dimensions and vulnerability to stress. Symptoms of anxiety and depressive were assessed by the Hospital Anxiety and Depression scale (HADS), Big-Five personality dimensions were assessed by the Ten Item Personality Inventory (TIPI), and vulnerability to stress was assessed by the Stress Vulnerability scale (SVS).

A total of 338 randomly selected medical students (73 men and 265 women) were included to the study. The mean age of the study population was 21 years. The prevalence of anxiety disorders and the prevalence of depressive disorders (scores of the HADS anxiety subscale and score of the HADS depression subscale >10) was 52% and 12%, respectively. The score on the HADS anxiety subscale and the score on the HADS depression subscale correlated negatively with the score on the subscale of Emotional Stability of the TIPI (r=-0.39, p<0.01 and r=-0.2, p<0.01, respectively) and correlated positively with the score on the SVS (r=0.38, p<0.01 and r=0.44, p<0.01, respectively). The score on the SVS correlated negatively with the score on the subscales of Extraversion (r=-0.24, p=0.01), Conscientiousness (r=-0.12, p<0.01) and Emotional Stability (r=-0.2, p=0.01) of the TIPI.

This study has demonstrated that symptoms of anxiety and symptoms of depression are prevalent in medical students. Severity of symptoms of anxiety and symptoms of depression has negative relationship with emotional stability and positive relationship with vulnerability to stress. Higher levels of extraversion, conscientiousness and emotional stability are associated with lower vulnerability to stress in medical students.

Abstract 1700

CHANGES IN DYSPNEA AND VENTILATORY BEHAVIOR ACROSS REPEATED EXPERIENCES OF HYPERCAPNIA: EFFECTS OF ANXIETY

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Purpose. To investigate how the subjective sensation of dyspnea (particularly air hunger) changes across repeated episodes and how these changes related to changes in ventilatory behavior.

Subject Sample and Methods. Three subsequent rebreathing trials (15 min intertrial interval), causing a slowly increasing state of hypercapnia, were administered in healthy women (N=31) scoring high or low for trait anxiety. Rebreathing (5 L I bag) was stopped after 7 min or when subjective intolerance was reached. Respiratory behavior (frequency, tidal volume), end-tidal CO2 and the intensity of air hunger perception were measured continuously.

Results. The threshold for air hunger sensation preceded the thresholds for each the respiratory parameters. Air hunger perception habituated in both groups across trials. Also the threshold for the respiratory rate habituated, whereas the sensitivity (slope of respiratory rate) increased. The correlation between air hunger and respiratory rate was significantly lower in high than in low trait anxious subjects. This suggests that high anxious persons rely less on breathing related cues to determine subjective air hunger compared to low anxious subjects.

Abstract 1739

ALEXITHYMIA AND EMOTIONAL AWARENESS IN HYPERTENSIVES : STATE OR TRAIT ?

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High levels of alexithymia were already found in hypertensives. Nevertheless, due to the cross-sectional type of data, it is difficult to know whether a difficulty in identifying and expressing feelings constitutes a defect in emotional processing (trait) which can contribute to hypertension as a disease aggravated by stress dysregulation or is rather a coping mechanism (state) for facing the burden of a chronic illness.

For partially answering such a question 100 hypertensives (47 males, 53 females; aged 53±1±13.5 years, hospitalized for a general check-up and an annual control of their treatment), aged 18-70, were studied by the Ten Item Personality Inventory (TIPI), and Schwartz Levels of Emotional Awareness Scale (LEAS) and Defense Style Questionnaire (DSQ-88): 71 presented with a primary idiopathic hypertension (PH), non complicated or with target organ complications (PCH and PNC), and 29 with a secondary hypertension (SH) more often due to a renal artery or endocri ne disease. Given the lack of a psychosomatic model for SH and the possibility of major adaptive difficulties in PCH, we hypothesized a gradient of emotional processing difficulties from SH to PCH, via PNC.

TAS scores were found lower, LEAS scores higher and DSQ mature defenses scores higher in SH, compared with PH (respectively p=0.034, p=0.074 and p=0.049). The differences of these scores between complicated and non complicated hypertensions were not significant. A significant gradient was nevertheless found for TAS and a reverse trend for LEAS, from SC to PCH via PNC (respectively p=0.018 and p=0.073). Based on median-split dichotomization of TAS, LEAS and DSQ mature defenses scores, a categorical psychological vulnerability (PV) variable was computed, ranging...
from 0 to 3 (alexithymia and/or low emotional awareness and/or low mature defenses), which predicted PH in a multiple logistic regression model (ORs respectively of 2.20, 3.57 and 5.00 for 1, 2 or 3 PV factors; p=0.022 for trend).

Our results, although cross-sectional, support the hypothesis that primary hypotensions are more congruent with the psychosomatic model than secondary ones (trait alexithymia); they are also compatible with an aggravating effect of illness complications on emotional processing in primary hypotensions (state alexithymia).

Abstract 1618

DYSRHYTHMOGENIC POTENTIAL IN PSYCHIATRIC PATIENTS

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The aim of the study was to examine the dysrhythmic potential of thirty psychiatric patients (group A), irrespective of diagnoses or medication, at admission to psychiatric institutions. The dysrhythmic potential was determined in terms of heart rate, corrected QT-intervals (QTc), heart rate corrected JT-intervals (JTC), QT- and JT-dispersion (QTcd and JTcd) between leads V1 and V6, and heart rate variability (HRV) as determined from lead V6 of the ECG. Values were compared with thirty age- and sex-matched controls (group B). In the second part of the study the dysrhythmic indicators were assessed in a patient group (group C; n=43) with only psychiatric disorders and compared to a group with psychiatric as well as medical disorders (group D; n=27). Results showed that the patient group A had significantly higher values than the control group for mean QTc (V6) (0.4579, SD = 0.0328; vs. 0.4042, SD = 0.0326, p=0.0470), mean Jtc (V6) (0.3883, SD = 0.0348 vs. 0.3064, SD = 0.0271; p=0.0287) and mean QT and JT-dispersion values (QTcd = 0.0443, SD 0.0203; vs. 0.0039, SD=0.0053 and JTcd = 0.0546, SD = 0.1075 vs. 0.0143, SD=0.1450, p < 0.05). A statistical significant difference (p< 0.0001) was found between the patients (group A) HRV and that of the controls (group B). No statistical significant differences were found between the values of the dysrhythmic indicators for patients with only psychiatric illness (group C) and those with psychiatric as well as medical disorders (group D). It can be said that psychiatric patients, at the point of admission to psychiatric institutions, may have an increased dysrhythmic potential not necessarily caused by physical disease. The potential of an augmented risk for cardiovascular incidents in psychiatric patients should be considered when treating such patients.

Abstract 1280

HORMONAL REPLACEMENT THERAPY (HRT) AND PSYCHIATRIC DISORDERS: THE ASSOCIATION WITH ISCHEMIA

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Background: Coronary artery disease (CAD) is the leading cause of death among women. Studies have suggested a protective effect of endogenous estrogen in women until the age of menopause, when rates of CAD sharply increase. As such, hormone replacement therapy (HRT) may be beneficial for post-menopausal women at risk for CAD. Research has also demonstrated a link between psychological stress (e.g., depressive and anxiety disorders) and increased CAD morbidity and mortality, particularly in women. However, we are unaware of any studies to explore whether having a depressive or anxiety disorder may reduce the protective effects of HRT in women at risk for CAD. The present study examined the impact of psychiatric morbidity on myocardial ischemia in women taking and not taking HRT. Method: 89 women (mean age = 59 yrs) undergoing myocardial perfusion (SPECT) exercise testing underwent a medical and psychiatric interview (PRIME-MD) on the day of their exercise test. History of HRT was self-reported and verified via chart review. General Linear Models were conducted to examine differences in myocardial ischemia rates adjusting for the following covariates: age, BMI, hyperlipidemia, blood pressure, smoking status and anti-ischemic medication. Results: There was no significant interaction between HRT and psychiatric disorders on ischemia (F = 0.66; p=.81). However, women taking HRT were less likely to have myocardial ischemia, compared to women not taking HRT (3% vs 18%; F= 4.54 p < .05), independent of covariates. No differences in rates of ischemia were found between women with and without psychiatric disorders (13% vs 0%; F=0.39, p=0.54). Conclusion: Results suggest that women taking HRT are at lower risk of ischemia, independent of known risk factors and medication. Interestingly, psychiatric morbidity did not appear to reduce the protective effects of HRT on ischemia or any other clinical variable. This suggests that psychiatric morbidity may not confer additional CAD risk for women undergoing HRT, which appears to be protective against ischemia.

Abstract 1216

EVALUATING THE OUTCOME OF INPATIENT PSYCHOSOMATIC TREATMENT BY FUNCTIONAL NEUROIMAGING: A CONTROLLED STUDY WITH PATIENTS WITH PANIC DISORDER


Preliminary neuroimaging studies demonstrated effects of psychotherapy on brain function; these, however, were mostly limited to behavioural therapies. Purpose of the study: To determine the effects of time-limited psychodynamic inpatient treatment on anxiety, behavioral responses and brain activation patterns. Subjects: 14 panic patients (group A) and 14 age-matched healthy controls (group B). Results: Behaviorally, patients showed significantly lower levels of anxiety as compared to healthy controls. All patients showed lower values as compared to healthy controls and recalled them comparatively better. According to hypotheses, patients showed stronger limbic activations (amygdala, hippocampus) and less prefrontal activation than controls comparing threat to neutral words at intake (F<.001). At termination, anxiety scores (STAI) had declined(p<.001); brain activation patterns did not differ any more. Discussion: Among panic patients, both a hypervigilance to threat words, an increased limbic and a reduced prefrontal activation were observed. Symptomatic improvement was accompanied by changes in neural networks subserving threat responses. Implications for using fMRI in the evaluation of treatment are discussed.

Abstract 1854

META-ANALYSIS OF PHARMACOTHERAPIES IN ADULT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD)

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Attention-deficit/hyperactivity disorder (ADHD) is the most common neurobehavioral disorder of childhood onset. It persists into adulthood in a high proportion of the subjects, and is associated with debilitating consequences, including chronic underachievement, impaired ability to function in work and academic settings, antisocial behavior, and drug and alcohol misuse. Although there is a body of evidence for the efficacy of pharmacological treatments in children, the efficacy of pharmacotherapeutics in adults remains less established. Available reports suggest a lack of consensus, and a substantial degree of heterogeneity in observed effect sizes of treatment across trials. The objective was to conduct a meta-analytic synthesis in order to provide evidence-based empirical estimates of treatment effects for adult ADHD. Relevant publications for the analysis were identified from a comprehensive search of PubMed- and MEDLINE-listed journals, the Food and Drug Administration Database, and from an exhaustive manual review of references from the pertinent publications. Publications were included if they represented double-blind, randomized, placebo controlled, short-term (<12 wks) clinical trials of stimulant, non-stimulant, or

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antidepressant medications used for the treatment of ADHD. For trials with crossover design only results from the first randomization period were considered. Change in the ADID rating scale over time (last observation carried forward) was adopted as the primary measure of efficacy. The primary analysis used a fixed effect approach; in addition, a random effects estimate, which takes into account of between-study variation, was calculated as a sensitivity check on the fixed effect estimate. Heterogeneity of treatment effect between studies was tested using the Chi-Square statistic. Results indicated a statistically significant heterogeneity across studies; however, a difference favoring the active treatment was consistently observed vs. placebo. The pooled effect size (Cohen's d) across all included trials was approximately 0.5. Overall, this indicates that an efficacy of medium magnitude can be achieved with pharmacological treatments in patients presenting with adult ADHD.

Abstract 1123
POLYSOMNOGRAPHICALLY-MEASURED SLEEP ABNORMALITIES IN PTSD: A META-ANALYTIC REVIEW
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Although sleep complaints are common among PTSD patients, polysomnographic studies examining sleep abnormalities in PTSD have produced inconsistent results. A meta-analytic review of polysomnographic studies comparing sleep in people with and without PTSD was conducted to synthesize results of those studies and examine effects of potential moderating variables. To our knowledge, no such meta-analytic review has been conducted. After locating 20 relevant studies representing 772 participants, we calculated a weighted average of standardized mean difference effect size (d+) and a 95% confidence interval (CI) for each sleep parameter [total sleep time, sleep onset latency (SOL), wake time after sleep onset, stage 1 sleep (S1), stage 2 sleep, slow wave sleep (SWS), rapid-eye-movement sleep (REM), REM latency, and REM density (REMD)]. Results showed that PTSD patients had longer SOL (d+=0.13, CI: 0.10 - 0.16), more S1 (d+=0.24, CI: 0.02 - 0.46), less SWS (d=−0.36, CI: 0.57 - -0.14), and greater REMD (d+=0.43, CI: 0.13 - 0.73) compared to people without PTSD. Results of chi-square tests of homogeneity indicated that effect sizes were heterogeneous for all sleep parameters except SOL; therefore, we examined effects of potential moderating variables (age, time elapsed since traumatic events, gender, and comorbid mental disorders). Results suggested that all of these variables moderated the effects of PTSD on some sleep parameters. Overall, studies with a greater proportion of male participants, patients with a more distal trauma, or a low rate of comorbid depression tended to find more sleep disturbances such as longer SOL, increased S1, and decreased SWS in people with PTSD compared to people without PTSD. These findings suggest that sleep abnormalities exist in PTSD, and that some of the inconsistencies can be explained by moderating variables.

Abstract 1555
EFFECTS OF POSTTRAUMATIC STRESS ON PHYSICAL FUNCTIONING OF MALE VETERANS IN PRIMARY CARE
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Chronic posttraumatic stress has been linked with increased musculoskeletal pain as well as impaired physical functioning in veterans. At issue in the present study is whether the deleterious effects of trauma-related stress are exerted directly or indirectly through the action of one or more intervening cognitive variables. Specifically, we wished to determine whether self efficacy and pain-related fear avoidance might explain the effects of posttraumatic stress on physical functioning in veterans. In order to examine this issue we administered a set of self report questionnaires to 122 consecutive male veterans attending a primary care clinic. Questionnaires included a screening instrument for PTSD along with measures of pain severity, physical functioning and disability, self efficacy and fear avoidance. As expected veterans who screened positive for PTSD (N=34) reported worse physical functioning (p<.001) and higher levels of work-related disability (p<.001). They also scored almost twice as high as veterans without PTSD on a measure of fear avoidance (p<.001) and significantly lower in self efficacy (p<.001). In agreement with previous research, posttraumatic stress accounted for 14% of the variance in physical functioning (r=.37; p<.001). However, a partial correlation controlling for the influence of fear avoidance, self efficacy, and pain severity attenuated this association and reduced explained variance to less than 1%. A path analytic model showed that posttraumatic stress led to decreased self efficacy and increased pain severity. Increased pain, in turn, led to increased fear avoidance (or pain sensitivity) which, in combination with diminished self efficacy, led to impaired physical functioning. A similar pattern of mediation was found when a measure of work-related disability was used as the dependent variable. While the present cross-sectional design does not allow us to infer causality the results suggest that self efficacy and fear avoidance beliefs might mediate the adverse effects of posttraumatic stress on functional status.

Abstract 1002
A PROSPECTIVE EXAMINATION OF ANTIDEPRESSANT USE AND ITS CORRELATES IN ACUTE CORONARY SYNDROME PATIENTS
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Depression is more prevalent in acute coronary syndrome (ACS) than general populations, and is associated with increased morbidity and mortality. While effective, treatment of these symptoms by either psychotherapy or antidepressants is infrequent. The objective of this study was to describe the frequency and type of antidepressant use 18 months following ACS discharge, and to identify which factors discriminate between patients who use antidepressants and those who do not.

661 ACS inpatients (157 female (23.8%); 61.22±11.30 years old; 75% response rate) recruited from 3 hospitals completed a sociodemographic survey and the Hospital Anxiety and Depression Scale (HADS), and clinical data were extracted from charts. A mailed survey 9 and 18 months post-discharge (81% retention rate) assessed self-reported antidepressant utilization, and the HADS was re-administered. Approximately 9% of participants reported taking an antidepressant both 9 and 18 months post-hospitalization, with 77% concordance in usage over time. Participants most frequently reporting using selective serotonin reuptake inhibitors (56.3%) such as citalopram (29.2%) and sertraline (12.5%), and least often tricyclics (12.5%). Logistic regression analysis (p<.001) revealed that participants taking an antidepressant were more likely to be anxious (OR=1.20), suffer from comorbid medical conditions (OR=1.17), and less likely to work full-time (OR=0.42), while total number of medications, age and marital status were unrelated to use.

Findings suggest that ACS patients are consistently taking prescribed antidepressant medications for more than nine months. Prescription of tricyclics which have negative cardiac effects is low. Patients with comorbid physical and mental health conditions who are unemployed may be more likely to receive an antidepressant due to both greater depressive symptoms or greater exposure healthcare providers which increases the potential of symptom recognition and treatment.

Abstract 1568
PSYCHOACTIVE MEDICATION USE AND NON-ADHERENCE FOR MENTAL HEALTH PROBLEMS IN CANADIAN SENIORS
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This study determined the relationship between depression and psychoactive medication use and non-adherence in Canadian seniors. Data from the Canadian Community Health Survey on Mental Health and Well-being were employed. Eligible respondents were 65 years of age and older. The Composite International Diagnostic Interview (CIDI) assessed depressive symptoms. Four depression levels captured a spectrum of depressive disorders and symptoms: primary major depression, secondary major depression, depressive symptoms, no depressive symptoms. Psychoactive medication use was defined as use of sleep aids, anxiolytics, and mood stabilizers/antidepressants in the prior 12 months. Non-adherence was defined as not taking medication as recommended or suboptimal dosing. Of the 7,736 survey respondents, 22.5% had taken psychoactive medication for a mental

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health problem and 31% were non-adherent. Psychoactive medication use was 46.8% for primary major depression, 43.1% for secondary major depression, 54.0% for primary minor depression, and 46.2% for no depressive symptoms; only 21% had consulted a health professional in the same time interval. Depressed elderly used more sleep aids than mood stabilizers/antidepressants. In multivariate analysis, depression was associated with greater likelihoods of psychoactive medication use and non-adherence. Females were more likely than males to take psychoactive medication. Consulting a psychiatrist or family doctor increased the odds of receiving medication. Depression was associated with increased use of and non-adherence to psychoactive medication. Few depressed elderly Canadians saw a health practitioner for a mental health problem in the previous year yet took psychoactive medication.

Abstract 1451
INVESTIGATION OF PHYSICAL ACTIVITY CHANGE BEFORE AND AFTER PANIC ATTACKS IN PANIC DISORDER PATIENTS USING A COMPUTERIZED MOMENTARY ASSESSMENT
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Background: When panic disorder (PD) patients have a panic attack (PA), they feel anxiety and physical symptoms such as palpitation. PAs are thought to impair daily activity of PD patients. In addition, increase of daily activity might trigger PA episodes, because it has been known that lactate metabolism could induce PAs (N Eng J Med, 1967).

In this study, the changes of physical activity between before and after PA episodes and whether physical activity increases right before occurrence of PAs were investigated using a computerized ecological momentary assessment.

Methods: Subjects were 10 PD patients diagnosed by DSM-IV. For 14 days, they attached a wristwatch-type computer that is an electronic diary with actigraph built-in. The wearable computer measured and recorded PA episodes , mood states, physical symptoms with its electronic diary and physical activity with its built-in actigraph.

The pre-PA and post-PA activity were defined as 60 minutes activities before and after PA, and the non-PA activity were defined as 60 minutes activity 24hr before pre-PA activity.

The differences between pre-PA activity and post-PA activity, and the differences between non-PA activity and pre-PA activity were analyzed using hierarchical linear modeling.

Results: Total thirty-four obvious PA episodes including six PA episodes during sleep were observed for 14 days in 10 PD patients. PA episodes during sleep were excluded from the analysis. PA episodes significantly reduced physical activities (p = 0.04). Just before PA attacks, physical activities increased, although not statistically significant (p = 0.86). In conclusion, PA episodes significantly affected and reduced PD patients' physical activities.

Abstract 1168
ANXIETY AND DEPRESSION AFTER RECURRENT SPONTANEOUS ABORTION
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Clinicians have noted that women who have experienced recurrent spontaneous abortion feel unhappy, depressed, anxious, and responsible for their pregnancy losses. Unfortunately, there are few empirical data describing the complex nature of these psychological reactions. The aims of this prospective study were to: 1) assess the psychological factors related to recurrent abortion, including anxiety, depression, marital and sexual adjustment immediately after spontaneous abortion and 3 mounts later and 2) compare these data with the results obtained from women who have experienced elective abortion. Subjects completed the Hamilton scales for depression and the MMPI 201 as well as sexual and marital functioning questionnaires devised by the authors. Results indicated that the women who had experienced recurrent spontaneous abortion often had high levels of emotional distress. We found that nearly one third of women experienced moderate to severe levels of depression, high levels of anxiety and serious sexual and marital problems 3 mounts after recurrent spontaneous abortion. The levels of anxiety decreased but not significantly, while the levels of depression significantly increased 3 months after spontaneous abortion. The rate of depression in this sample was nearly twice the rate of depression reported among women who experienced elective abortion. Patients who experienced these problems complained that they didn’t feel like real women. This feeling often affected sexual behaviour. We found high levels of anxiety and depression, as well as grater marital and sexual problems within a subgroup of subjects who had had three or more losses and no living children. In our study, the women who had a previous elective abortion reported more anxiety, depression, guilt and general distress, as well as poorer marital adjustment. Although, the generalizability of these findings is limited, clinicians should be aware of the fact that this group of women is at risk for poor psychological adjustment and probably need counseling.

Abstract 1516
THE ASSOCIATION BETWEEN ASTHMA SELF-EFFICACY, PSYCHIATRIC DISORDERS, AND STRESS-INDUCED ASTHMA
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The role of emotions and stress in asthma remains unclear. Mood and anxiety disorders are highly prevalent among asthmatics and may serve as both markers of and sensitizers to psychological stress. On the other hand, confidence in one’s ability to cope may mitigate stress. Asthma self-efficacy (ASE) specifically involves belief in one’s ability to control asthma symptoms. However, little is known about psychiatric disorders (PD) and ASE in the subset of patients who report that stress can trigger their asthma. The present study assessed associations between ASE and PD and self-reports of stress-induced asthma. A total of 529 patients with documented asthma (40% men; M age=49 yrs) underwent a sociodemographic and psychiatric interview (PRIME-MD) as well as pulmonary function testing on the day of their asthma clinic visit. Patients were asked to self-report whether they experienced stress- or emotion-induced asthma (f/h). Patients also completed the Asthma Self-Efficacy Scale (ASES). Two General Linear Models were conducted, the first assessed the main effects of PD and ASES scores on stress-induced asthma, and the second also included an interaction term. Both models included age, sex, asthma control, and asthma severity as covariates.

The first model revealed significant independent main effects of PD (F=15.58, p<0.001) and ASES (F=47.96, p<0.001), such that patients with a PD or with lower ASE were more likely to report stress-induced asthma. The second model revealed a similar main effect of ASES (F=41.35, p<0.001), but no main effect (F=0.13, p=.72) or interaction (F=0.99, p=.32) effects of PD. Results suggest that the presence of mood and/or anxiety disorders and low ASE were independently associated with patient reports of stress-induced asthma. Future research should verify reports of stress-induced asthma with physiological measurement. Interventions to increase ASE or treat psychiatric disorders may also be assessed for impact on stress-induced asthma.

Abstract 1164
THE ASSOCIATION BETWEEN PSYCHIATRIC DISORDERS, PSYCHOLOGICAL DISTRESS, AND ASTHMA SELF-EFFICACY
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Background: Currently, asthma remains poorly controlled in over 50% of patients. Achieving good asthma control relies upon several behavioural factors (e.g., self-monitoring, treatment adherence) that are influenced by asthma self-efficacy (the belief in one’s ability to control asthma symptoms: ASE). Also, past studies have shown a high prevalence of psychiatric disorders (e.g. mood (MD) and anxiety (AD)) among asthma patients. Such factors (e.g., self-monitoring, treatment adherence) are influenced by asthma self-efficacy (the belief in one’s ability to control asthma symptoms: ASE). Also, past studies have shown a high prevalence of psychiatric disorders (e.g. mood (MD) and anxiety (AD)) among asthma patients. Such disorders have been associated with decreased self-efficacy. However, the extent to which psychological distress is associated with ASE is unknown.

Objective: The present study assessed associations between levels of ASE and psychiatric disorders and psychological distress. Methods: A total of 590 patients with documented asthma (38% men; M age = 49 yrs) underwent a sociodemographic and psychiatric interview (PRIME-MD) and completed a questionnaire pack (Asthma Self-Efficacy Scale, ASES; Beck Anxiety Scale and PRIME-MD) as well as pulmonary function testing on the day of their asthma clinic visit. Patients were asked to self-report whether they experienced stress- or emotion-induced asthma (f/h). Patients also completed the Asthma Self-Efficacy Scale (ASES). Two General Linear Models were conducted, the first assessed the main effects of PD and ASES scores on stress-induced asthma, and the second also included an interaction term. Both models included age, sex, asthma control, and asthma severity as covariates. The first model revealed significant independent main effects of PD (F=15.58, p<0.001) and ASES (F=47.96, p<0.001), such that patients with a PD or with lower ASE were more likely to report stress-induced asthma. The second model revealed a similar main effect of ASES (F=41.35, p<0.001), but no main effect (F=0.13, p=.72) or interaction (F=0.99, p=.32) effects of PD. Results suggest that the presence of mood and/or anxiety disorders and low ASE were independently associated with patient reports of stress-induced asthma. Future research should verify reports of stress-induced asthma with physiological measurement. Interventions to increase ASE or treat psychiatric disorders may also be assessed for impact on stress-induced asthma.
Central adiposity (CA) has been shown to be a more significant predictor of the progression of asthma than total body fat (TFB), as measured by body mass index (BMI). Recently TBF has been associated with increased asthma severity, asthma control & worse asthma morbidity. However, the role CA and the comparison of CA to TBF in the prediction of asthma morbidity is unknown. Thirty four patients with physician diagnosed asthma (Mean (SD) age = 44 (14) years, 41% male) completed the asthma control questionnaire (ACQ) & QoL questionnaires (AQLQ) & provided sociodemographic information and had their waist and hip circumference measured. Linear model analyses were conducted to assess the relationship between adiposity and asthma morbidity. Separate models were run for the total and upper subscale of the ACQ and the AQLQ, entering BMI, waist circumference (WC) and waist-to-hip ratio (WHR), together, controlling for age, sex, and asthma severity. From the ACQ, only the WHR was significantly related to nocturnal awakenings (F=4.90 p=.036) and tended to be related to total control (F=4.14 p=.053), wheezeing (F=3.79 p=.064) and bronchodilator use (F=3.29 p=.082). WHR was not related to any other ACQ measure and neither BMI nor WC were related to any of the ACQ measures. For QoL, BMI was significantly related to activity limitations (F=4.32 p=.050) and environmental triggers (F=6.34 p=.020) and tended to be related to total AQLQ score (F3.60 p=.072). BMI was not related to emotional distress. Neither WC nor WHR was correlated to any AQLQ measures. These results suggest that CA plays a significant role in asthma control independent to TBF, such that greater CA is associated with worse control. In contrast for asthma QoL, increasing TBF is significant role in asthma control independent to TBF, such that greater CA is associated with worse control.

Background: Asthma is a chronic respiratory disease that has been previously associated with a disproportionately high level of suicidal ideation (SI), independent of depression. However, the precise mechanisms linking asthma to suicidal ideation remain poorly understood. Several asthma medications like theophylline and beta-2 adrenergic-agonists (which are potent bronchodilators), have been shown to provoke intense feelings of anxiety, fear, or panic in some individuals. These drugs may potentially influence rates of SI in asthma patients, but this has yet to be explored. The present study assessed SI in 630 consecutive adult asthma patients presenting to an outpatient clinic (40% men; mean age=50 yrs). Methods: All patients underwent a sociodemographic, psychiatric (PRIME-MD), and medical history interview, and completed a battery of questionnaires including the Beck Depression Inventory-II (BDI-II) and Asthma Control Questionnaire (ACQ). Responses e 1 on question 9 of the BDI were used to measure SI. Results: BDI-II results indicated that 12% of asthmatics reported having SI. After controlling for age, sex, smoking status, and major depression, results of general linear model analyses indicated a significant main effect theophylline use (F=3.85, p=.05), but not beta-2 agonist use (F=0.04, p=.8497), on SI. Though asthma control and severity levels were also significantly associated with SI in univariate analyses, these associations were no longer significant after controlling for covariates. Conclusions: These findings suggest that theophylline use may be associated with a higher risk of SI in adult asthmatics. It is noteworthy that these findings were independent of major depression, which suggests results are not simply the results of depressive symptomatology in asthma patients. Clinically, these findings indicate that physicians should be vigilant about the potential psychological side effects of certain asthma medications, particularly those that enhance central nervous system activity.
showed a gradual increase in hematocrit from the start which reached a plateau after 16 min. Blood pressure, in contrast, increased at the onset of the task but no further increase occurred. Even though there was a marginal decrease in hematocrit immediately following the task, full recovery was found only after 15-20 min following 4- and 10-min tasks. When the task lasted 32 min, however, full recovery was not seen even after 30 min; although hematocrit was lower than that observed during the task, it was still elevated relative to pre-stress baseline. Blood pressure returned to baseline rest levels almost immediately after the task. Thus, the studies presented here show that laboratory mental stress reliably elicits hemococoncentration, and that both the extent of and recovery from hemococoncentration are dependent on the task duration. Thus, even after a stressful exposure ends and the blood pressure has returned to baseline, shear stress on blood vessels remains increased due to continuing stress-induced hemococoncentration.

Abstract 1384
MIND YOUR MIND: PSYCHOLOGICAL MINDENESS PREDICTS HEART RATE VARIABILITY IN POST-MYOCARDIAL INFARCTION PATIENTS
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Psychological mindedness (PM) is the motivation and ability to be in touch with and reflect upon one's internal psychological processes, such as feelings and thoughts. The resulting enhanced awareness of one's sensitivities and needs has been hypothesized to increase psychological well-being as well as physiological functioning, mainly by means of increased vagal tone. The relationship between PM and indices of heart rate variability (HRV), some of which are dominated by vagal tone, was examined in 82 post-myocardial infarction patients (18% women, mean age = 56, SD = 10). The patients completed the Lack of Psychological Mindedness scale (LPM; Denollet & Nyklícek, 2004) and received a digital 24-hour electrocardiogram recording (Holter). Both time and frequency domain measures of HRV were obtained. Patients with a lack of PM showed a lower HRV across both time and frequency domain measures. After adjustment for sex, age, medication, and disease severity (multi-vascular disease and anterior infarction), significance (F (1, 77) > 4.22, p < .05) was retained for vagally mediated time domain measures (rMSSD and pNN50) and for low frequency spectral power. Nonsignificant trends (F (1, 77) > 3.29, p < .08) in the same direction were obtained for the vagally mediated high frequency spectral power, the very low frequency power, as well as the overall time domain measures SDNN and SDANN. Lack of psychological mindedness seems to be associated with less favorable cardiovascular function after a myocardial infarction, as reflected by lower heart rate variability. Partially, these effects may be mediated by a lower vagal tone.

Abstract 1388
NOW YOU SEE IT, NOW YOU DON'T: RESTING HEART RATE VARIABILITY IS RELATED TO THE STARTLE REFLEX TO PICTURES PRESENTED OUTSIDE OF CONSCIOUS AWARENESS
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Resting heart rate variability (HRV) is an independent predictor of morbidity and mortality and thus serves to index important functions associated with health. One such function is emotional regulation. The ability to recognize emotions and to generate a context appropriate response is a critical part of healthy living. We have previously shown that persons with low HRV demonstrated potentiated eyelink startle responses to consciously processed neutral stimuli, thus responding as if the stimuli were threatening. In the present study we extended these findings by examining the effects of HRV on the startle magnitude to pictures that were presented briefly and outside of conscious awareness. Eighty-five male and female college students were stratified via median split on their resting HRV. They were presented pictures for 6 seconds (conscious condition) or for 20 milliseconds (non-conscious condition). There was a significant interaction between HRV group and stimulus type (F (2, 154) = 3.29, p = 0.04, epsilon = 0.84). Those with low HRV again showed potentiated startle responses to consciously processed neutral stimuli (F (1,77) = 9.53, p = 0.002), replicating our previous results. In the non-conscious condition, individuals with high HRV showed context appropriate startle responses. However those with low HRV again showed potentiated startle responses to neutral stimuli (F (1,77) = 6.76, p = 0.01). Thus, people with high HRV were better able to generate appropriate emotional responses even to stimuli that were degraded by being briefly presented and backward masked. This suggests superior emotional processing even in ambiguous situations and implies that individual differences in trait emotional awareness might be indexed by HRV. High HRV may provide health benefits by allowing persons to better recognize threat and safety signals.

Abstract 1379
EMOTION REGULATION DISTURBANCES IN FEMALE PATIENTS WITH FIBROMYALGIA
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Some emotion regulation styles (e.g., alexithymia) are usually maladaptive and show the greatest impact on treatment of pain conditions such as fibromyalgia (FM), whereas other emotion regulation styles (e.g., emotional expression) are often adaptive. We examined differences in these emotion regulation styles between 399 women with FM (mean age 46.5 years, SD = 12.3) and 164 control women from the general population (mean age 45.2, SD = 4.2). Compared to controls, women with FM reported more frequent use of maladaptive styles (difficulty identifying and describing feelings, impulse intensity, internalization of anger, and suppression of emotions), but the two groups did not differ on the adaptive styles of reappraisal and emotional processing, although the FM group had slightly lower levels of emotional expression. Maladaptive styles were related to more pain and fatigue (0.06 < r < .22**) and to more sadness, guilt, fear, and hostility (0.17** < r < .56**). Adaptive emotion regulation styles showed weaker associations with less pain and fatigue (-.13 < r < .05) and less negative affect (-.22** < r < .07). This study shows that women with FM are more likely to have deficits in emotional awareness, processing, and expression, but generally do not differ from controls in the use of adaptive styles of emotion regulation. Maladaptive styles predict less affective well-being and play a limited role in pain and fatigue, whereas adaptive styles are less related to both affective and somatic symptoms. These results suggest that these two types of emotion regulation are somewhat distinct rather than simply opposites, and maladaptive emotion regulation should be the target of therapeutic intervention in this patient group. * p <.05, ** p <.001

POSTER SESSION II

Abstract 1789
DEPRESSION RELATED MORTALITY AMONG CAD PATIENTS WITH AND WITHOUT TYPE 2 DIABETES
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Accumulating evidence suggests that having depression or type 2 diabetes mellitus (DM) independently increases the risk for coronary artery disease (CAD) morbidity and mortality. Recent studies have also shown that having both DM and depression is associated with a significantly increased risk of death in otherwise healthy individuals. The aim of the present study was to determine the independent and combined association of depressive symptoms and type 2 diabetes on mortality among established CAD patients. 907 CAD patients were recruited during hospitalization for coronary angiography (325 with DM and 582 without DM). Exclusion criteria included myocardial infarction or coronary revascularization procedure in the month preceding enrollment. Depressive symptoms were measured using the Beck Depression Inventory (BDI). Cox regression was used to examine whether survival time was related to BDI score, and diabetes, adjusting for age, BMI, left ventricular ejection fraction and gender. A restricted cubic spline was used to evaluate...
non-linearity in the BDI-DM survival relation. A total of 135 deaths were documented over the 4.5 (median = 3) year follow-up. The presence of depressive symptoms (p=.0002) and DM (p=.04) were independently associated with increased mortality. In addition, there was a marginally significant non-linear interaction between DM and depressive symptoms (p=.09), with the highest mortality among patients with DM and elevated BDI scores. These findings suggest that the CAD mortality risk among established CAD patients is especially high for depressed patients with DM.

Abstract 1561

DEPRESSIVE SYMPTOMS PREDICT PLASMA D-DIMER LEVELS IN PATIENTS WITH VENOUS THROMBOEMBOLIC DISEASE: BUFFERING EFFECT OF SOCIAL SUPPORT

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Plasma D-dimer levels indicating fibrin turnover have previously been associated with an increased risk of recurrent venous thrombotic events in patients with venous thromboembolism (VTE). Whether psychosocial factors may contribute to the risk of VTE has not been investigated. We hypothesized that depression would be associated with D-dimer levels and that this association would be affected by social support. Study participants were 65 consecutive patients (51% men; mean age 45±13 years; mean body mass index (BMI) 26±5 kg/m2) who underwent thrombophilia work-up because of objectively diagnosed spontaneous VTE (e.g. deep venous thrombosis of the lower limb, pulmonary embolism). Patients with a permanent risk factor for VTE (e.g. cancer) were excluded from this study. Depressed mood was rated by the Hospital Anxiety and Depression Scale (HADS) and social support by the Enhancing Recovery in Coronary Heart Disease (ENRICHD) Social Support Instrument. Plasma D-dimer levels were determined by the Vidas D-dimer rapid ELISA test. Hierarchical regression analysis controlling for age, gender, and BMI rendered the interaction between depression and social support as a significant predictor of plasma D-dimer levels (p=.017). Post hoc regression analyses applying the Holmbeck method indicated that the relationship between depression and D-dimer was significant in patients with low social support (β=.40, p=.006, DR²=.08) but not in patients with high social support (p=.29). Additional controlling for current oral anticoagulant therapy did not change these results. Depression independently predicted plasma D-dimer levels in patients with spontaneous VTE who, at the same time, were low in social support. Our finding provides first evidence for a mechanism by which psychosocial factors might contribute to the risk of recurrent VTE.

Abstract 1411

CORRELATES OF DEPRESSION AMONG LOW-INCOME, URBAN CARDIOVASCULAR PATIENTS

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Depression among cardiac patients has been associated with poorer clinical outcomes and even mortality. The purpose of this study was to examine variables correlated with depression among patients with symptoms of acute myocardial infarction (AMI) who were admitted to a large, urban hospital serving low-income neighborhoods. One hundred consecutive admitted patients were interviewed within an average of 2 days of admission. The interview included the 20-item Center for Epidemiologic Studies Depression scale (CES-D). The sample was 90% African American and 53% female. Mean age was 56 years. Mean CES-D score was 20.7 (s.d.= 14.1). CES-D scores of 16 or greater have been associated with clinical diagnosis of major depression; 53% of this sample had scores of 16 or greater. Results indicated no statistically significant differences in CES-D scores by race, sex, marital status, educational level, or prior history of cardiovascular disease in this sample. Higher CES-D scores correlated with younger age (r=.32, p=.001), current smoking (r=.28, p=.005), poorer self-rated health (r=.27, p=.007), and greater severity of AMI symptoms (i.e., chest pain, sweating, left arm pain). The Health Complaints in Coronary Heart Disease (HCS) questionnaire was used to measure physical and cognitive complaints associated with heart disease experienced prior to hospital admission. Depression was correlated with greater HCS cognitive complaints (r=.67, p<.001) and greater physical complaints (r=.57, p<.001). In addition, CES-D scores were higher among cardiac patients who believed that they were experiencing an AMI when the symptoms began. However, higher depression scores were not significantly correlated with seeking emergency medical attention within 3 hours of symptom onset. In summary, cardiac patients with higher depression scores were younger, reported poorer overall health, more health and cognitive complaints, and more severe AMI symptoms. Yet, they were no more likely to seek emergency medical attention for the symptoms of AMI than less depressed cardiac patients. Implications for clinical practice will be discussed.

Abstract 1678

LONG TERM COURSE OF CORONARY HEART DISEASE PATIENTS (CHD) WITH DEPRESSIVE DISORDERS OR MENTAL DISTRESS

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Goal of this analysis was to describe the clinical improvement of CHD patients after inpatient cardiac rehabilitation depending on co-morbidity with depression. Within the intervention study PROTeCD we screened coronary heart disease patients for mental distress. Patients with elevated distress (Hospital Anxiety and Depression Scale (HADS) > 17) were interviewed to evaluate if a depressive disorder was present. Patients with depression (N=40) showed, as expected, more depressive symptoms (BDI t=4.817, p<.01), anxiety (HADS t=2.224, p<.05) and less mental quality of life (SF 12 mental health, t=4.487, p<.01) than patients without depressive disorders (N=81). Somatization did not differ between groups (SF 12 somatic health, t=1.769, p=.45). Controlled for baseline data, six months after rehabilitation both groups improved equally in depressive symptoms (BDI) and mental health (SF 12). Patients without depression improved more in somatic health (SF12, F=5.892, p=.02) and anxiety (HADS, F=6.933, p<.01). Within a minimum of 12 months after rehabilitation the two groups did not differ in the improvement on any scale. These results indicate that cardiac rehabilitation lowers depressive symptoms equally in both groups. Nonetheless, patients with depressive disorders at baseline still suffer from clinically relevant symptoms (BDI M=15.7), while initially distressed patients show only moderate symptoms (BDI M=12.6). Long term treatment with low barriers for CHD patients with depression should be provided by the health care system.

Abstract 1443

CARDIAC HISTORY, PRIOR DEPRESSION, AND PERSONALITY PREDICT PERSISTENCE OF DEPRESSIVE SYMPTOMS POST-MYOCARDIAL INFARCTION

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There is a paucity of research on the evolution and the persistence of depressive symptoms post-MI. Additionally, little is known about the determinants of depressive symptom trajectories. The aim of this study was to examine these issues. Two hundred eighty-seven post-MI patients completed the Beck Depression Inventory at baseline, 2-, and 12-month follow-up. The SAS procedure TRAJ was used to examine trajectories of depressive symptoms over a 1-year time course. A multinomial logit model was adopted to assess whether demographic, medical, and personality variables could be identified as determinants of depressive symptom trajectories. Associations were reported as log odds (lo). Based on the Bayesian information criterion, a four group model was found to be the best fitting model. This model was defined by intercepts only. Apparently, the level of depressive symptoms was rather stable during the first year post-MI. The groups were classified accordingly as non-depressed (40%; intercept=-2.52), mildly depressed (42%; intercept=-6.91), moderately depressed (14%; intercept=13.73), and severely depressed (4%; intercept=24.54). In multivariate analysis using the non-
Depressed group as reference category, cardiac history (losevere=2.93; p<.05, lomoderate=1.81; p=.05) turned out to be the most prominent medical risk factor for experiencing depressive symptoms during the first year post-MI. History of Major Depressive Disorder (MDD; losevere=4.40; p<.001, lomoderate=1.97; p<.05), and type-D personality (losevere; p<.001, lomoderate=4.17; p<.001) were determinants of depressive symptom trajectories as well. In conclusion, the level of depressive symptoms in post-MI patients tends to be stable over time. Cardiac history, history of MDD, and type-D personality were identified as risk factors for increased levels of depressive symptoms during the first year post-MI.

Abstract 1162

SELF-REPORTED SYMPTOMS OF DEPRESSION AND ANXIETY, BUT NOT CLINICAL DIAGNOSIS PREDICT ADVERSE CLINICAL EVENTS POST-MYOCARDIAL INFARCTION

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Although the impact of post-myocardial infarction (MI) depression on prognosis has been studied extensively, the role that co-morbid anxiety plays in this relationship has been less well studied. The aim of the present study was to examine the differential impact of 1) a clinical depressive and/or anxiety disorder; 2) depressive and/or anxiety symptoms on clinical adverse events in post-MI patients. Two months post-MI, patients (n=434) completed the CIDI, BDI and STAI, in order to determine the presence or absence of an anxiety or depressive disorder, and the level of depressive and anxiety symptomatology. Patients were followed-up for clinical adverse events at 1.8 years.<br>There were 26 cardiac deaths and non-fatal MIs at follow-up. Symptoms of depression (HR:2.48; 95% CI:1.10-5.59) and anxiety (HR:2.32; 95%CI:1.12-7.09) had a substantially increased risk of adverse clinical events. Cardiac history and use of statins were also independent predictors of death/MI. Symptoms of depression and anxiety, and in particular co-occurring symptoms were independent predictors of cardiac death and non-fatal MI. In addition to depressive and anxiety symptoms alone, the co-occurrence needs to be considered to optimize risk stratification and treatment in post-MI patients.

Abstract 1094

PREDICTING ANXIETY, VITAL EXHAUSTION AND DEPRESSION AFTER ACUTE CORONARY SYNDROMES: 1 YEAR FOLLOW-UP

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Reviews suggest that diverse measures of negative affect (AX, vital exhaustion, depression) may predict adverse outcomes in cardiac patients after acute coronary syndromes (ACS). We studied: 1) Do questionnaire and interview measures of AX, exhaustion and depression prior to and after ACS predict new ACS during follow-up? 2) Is lifetime adversity distress prior to ACS a determinant of AX, exhaustion and depression and ACS during follow-up?<br>We conducted a RCT of AMI (68%) and CABG (32%) patients (N=213, 87% male, mean age 59[9], 1 year follow-up. In all, we studied trait anxiety (STAI), Maastricht Interview Vital Exhaustion (MIVE), Beck Depression Inventory (BDI), SCID Depression module (SCID), cardiac history, lifetime adverse distress, and conventional risk factors.<br>Prior to ACS, 44% of patients were exhausted and 20% were depressed (SCID). Lifetime distress predicted exhaustion and depression (BDI, SCID) at follow-up (p<.05), adjusting for gender, medical history, depression and exhaustion, but with less predictive power when adjusting for depression and exhaustion (BDI, SCID) at follow-up (p<.01). Baseline BDI predicted depression (BDI, SCID) at follow-up (p<.001), and baseline SCID predicted depression (SCID) at follow-up (p<.001). Baseline AX predicted depression and exhaustion (BDI, SCID) at follow-up (p<.001).<br>There were 222 new ACS (PCI=10, CABG=12) during follow-up. In multivariate analysis, in AMI patients (68%), baseline SCID predicted new ACS at follow-up (p<.01: OR=4.8), but age, cardiac history and LVEF did not. Multivariate analysis of total sample of patients (AMI+CABG) showed similar risk of baseline SCID depression (p<.01: OR=4.1). Thus, lifetime adverse distress was associated with exhaustion and depression at follow-up. Diverse baseline measures of AX, exhaustion and depression after ACS (in particular SCID) predicted adverse mood, depression, and cardiac morbidity 1 year later. Therefore, ACS patients should be screened for lifetime distress, AX, exhaustion and depression before hospital discharge.

Abstract 1846

PLATELET AND ENDOTHELIUM BIOMARKER RESPONSE TO TREATMENT WITH CITALOPRAM IN PATIENTS WITH CORONARY ARTERY DISEASE AND CO-MORBID MAJOR DEPRESSION

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Purpose: Major depression has been identified as an independent risk factor for increased mortality in patients with coronary artery disease (CAD). The underlying mechanisms of this negative association are uncertain, but increased platelet activity and vascular endothelial dysfunction are possible pathways through which depression may increase cardiovascular risk. Citalopram has been shown to exhibit strong selective inhibition of human platelets, but little is known about its effects on vascular endothelium. We assessed whether treatment of depressed CAD patients with citalopram alters platelet and endothelial biomarkers. The study was performed within the framework of the CREATE trial.<br>Methods: The CREATE sub-study was designed to assess the effect of citalopram on the following series of platelet and endothelial biomarkers: P-selectin, Beta-thromboglobulin (BTG), intercellular adhesion molecule-1 (ICAM-1), and total nitric oxide (NOx). Plasma samples were obtained at baseline and week 12 from subjects randomized to citalopram 20-40mg daily (n=35), or placebo (n=23). Anticoagulants, aspirin, and clopidogrel were permitted in this study.<br>Results: Treatment with citalopram was associated with a highly significant increase of tNO release when compared with its own baseline (p=0.004) and the placebo arm (p=0.003). There were no differences in P-selectin, BTG, and ICAM-1 between and within the groups.<br>Conclusion: Treatment with citalopram for 12 weeks in depressed CAD patients is associated with enhanced production of nitric oxide despite the co-administration of widespread anti-platelet regimens including aspirin and clopidogrel. The clinical implications of these findings are presently unclear. Increased NO production may represent a major advantage of citalopram as SSRI in the post-infarction population.

Abstract 1083

DEPRESSION AND ANXIETY AS PREDICTORS OF HEART RATE VARIABILITY FOLLOWING MYOCARDIAL INFARCTION

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Reduced heart rate variability is a prognostic factor for cardiac mortality. Both depression and anxiety have been associated with increased risk for mortality in patients with coronary artery disease. Low heart rate variability may act as an intermediary in this association. The present study aims to examine to what extent depression and anxiety differently predict 24-hour heart rate variability in patients with recent myocardial infarction. Ninety-three patients were recruited during hospitalization for myocardial infarction. Self reported symptoms of depression and anxiety were assessed 2 months post-myocardial infarction. Prior to ACS, 44% of patients were exhausted and 20% were depressed (SCID). Lifetime distress predicted exhaustion and depression (BDI, SCID) at follow-up (p<.05), adjusting for gender, medical history, depression and exhaustion, but with less predictive power when adjusting for depression and exhaustion (BDI, SCID) at follow-up (p<.01). Baseline BDI predicted depression (BDI, SCID) at follow-up (p<.001), and baseline SCID predicted depression (SCID) at follow-up (p<.001). Baseline AX predicted depression and exhaustion (BDI, SCID) at follow-up (p<.001). There were 222 new ACS (PCI=10, CABG=12) during follow-up. In multivariate analysis, in AMI patients (68%), baseline SCID predicted new ACS at follow-up (p<.01: OR=4.8), but age, cardiac history and LVEF did not. Multivariate analysis of total sample of patients (AMI+CABG) showed similar risk of baseline SCID depression (p<.01: OR=4.1). Thus, lifetime adverse distress was associated with exhaustion and depression at follow-up. Diverse baseline measures of AX, exhaustion and depression after ACS (in particular SCID) predicted adverse mood, depression, and cardiac morbidity 1 year later. Therefore, ACS patients should be screened for lifetime distress, AX, exhaustion and depression before hospital discharge. In unadjusted analyses, depressive disorder was a significant predictor of both lower SDNN (B=−.25, P=.023) and SDNN (B=−.26, P=.022), and anxiety disorder of lower rMSSD (B=−.23, P=.039). Self reported symptoms of
Erectile dysfunction (ED) in men suffering from a coronary heart disease (CHD) is a frequent comorbid condition impairing quality of life and compliance. The links between ED and endothelial dysfunction are nowadays stressed: ED can actually be the first clinical sign of CHD and has to be considered as a risk factor of major coronary events. The aim of this study was to explore the relationships between ED, depressive mood, type D personality (negative affectivity + social inhibition) and the traditional cardiovascular risk factors in CHD male patients.

A total of 85 men, aged 60.7 ± 9.4 years, filled out the BDI-13 (depression), the DS-14 (type D) and the IIEF-5 (ED). Population was divided into 67 already known and 18 recently diagnosed (<1 month) CHD patients, the two groups differing only by a higher prevalence of hypercholesterolemia in the first case.

A significant ED (IIEF score < 19) was found in 57.6 % of the population studied. In univariate analyses, only age and depressive mood were associated with ED. In multiple binary logistic regression, the presence of a significant ED was independently predicted by age (p=0.01), depressive mood (p=0.013), hypertension (p=0.035) and the interaction between the diagnostic group and type D (p=0.045), the latter being predictive of ED only among recently diagnosed CHD patients.

Such results underline the load of the psychological factors associated with ED in CHD patients, compared with the traditional risk factors, such as smoking, dyslipidemia, diabetes or antihypertensive drugs, or with the clinical presentation of CHD. Given the cross-sectional nature of the study, we cannot exclude that depressive symptomatology is itself a consequence of ED or of CHD, although BDI scores were comparable, whatever the time elapsed since the diagnosis.

Our findings encourage to better search for, and better treat depression in CHD patients, especially in those presenting with ED. Results also confirm the higher vulnerability of type D individuals to the traumatic impact of CHD diagnosis.
the aim of this study was to determine whether type-D personality, anxiety sensitivity and ICD shocks are independent predictors of anxiety in ICD patients. Respondents (N=201, 84% men, mean age = 62.15±9.72, range 24-79) were patients who were hospitalized for ICD implantation between May 2003 and August 2006. The DS14 and ASI were completed during hospitalization to measure type-D personality and anxiety sensitivity, respectively. The STAI-state was completed two months after hospitalization, to measure anxiety symptoms. Univariate linear regression analyses showed that type-D personality (β=-3.66; p<0.001) and anxiety sensitivity (β=3.99; p<0.001), but not ICD shocks (p=3.13), were predictors of anxiety. In multivariate analysis, type-D personality (β=-2.87; p<0.001) and anxiety sensitivity (β=-2.87; p<0.001) remained independent predictors of anxiety, while ICD shocks tended towards significance (β=1.11;p=0.078), adjusting for demographic variables, ICD indication, diabetes, and previous cardiac disease. Hence, type-D personality was an important predictor of anxiety in ICD patients, independent of anxiety sensitivity and ICD shocks. These results warrant future research on prognosis, since anxiety may lead to life-threatening arrhythmias. To optimize risk stratification in clinical research and practice, it is important to identify ICD patients with a type-D personality during hospitalization and to provide psychological support for these patients.

Abstract 1175

PREVALENCE AND CORRELATES OF DEPERSONALIZATION IN CONSULTATION-LIAISON PSYCHOSOMATIC MEDICINE
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The purpose of the study is to investigate the prevalence and correlates of depersonalization in patients of an University Hospital, who underwent psychosomatic examination. From 556 consecutive patients (Jan. to May 2006), who underwent a psychosomatic interview, 336 patients could be analyzed due to complete data. Diagnoses were made according to the ICD-10 (F) and the severity of the disorder was rated with the GAF. The patients were administered the Liebowitz Social Anxiety Scale (LSAS), the SCL-90-R and the short version of the Cambridge Depersonalization Scale (CDS-9). For the detection of depersonalization a cut-off of 19 for CDS-9 (sensitivity 90.7%, specificity 87.5%) is established. The most prevalent diagnoses were somatoform disorders/psychological factors associated with physical disorders (F45.x & F54, n=106), mood disorders (n=84), anxiety disorders (n=82) and adjustment disorders (n=42). On average every patient received 1.7 diagnoses of a mental disorder according to ICD-10 (F). A Proportion of 15.6% of the patients (n=49) exceeded the cut-off of the Cambridge Depersonalization Scale, which is highly specific for pathological depersonalization. However only n=4 (1.2%) patients received a main, secondary or tertiary diagnosis of depersonalization-derealization syndrome (F48.1). This is suspect of a significant diagnostic gap for depersonalization disorder. Depersonalization severity correlated negatively with age (r=-0.20, p<0.001), GAF (r=-0.33, p<0.001) and positively with the GSI of the SCL-90-R (r=0.57, p<0.001) and the severity of social anxieties (LSAS; r=0.54, p<0.001). There were no significant differences in the distribution of sex and the most prevalent diagnoses. It is concluded that significant depersonalization is a frequent symptom in consultation-liaison psychosomatic medicine, which is too rarely diagnosed. The implementation of short screening questions or self-rating instruments in the C-L psychosomatic diagnostic routine is recommended.

Abstract 1544

adolescence is a particularly stressful period in human lifecycle facing physical,psychological and social challenges. The greatest task is to develop an integrated identity. Researchers found that the efficacy of coping with stress is necessary for healthy development. The aim of the study was to reveal a possible connection between the process of identity formation and the presence of psychosomatic symptoms. Background personality factors were also examined to find out how different dimensions of coping potential facilitate the process of forming identity,coping with life-stress and treating somatic symptoms. Three main hypothesis were tested.1) Distinct somatic symptoms change during each stage of identity elaboration.2) Higher level of dimensions of coping potential are attached to lower number of somatic symptoms, resulting in adaptive coping.3) Successful coping determines the development of identity. The sample included 150 Hungarian high school students (mean age = 16.3 years). The instruments were EOMES-2 to discriminate the ideological and interpersonal identity statuses discribed by MCMARCA (diffusion, foreclosure, moratorium, achievement), a self-made somatic Symptom Checklist to discover the extant symptoms, and PISI Jun.to measure the dimensions of coping potential and the efficacy of the -psychological immune system (PI) which contains three subsystems (Monitoring s., Mobilizing s., Self-regulating s.). Significant differences were found between ideological moratorium and diffusion/achievement in the amount of respiratory symptoms (F=3.638, p<0.01), and between interpersonal diffusion and forclosure in gastrointestinal symptoms (F=2.317, p<0.01). However no general pattern of the symptom report of each identity status emerged. Group differences were found in general disease (r=1.69, p<0.1), motoric symptoms (t=-2.07, p<0.05), respiratory symptoms (t=-2.11, p<0.05) and vestibular symptoms (t= 2.05, p<0.05) in functioning of the PI subsystems. The state of ideological and interpersonal identity was related to personality factors of coping such as Optimism, Challenge Orientation, Sense of Coherence, Social Monitoring Capacity, Social Mobilizing Capacity and Goal Orientation (F=7.42, p<0.05). In summary the results confirmed the role of the dimensions of coping potential in association with achieving identity and somatic symptoms.

Abstract 1784

AN INTERDISCIPLINARY APPROACH TO CHEST PAIN: IMPLEMENTATION OF A PSYCHOSOMATIC SCREENING TOOL IN A CARDIOLOGICAL OUTPATIENT SETTING
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Purpose: Chest pain has been reported to occur often in association with psychosomatic comorbidity. It seems difficult to detect such disorders facing the rationale of shorter time and economic resources in patient contacts. We asked, whether it is possible to effectively screen patients on depression, panic disorder and individual somatic symptoms by using a questionnaire in a daily routine cardiological outpatient setting.

Methods: All patients (pts.) reporting acute or chronic chest pain to our outpatient clinic received history taking, physical exam, ECG, lab test, echocardiography, ergometry and were screened for inclusion (Exclusion: acute coronary syndrome or age < 18 years). Eligible pts. received the HADS and the Zerssen somatic symptom list after giving informed consent. Pts. with a positive cut-off for at least one scale were notified along with their general physicians. They were offered the opportunity to report to the psychosomatic outpatient clinic on their own demand. The questionnaire was validated by a structured clinical interview.

Results: From February to November 2003 a total of 405 patients (235 male, 170 female) were included. 94.6% (383 of 407) of pts. answered the questionnaire; 48 of them required a second call. 5.4% (22 of 405) declined further participation. Of 383 questionnaire, 37.9% (145 of 383) pts. reached a positive cut-off and were subsequently referred to an individualized exploration according finishing the cardiological work-up.

Conclusion: 1. This questionnaire is an effective method to detect psychosomatic comorbidity in a cardiological outpatient setting. 2. Facing the high prevalence of existing comorbidity, a basic psychosomatic training seems to be mandatory for cardiologists.
BARRIERS TO MENTAL HEALTH TREATMENT IN THE PRIMARY CARE SETTING

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Psychiatric illness often goes undetected or under treated in patients seeking primary medical care. This problem is even more acute in low income neighborhoods where residents have limited access to health care services. The aim of the current study was to identify potential barriers to psychiatric services among inner city medical outpatients. A questionnaire assessing potential barriers to psychiatric services was developed and given to 109 adults at two outpatient medical clinics in Newark, NJ. Patients also completed self-report screens for Major Depressive Disorder, Panic Disorder, and Posttraumatic Stress Disorder. The sample was predominantly black (68.8%) and female (71.6%). Half the participants earned $25,000 or less annually and 48.6% had less than a high school education. Forty two (38.5%) participants screened positive for a current psychiatric disorder yet only 7 of these patients (16.6%) were seeing a mental health professional on a regular basis (>= monthly). Over a third (16/42) had no mental health visits in the past year. Impairment, defined as the extent to which cognitive ability interfered with daily activities, was positively stated that they would attend psychotherapy if recommended by a doctor. The barriers questionnaire included items relating to time constraints, lack of transportation, symptom perception, outcome expectancy, emotional distress, and cost. A principal component analysis with varimax rotation on 7 factors accounted for 78.9% of total scale variance and was internally reliable (Cronbach's Alpha = .74).

Among patients screening positive for psychiatric illness, the most frequently endorsed barrier to mental health treatment was "I don't have psychological problems" (42.5%). Low rates of psychiatric treatment in this population prevented us from testing the predictive validity of the barriers measure. Nonetheless, the data suggest that failure to receive psychiatric care is not due to unwillingsness to attend a mental health practitioner but to a lack of awareness that psychological problems may exist. Implementing psychiatric screening protocols in primary care and providing explicit recommendations to patients with mental illness is likely to improve access to care for these under treated patients.

Abstract 1037

PSYCHOSOMATIC SYMPTOMS AMONG HUNGARIAN EARLY ADOLESCENTS

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During adolescence, the development of psychosomatic symptoms becomes more frequent. Such symptoms have an influence on adolescents' perceived health, health-related attitudes, and health and illness behaviors. The main goal of the present study was to detect the occurrence of psychosomatic symptoms among early adolescents, and to see the impact of psychosocial and psychological variables on symptom formation. Subjects in this study were middle school aged children at the Southern Plain Region of Hungary. Self-administered questionnaires were used for data collection. Questionnaires included items on sociodemographics, psychosomatic symptoms, and psychosocial and psychological variables affecting psychosomatic symptom formation (such as academic achievement, health-compromising behaviors, the lack of aggression control and social comparison). Chi-square, student's t-test, ANOVA, and multiple linear regression analyses were employed. Fatigue proved to be the most frequent psychosomatic symptom in both sexes, which was followed by headache and lower back pain. These latter symptoms were more common among girls (p<0.001). Good academic achievement was a protective factor (p<0.05), while the lack of aggression control increased psychosomatic symptom formation in both sexes (boys: betas=0.37, p<0.001, girls: betas=0.21, p<0.001). In addition, smoking (betas=0.24, p<0.01) and social comparison (betas=0.16, p<0.05) were predictors only among girls. The results may help raise awareness regarding the importance of psychosomatic symptom formation during the early adolescent period.

Abstract 1621

THE ASSOCIATION BETWEEN SOMATIZATION AND AUTONOMIC NERVOUS SYSTEM FUNCTION IN THE GENERAL POPULATION

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Preliminary studies showed a dysfunction of autonomic nervous system (ANS) in patients with different functional somatic syndromes, mostly an increased sympathetic and /or a decreased parasympathetic activity. Since there is overlap between functional somatic syndromes and persistent medically unexplained symptoms (MUPS), they might be elicited by the same mechanism. Therefore, we investigated the association between ANS function and MUPS in the general population.

This study was performed in the SALUT-cohort (N=1093; 46.1% male; average age 53.2, SD 11.3). Participants completed the somatization section of the Composite International Diagnostic Interview (CIDI). Somatization was defined as the sum of all lifetime MUPS reported in the CIDI. ANS function was characterized by heart rate (HR), heart rate variability in the low frequency band (HRV-LF) and in the high frequency band (HRV-HF) and baroreceptor sensitivity (BRS) derived from Portapres measurements at rest.

Women reported more lifetime MUPS then men (4.2 ± 3.6 versus 2.8 ± 3.0 symptoms; F(1,885)= 6.82, p<0.001). Linear regression analysis revealed that there were no associations between number of lifetime MUPS and ANS function: HR beta=-0.003, t=-0.075, p=0.940, HRV-HF beta=-0.051, t=-1.524, p=0.118, HRV-LF beta=0.036, t=1.128, p=0.260 and BRS beta=0.001, t=0.011, p=0.992.

We conclude that this study does not provide any evidence for an association between an altered ANS function and somatization in the general population.

Abstract 1855

MANAGING PSYCHOLOGICAL DISTRESS IN CHRONIC MEDICAL ILLNESS: STRUCTURE AND FUNCTION OF AN INFORMATION TECHNOLOGY ENABLED MANAGEMENT SYSTEM FOR DEPRESSION. MCLAUGHLIN TJ, AUPONT O, FARZANFAR R, LOCKE S

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Purpose. To develop an information technology enabled management system for depression (ITEMS-D) in chronically medically ill (CMI) patients.

Subjects and Methods. ITEMS-D uses multiple information sources and creates alerts in real-time to allow DMs to intervene and manage the distress of living with CMI. ITEMS-D modules include monitoring of mood, social support, perceived stress, hopelessness and treatment compliance. Nurses use social learning theory approaches to negotiate interventions with patients. To facilitate future adoption of ITEMS-D, we engaged users of the system in the design and development process. We conducted focus groups and in-depth interviews of primary care physicians (PCPs), disease managers, and CMI patients for content, acceptability and ease of use of ITEMS-D that exists on a computer assisted phone interview platform.

Results. The ITEMS-D prototype was widely accepted by users. PCPs saw ITEMS-D as a parallel, independent system of care and one in which alerts would only be sent to the PCP regarding previously unknown issues. DMs felt that distress typically emerged when CMI was unattended or worsening, suggesting that ITEMS-D monitoring and assistance in identifying patient-tailored interventions could improve care. Content, language level, and administration time were very acceptable to patients.

Conclusions. User input into ITEMS-D development is essential for dissemination into community settings. The goal of ITEMS-D is to explore if a health delivery system can employ interventions tailored to patients by which depression and other areas of patient concern arising in CMI can be improved.
Adjustment disorders (AD) are a common problem but also an ill-defined category in the present diagnostic nomenclature. A new diagnostic model describes AD as a particular form of stress response syndrome. Central processes and symptoms of this diagnostic model are intrusions, avoidance of reminders, and failure to adapt. AD subtypes are included in the model consistently to existing classification systems. Data from a clinical sample of patients with an automatic implantable cardioverter defibrillator (N = 160; mean age 63 years, 90% male) are investigated concerning the new model of AD. For assessment of AD a new questionnaire was used (Adjustment disorder-New Module; ADNM; Maercker et al., 2005). First, all consistencies of the subscales were very satisfactory, with Cronbach’s alphas of .85 for intrusion, .80 for avoidance, .79 for failure to adapt, .80 for depressed mood, .83 for anxiety, and .88 for disorders in impulse control. To examine the convergent validity of the new ADNM subscales, correlation coefficients were analyzed between ADNM-subcales, PTSD (IES-R) and anxiety as well as depression (HADS). As expected, we found moderate correlations between the IES-R or HADS and corresponding ADNM subscales. For impulse control no corresponding scale was available. Using the diagnostic algorithm, 17% of our sample met the criteria of the new AD. The subtype AD with mixed emotional factors was most commonly diagnosed (41%). A subsample was also diagnosed by SCID. The diagnostic sensitivity was .58 and specificity .81 in relation to traditional AD. By applying the most strongly conservative exclusion rule analogous to SCID, the AD prevalence was reduced to 9%. The first results of the new theory-driven AD concept show methodological soundness. The new diagnostic model of AD is suitable for assessment of this stress response syndrome and maladaptive coping in patients with cardiac arrhythmias. Further research should clarify the impact in other disease patterns.

DEPRESSION, ANXIETY, AND SOMATIZATION IN PRIMARY CARE: SEPARATE DISORDERS OR MINOR VARIATIONS OF A BROADER SYNDROME?
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Depression, anxiety, and somatization are the most prevalent psychiatric syndromes in primary care, but there is little evidence that they are clearly separated from one another. To assess whether their classification as discrete entities is appropriate, we determined diagnostic overlap of these three syndromes as well as their unique and overlapping contribution to health outcomes.

In a cross-sectional survey in 15 primary care clinics, 2091 consecutive patients participated (response rate, 92%). Depression, anxiety, and somatization were assessed using the PHQ-8, GAD-7, and PHQ-15, respectively. Health outcomes included health-related quality of life (SF-20) and disability days. Multivariable regression analyses were used to determine the unique contribution of depression, anxiety, somatization and their commonalities to health outcomes.

In over 50% of cases, comorbidities existed between depression, anxiety, and somatization. The contribution of the commonalities of depression, anxiety, and somatization to each health outcome substantially exceeded the contribution of their independent parts. For example, 2%, 0% and 8% of the total variance of the SF-20 general health dimension were uniquely explained by depression, anxiety, and somatization, resp., while the proportion explained by the overlap of the three syndromes was 27%. Nevertheless, the contribution of the independent parts to health outcomes was still substantial: i.e., a mean (95% CI) of 9.4 (6.5-12.2) disability days in the past 3 months was uniquely associated with depression, 5.8 (3.4-8.2) disability days with somatization, whereas anxiety was not independently associated with disability days.

The results suggest the existence of a broader underlying syndrome that is composed of the common features of depression, anxiety, and somatization. The symptoms unique to depression, anxiety, or somatization contribute to a lesser extent to health outcomes and appear to reflect variations of the broader underlying syndrome.

RESEARCH BETWEEN ATTACHMENT, CHILDHOOD TRAUMA AND EMOTIONAL AWARENESS IN PSYCHOSOMATIC INPATIENTS
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Purpose of study: The disorganized attachment style of many hospitalized psychosomatic inpatients (Main, 1986, Fonagy et al. 1996) reflects inadequate psychic integration of attachment related traumatic experiences and affects. The question of whether this disorganized attachment style is related to childhood trauma and/or to impairments in the ability to represent and integrate disturbing affects, has not yet been answered empirically. We explored the impact of remembered childhood trauma and level of emotional awareness (Lane et al. 1987) on organized (R) and disorganized (U) attachment style in psychosomatically treated psychosomatic inpatients.

Methods and sample: At admission, patients (n = 45, diagnoses: somatotomform, eating disorder, or depression) were assessed with the Adult Attachment Projective (AAP), the Childhood Trauma Questionnaire (CTQ), the Child Abuse and Trauma Scale (CATS), self-report measures for symptom severity (SCL-90R, STAI, BDI) and an established measure for cognitive-emotional development- the Levels of Emotional Awareness Scale (LEAS). Based on a correlation of 92% with the Adult Attachment Interview (AAI), the AAP is a reliable attachment measure. CTQ and CATS are established questionnaires for neglect and abuse in childhood. Results: Disorganized attachment (U) was present in 53% of subjects; R and U did not differ in symptom severity. U had a significantly lower level of emotional awareness (U: M = 27.8; SD = 4.6) compared to R (M = 31.3; SD = 5.3; p < 0.05). Remembered childhood trauma did not differ significantly (CTQ: U: M = 59.6; SD = 22.8 vs. R: M = 55.0; SD = 14.0; n.s.; CATS: U: M = 54.3; SD = 26.6 vs. R: M = 50.9; SD = 19.2; n.s.), and, according to scoring rules, trauma impact was low to moderate. Discussion: These findings indicate that a disorganized attachment style prevailed in a group of psychosomatic inpatients. Disorganized attachment was significantly related to low emotional awareness, but not to childhood trauma.

ACCURACY OF RESPIRATORY SYMPTOM PERCEPTION IN PERSONS WITH MEDICALLY UNEXPLAINED SYMPTOMS (MUS) IS REDUCED IN A SYMPTOM INFORMATION FRAME
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Purpose. To investigate the effect of a neutral versus a symptom information frame on the accuracy of respiratory symptom perception and on retrospective symptom reporting in non-clinical high and low reporters of Medically Unexplained Symptoms (MUS).

Subject Section and Methods. Participants (N = 74) went through two rebreathing trials causing a gradually increasing state of hypercapnia. Each trial consisted of a baseline (60s), a rebreathing phase (150s), and a recovery phase (150s). For one trial, participants were told that the gas mixture would alter breathing behavior and produce respiratory sensations (neutral information frame). For the other trial, participants were told that the gas mixture would alter breathing behavior and induce respiratory symptoms and complaints (symptom frame). During each trial breathing behavior was continuously monitored, and subjective sensations were rated every 10s. After each trial, participants filled out a symptom checklist. Within-subject correlations were calculated between the subjective rating and its
physiological referent for the re-breathing phase and recovery phase of each trial separately.

Results. High MUS persons reported more (retrospective) complaints than low MUS persons, especially in the symptom frame. Only in the symptom frame, high MUS persons were less accurate compared to low MUS persons. The reduction in interoceptive accuracy in high MUS persons was most striking in the recovery phase of the symptom frame trial.

Our results highlight the importance of the information frame used to interpret sensations for interoceptive accuracy in high MUS persons. The results also suggest a deficiency in symptom recovery in high MUS persons.

Abstract 1517
DIFFERENTIATING STRESS FROM PSYCHIATRIC DISORDERS IN STRESSED-OUT PATIENTS. THE UTILITY OF PSYCHIATRIC, PSYCHOSOCIAL, AND BIOLOGICAL TOOLS.
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Background. Commonly, patients suffering from stress also have one or more psychiatric co-morbidities. Stress research studies rarely describe co-morbidity conditions. The aim of the current paper is to describe psychiatric morbidity in an unselected group of patients and to evaluate whether stressed-out patients with/without psychiatric co-morbidity exhibit systematic differences.

Method. A total of 144 consecutive patients (72.2% women, median age 60 years old, S.D. 10) were evaluated for possible psychiatric disorders and stress. Only patients with no psychiatric disease, or suffering from dysthymia, depression, or general anxiety disorder were included. Exhaustion syndrome (ES) status, using the criteria proposed by the Swedish Board of Health and Welfare, was assigned to patients.

Results. Of the 144 patients, 11 were diagnosed suffering from dysthymia, 26 with depression, and 4 with GAD. Thirty-eight patients had no ES, 33 had partial ES, and 73 had complete ES. Self-rated health followed an inverse dose-response pattern (35, 40, 27.5, 0-100 mm VAS scale) across the three ES categories. Scorings for perceived stress during the last year were 65, 73, and 85. For currently being stressed, the figures were 55, 58, 75. Serum testosterone and afternoon salivary cortisol levels were 6, 8, and 4 nmol/L, and 3.3, 4.7, and 3.7 nmol/L, respectively. All significant at the p<.05 level.

Conclusion. The results confirm that patients referred for stress-related conditions by general practitioners commonly suffer from psychiatric co-morbidity. There appears to be some psycho-physiological differences between stress patients with and without the proposed new psychiatric diagnosis Exhaustion syndrome.

Abstract 1263
DIFFERENT EMOTIONAL MEMORY IN WOMEN WITH AND WITHOUT CANCER-RELATED INTRUSION
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We previously reported that women with a history of cancer-related intrusions exhibit smaller left hippocampal volume than those without such history (Nakano et al, 2002). However, the fundamental question still remained as to whether the volumetric differences represented the neurotoxic effect of persistent intrusive recollections for several years or a pre-existing trait that predisposed people to pathological stress reactions to cancer experiences. Given recent findings that cancer disorder and 3.3, 4.7, and 3.7 nmol/L, respectively. All significant at the p<.05 level.

Conclusion. The results confirm that patients referred for stress-related conditions by general practitioners commonly suffer from psychiatric co-morbidity. There appears to be some psycho-physiological differences between stress patients with and without the proposed new psychiatric diagnosis Exhaustion syndrome.

Abstract 1310
EFFECTS OF GENETIC AND PSYCHOLOGICAL FACTORS ASSOCIATED WITH HAVING A FAMILY HISTORY OF BREAST CANCER ON CORTISOL RESPONSES TO EXPERIMENTAL STRESS

For healthy daughters and sisters of the 200,000+ women diagnosed with breast cancer each year, the threat of this disease is particularly salient. Biologically, they are at risk for carrying as yet unidentified genes beyond BRCA that increase their likelihood of developing breast cancer. Psychologically, they are at risk for symptoms of anxiety, depression, and posttraumatic stress. As yet unexplored is the possibility that these factors may contribute to previously-reported heightened HPA axis responses to acute stress in these women. The purpose of the present study was to investigate possible positive effects of genetic (operationally defined by Claus risk scores) and psychological (operationally defined by validated questionnaires) factors on the strength of cortisol responses to experimental stress (Trier Social Stress Test [TST]). Healthy women (N=54; 75% white, age=35.9) self-reported demographic and family history variables, as well as the: Beck Depression Inventory; Brief Symptom Inventory, Impact of Events Scale, Perceived Breast Cancer Risk, Perceived Stress Scale, Personality (Costa & McCrae), and a hippocampal and amygdalar volume as measured by MRI. A significant negative correlation with enhanced emotional memory (r = -0.407, p = 0.035). This finding supports smaller left hippocampal volume might therefore predispose women to acquire stronger emotional response, when exposed to an aversive stimulus. And it also supports that smaller left hippocampus in cancer survivors with intrusions represent a pre-existing (acquired until cancer experience) vulnerability factor rather than the neurotoxic effect of persistent intrusions.
before and after (0, 15, 30') the TSST (conducted in luteal phase). Results revealed that Claus scores, breast cancer-specific intrusions, conscientiousness, and income were all significant independent predictors (p<0.05) in multivariate analysis of stress-induced changes in cortisol levels.

None of the other factors assessed were found to be significantly related to the women's cortisol responses. Findings are consistent with the possibility that both genetic and psychological factors associated with family histories of breast cancer may contribute to heightened HPA axis responses to stress and raise new questions about possible health consequences.

Abstract 1787

TESTING CELLULAR IMMUNE ACTIVITY IN A BREAST CANCER SURVIVOR UNDER REAL-LIFE CONDITIONS
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Objective: This integrative single-case study investigated the influence of emotionally meaningful daily incidents on cellular immune system dynamics in a breast cancer survivor. Methods: The 60 year-old patient with breast cancer (primary diagnosis 5 years before study start, cancer recurrence 1 year before study start, disease free at study start) collected her entire urine for a period of 32 days in 12-hour intervals. In addition, she filled out questionnaires regarding her emotional state, daily routine (e.g., medication) and illness perception. Weekly interviews (HI) identified the past week's incidents. After the end of the study, neopterin (cellular immune parameter, HPLC) was measured in the 63 consecutive urine samples. Time series analysis consisted of ARIMA modeling and cross-correlational analysis. Results: Mean urine neopterin level was 164micromol/mol creatinine. Daily stressors were followed by a cyclic response pattern in neopterin, i.e. a decrease after 24 hours (+lag2: -2.257;p<0.05) and an increase after a total of 84 hours (+lag7: +2.272;p<0.05). On the other hand, medication (i.e., anastrozole, zinc orotate, selenite, Cinnabaris, sodium sulfur) was first associated with an increase in neopterin after 12 hours (+lag1: +2.373;p<0.05) and then with a decrease after a total of 60 hours (+lag5: -2.422;p<0.05). The patient did not suffer from sickness behavior. Conclusions: When recent findings on patients with SLE and healthy probands were considered, the results on this patient suggest a dysfunctional stress system with increased cellular immune activity/inflammation when stressed. The fact that the patient showed no signs of sickness behavior and normal urine neopterin levels may have been related to suppression of inflammatory activity by daily medication.

Abstract 1478

PSYCHOSOCIAL INTERVENTIONS FOR WOMEN SUFFERING FROM BREAST CANCER: A COMPARISON BETWEEN THE PATIENTS’ DEMANDS AND THE RESULTS FROM TWO STANDARDIZED SCREENING INSTRUMENTS
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So far many studies have shown a marked discrepancy between an initial demand for psychosocial interventions and the actual numbers of participating breast cancer patients. The aim of the study was to define a subgroup of patients with a stable demand for psychosocial support and characterize the specific needs of this group. Anxiety and depression was measured by the German version of the Hospital Anxiety and Depression scale (HADS-D) and the German version of the Brief Patient Health Questionnaire (PHQ-D). Patients were asked at admission whether they were interested in psychosocial support and if they would like to take part in a semi-structured telephone interview six weeks later. The telephone interview consisted of sociodemographic variables, rating of emotional wellbeing as well as specific details of anxiety and time of psychosocial interventions. Clinical data were obtained from the patients’ record. 115 women were asked to fill in the questionnaires at the time of admission into a breast cancer centre. 91.3% (n=105) of these patients had primary breast cancer. 40.9% (n=47) expressed an interest in psychosocial support. These patients achieved significantly higher scores in the two instruments (HADS-D depression scale p<0.001; HADS-D anxiety scale p<0.001; PHQ-D depression scale p<0.001). Six weeks later 58.3% (n=67) took part in a telephone interview. 69.8% (n=44) of these women initially reported an interest in psychosocial support. 42.7% (n=27) of this group remained with their demand. Patients with a stable interest achieved significantly higher scores in both HADS-D anxiety and depression scale. Women with a non-stable interest however showed only increased scores in one scale of the deployed instruments. The question about the patients’ specific needs revealed a strong interest for psychosocial support immediately after diagnosis (second after surgery). These patients would like to address the question how to deal with anxiety and depression preferably to specialized psychotherapists or psychooncologists in form of accompanying counselling.

Abstract 1667

PREDICTORS OF THE ATTITUDE TOWARDS COMPLEMENTARY MEDICINE IN WOMEN WITH DIFFERENT KINDS OF CANCER
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Purpose of study
A questionnaire study was carried out with 342 female members of a German self-help organization with different kinds of cancer. We used the structured Questionnaires on Attitudes towards CAM (QACAM) and Psychotherapeutic Treatment (QAPT). Ditte et al. 2006; socio-demographic attitude towards CAM and psychotherapy and scale 2: Acceptance [of psychotherapy] by the society), the Symptom-Checklist-27 (SCL-27, Hardt et al. 2004), and demographics.

Summary of results
The structure of the 17 item-QACAM with 3 scales (1: Positive attitude towards CAM, 2: Social acceptance of CAM, 3: Positive attitude towards conventional medical treatment of mental complaints) could be confirmed by factor analysis. Cancer patients with A-level have significant lower values in QACAM scale 2 (p=.004) and 3 (p=.014, both: t-test) than patients with GCSE O, i.e. they are less concerned about the use of CAM and they have a more sceptical approach to conventional treatment. In addition, we found the following significant correlations: between the QACAM scale 2 Social Acceptance of CAM and (1) the SCL-27 scale Agoraphobic symptoms (r=.211), (2) the SCL-27 scale Symptoms of distrust (r=.209), and (3) the QAPT scale 2 Acceptance (of psychotherapy) by the society (r=.405), i.e. even more the cancer patients fear stigmatization by CAM-use the more skeptical they are about a psychotherapeutic treatment. Summarizing, the results suggest it might be helpful to focus on certain fields of personality for a better understanding of subjective reasons for CAM seeking behaviour.

Abstract 1122

CORTISOL MEDIATES THE RELATIONSHIP BETWEEN STRESS MANAGEMENT SKILLS AND PROSTATE-SPECIFIC ANTIGEN (PSA) LEVEL AMONG MEN TREATED FOR PROSTATE CANCER
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Rising prostate-specific antigen (PSA) level following treatment for prostate cancer (PC) has been related to poorer prognosis. While perceived stress has been associated with PSA elevation at pre-diagnosis, psychosocial predictors of elevated PSA during the post-treatment phase are unknown. This study explored the relationships among stress management skills, cortisol, and PSA level in men treated with radical prostatectomy (RP) for Stage 1 or II PC. Participants were an ethnically diverse sample of older men (N=114; age>50)
who were treated with RP (M months since treatment=9.9, SD=4.8). Perceived stress management skills, serum levels of total PSA, and 24-hour urinary free cortisol were assessed at a single time point. Greater stress management skills were related to lower cortisol (r=-.22, p<.01) and lower PSA (r=-.18, p<.03). Higher cortisol was related to higher PSA (r=.22, p=.01). In a hierarchical regression model of PSA that adjusted for cortisol, the relationship between stress management skills and PSA was reduced to nonsignificance, whereas cortisol remained a significant predictor of PSA (Beta=.21, p<.03). Results indicate that the relationship between stress management skills and PSA level may be mediated by cortisol. Stress management skills may help buffer post-treatment PSA elevation via hypothalamic-pituitary-adrenal (HPA) axis regulation. Stress management skills may therefore be salient targets for psychosocial interventions aimed at improving health outcomes in post-treatment PC patients. Future studies should longitudinally examine physiologic pathways among psychosocial factors, PSA elevation and PC recurrence.

Abstract 1655

EXOGENOUS CORTICOSTEROID MEDICATION AND DEPRESSION IN CANCER PATIENTS
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Objective: Corticosteroid is frequently used for cancer patients to reduce inflammatory reaction and it is also known to induce depression and insomnia.

This study was to investigate psychiatric effects of corticosteroid on cancer patients.

Methods: One hundred and four cancer patients visiting a day-care cancer center were completed the questionnaire including the Hospital Anxiety and Depression Scale (HADS), the Insomnia Severity Index and Activities of Daily Living. We added the information about cancer types, extent of the disease, current relapse and steroid use through their chart reviews.

Results: High dose of steroid use was significantly associated with depression in the cancer patients (OR = 3.9, p = 0.03) after controlling for age, gender, education years and other variables of cancer, whereas it showed no association with anxiety symptoms. Cancer types, extent of the disease, current relapse showed no significant associations with both depression and anxiety of the patients except for the association between limitation of activities and depression. Sleep problems at induction, maintenance and awakening were not associated with corticosteroid medication.

Conclusion: High dose of corticosteroid medication increase risk of depression in cancer patients. On the contrary, status of cancer showed less associated with depression than corticosteroid medication.

Abstract 1456

WELL-BEING, POSTTRAUMATIC GROWTH AND BENEFIT FINDING IN LONG-TERM BREAST CANCER SURVIVORS
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This study evaluates posttraumatic growth, benefit finding and well-being, and their interaction, in a random sample of disease-free 10-year breast cancer survivors.

In October 2003, the population-based Eindhoven Cancer Registry was used to select all women diagnosed with breast cancer in 1993 in six hospitals. One hundred and eighty three (72%) of the 254 breast cancer survivors returned a completed questionnaire. Measures included the Posttraumatic Growth Inventory, the Perceived Disease Impact Scale and the CentrEdata Health monitor.

Self-reported health status and psychological well-being were similar in survivors compared to general population norms, whereas life satisfaction was significantly higher among survivors. In addition, posttraumatic growth was seen in the following domains: ‘relationships with others’, ‘personal strength’ and ‘appreciation of life’. The number of patients reporting benefit finding was high (79%, N=145). Benefit finding showed a moderately positive correlation with posttraumatic growth. In addition, women who stated that their satisfaction with life was high reported higher levels of posttraumatic growth in comparison to women who did not. Radiotherapy was negatively associated with posttraumatic growth. Women with a higher tumour stage at diagnosis experienced less benefit finding in comparison to women with a lower tumour stage at diagnosis. The above results can help to identify those patients who will probably experience posttraumatic growth and benefit finding after cancer. However, it is important to be aware that positive effects of cancer on a patient’s life do not occur in all cancer patients and all phases of the disease trajectory.

Abstract 1073

SENSE OF HUMOR AND MORTALITY: A SEVEN-YEAR PROSPECTIVE STUDY OF AN UNSELECTED ADULT COUNTY POPULATION AND A SUB-Population Diagnosed With CANCER. THE HUNT STUDY
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This study prospectively explored the influence of sense of humor for survival. Humor was measured at a median period in a large, unselected adult county population and in a sub-population of individuals diagnosed with cancer.

All residents in Nord-Trøndelag County, Norway, aged 20 and older, were invited to take part in a public health survey during 1995-97, and 66,140 individuals (71.2%) participated. Sense of humor was estimated by responses to a cognitive (n= 53,546), social (n= 52,198) and affective (n= 53,132) item, respectively, taken from the Sense of Humor Questionnaire (SHQ; Svebak, 1997). Scores were related to mortality statistics up to 2003 using Cox survival regression analyses. Unadjusted statistics stated that hazard risk (HR) was significantly linearly reduced in those with higher scores on the cognitive (p<.001), social (p<.001) as well as affective (p<.001) facets of sense of humor. Adjustment for age, gender, demographics, lifestyle and subjective as well as somatic health status caused reduced linear HR for all three facets and was still significant for scores on the cognitive item. A sub-population diagnosis during cancer at screening (n= 2,015) also presented a significant linear reduction of seven-year unadjusted HR for scores on all three SHQ items. Adjustment as above (except for cancer) yielded curvilinear trends due to significant reductions in HR among individuals who scored medium as well as high on the cognitive facet of sense of humor (HR at or below .36, p=.04 -.002), whereas non-significant results emerged for the social and affective facets. These findings suggest that the cognitive facet of sense of humor can significantly reduce mortality risk among adults over a seven-year period and that the cognitive facet can reduce HR also among adults who are faced with the life-threatening diagnosis of cancer.

Abstract 1413

HEMODYNAMIC EFFECTS OF PUBLIC SPEAKING: ANTICIPATION, PERFORMING AND RECOVERY
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Changes in hemodynamic parameters such as Cardiac Output (CO) and Total Peripheral Resistance (TPR) in reaction to stress are typically examined in a lab setting. The purpose of the current study, however, was to measure changes in Mean Blood Pressure (MBP), Heart Rate, CO and TPR during, before and after a real-life speech. Participants in this study were 12 men aged 20-27. Ambulatory BP was recorded during performance of a speech as part of the individual's course requirements (in students) or job. BP was sampled at 100 Hz with a Portapres. HR values were derived from the blood pressure waveform. Modelflow analysis was used to derive TPR and CO. After artefact correction, one-minute means were calculated. Repeated measures analysis showed a significant, upward linear trend during anticipation in both MBP and HR (F(1,11)=6.21, P=0.03 and F(1,11)= 8.56, P=0.014 respectively). Anticipatory CO showed a significant cubic trend (F(1,11)=6.04, P=0.032) as values increased initially and decreased just prior to the start of the speech. Anticipatory TPR showed a quadratic trend that approached significance (F(1,11)=3.49, P=0.088); an initial decrease was followed by an increase in TPR. HR decreased during recovery, showing a larger trend than beyond a significant (F(1,11)= 3.43, P=0.087). T-tests contrasting the means of the last two minutes of the anticipatory period with
that of the first two minutes of the speech and recovery periods revealed significant effects in MBP only. In MBP the difference between anticipation (127.6 mmHg; S.E.=6.7) and speech (133.5 mmHg; S.E.=6.5) was significant (P=.026), while the difference between speech and recovery (120.8 mmHg; S.E.=7.0) approached significance (P=.080). In conclusion, both HR and MBP increased initially. The anticipatory increase in MBP appears to be at first mediated by early rises in CO. However, just before the start of the speech, CO decreases. TPR continues to rise throughout the anticipatory period and appears to be increasingly responsible for the continuing rise in MBP.

Abstract 1726
PERIPHERAL INFLAMMATION MODULATES STRESSOR INDUCED ACTIVITY IN BRAIN SYSTEMS MEDIATING CARDIOVASCULAR RESPONSIVITY TO STRESS

Cognitive and emotional stress and systemic inflammation accentuate cardiovascular (CV) disease and risk of cardiac events. Brain systems have been identified that mediate CV responsivity to stress and predict CV morbidity. We used functional MRI to examine the neural mechanisms through which peripheral inflammation modulates central responses to a cognitive Stroop stressor task. 16 healthy male subjects performed a color word Stroop task after both blind placebo and typhoid administration. Subjects were studied twice in random order a mean of 7 days apart. Inflammation markers IL-6, IL-1Ra, TNF-alpha and salivary cortisol were recorded at baseline and 3 hours post-vaccine. IL-6 and IL-1Ra were significantly higher following Typhoid than placebo vaccination confirming robust inflammatory response. Inflammation significantly accentuated neural responses during the processing of Stroop induced conflict (i.e. stress induction) in regions previously implicated in mediating CV responsivity to stress. These included dorsal anterior cingulate, insula and posterior cingulate cortices (P<.001 uncorr.). Control checkerboard task showed no effect of inflammation in early visual cortex, establishing that responses were not due to a general effect on neurovascular coupling. This study is the first to examine functional neural correlates of states of inflammation and highlights the role of discrete brain regions, in supporting the interaction between stress and inflammatory states. Importantly the regions identified are also implicated in behaviorally integrated CV control, autonomic reactivity and CV risk. We provide a mechanistic account that is relevant to understanding how inflammatory states may lead to increased CV morbidity.

Abstract 1749
SEROTONIN TRANSPORTER GENE VARIATION IMPACT ON THE CORTISOL RESPONSE TO PSYCHOSOCIAL STRESS
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Background: Dysfunction of the serotonin (5-HT) system for humans carrying the short and low expressing allele (s) has significant links with depression (Caspi et al., 2003), anxiety (Hariri et al., 2002) and neuroticism (Lesch et al., 1996). Carriers of the long and full expressing allele (I) have been reported to show an increased cardiovascular reactivity (Williams, 2006) and greater risk of myocardial infarction (Fameron et al., 2002). Very recent studies suggest that due to the A/G SNP within the 5-HT transporter polymorphism, only the LA allele is high expressing (Hu et al., 2005). Furthermore, Hariri et al. (2002) demonstrated higher amygdala neuronal activity in low expressing carriers, which could be linked to differences in accurate, stress responses. Methods: 112 adults (mean age: 24 years) and 116 children (mean age: 9 years) were assigned to a standardized psychosocial stress in the laboratory (the Trier Social Stress Test; TSST). Cortisol levels were determined from saliva samples obtained 2 minutes before and 2, 10, 20 and 30 minutes after the stress exposure, respectively. The DNA was extracted from saliva samples for genotyping the higher (LA) and lower (LG, S) expressing alleles. Results: Contrary to previous reports, adults carrying the higher expressing alleles (N=31) of the 5-HTT polymorphism revealed a significantly higher cortisol response to the TSST than individuals carrying the lower expressing allele (N=81), (p=.05). The mean increase in cortisol was 6.25 nmol/l (SD=5.57) for adults carrying the lower expressing allele (LG, S) and 9.57 nmol/l (SD=7.32) for adults carrying the higher expressing allele (LA). Similar results were observed in children (LG, S allele response: 2.93 nmol/l; LA allele response: 4.87 nmol/l). Conclusion: Contrary to expectations, increased amygdala responsiveness observed in lower expressing 5-HTT allele types appears to be linked to a relatively low adrenocortical response to psychosocial stress.

Abstract 1131
TIME COURSE OF THE ALLOGREGANOLONOME RESPONSE TO STRESS IN HUMANS
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The neuroactive steroid, allogreganolone(AP), is an A-ring reduced metabolite of progesterone. It is found in ovine adrenals and brain. Peripherally produced AP readily enters brain where it is a potent allosteric modulator of the GABA-A receptor, and it is via this mechanism that AP exerts anxiolytic effects. AP also has anti-depressant actions in animals and is depleted in human depression. Animal models indicate that AP increases in response to acute stress, acting as an endogenous suppressor of the HPA-axis stress response, with plasma AP levels peaking 30-60 min after stress onset. Our lab has been engaged in translational studies on the AP responses to mental stress in humans, and we have reported that women with current or past depressive disorders show a dysregulation in AP responses to stress compared to never depressed women. However, our earlier work suggested that the time course of the AP response to stress in humans may differ from animals. Thus, we examined the time course of the plasma AP response to the Trier Social Stress Test in an ethnically diverse sample (50% minorities) of medically healthy women (n=49) and men (n=25), 18-45 years of age, and free of any anxiety or depression. Via catheter, plasma AP was sampled at baseline rest, 12 min (speech) and 18 min (math) after stress onset, and again during a recovery period 30 min after stress onset. Women were tested in the luteal phase of their cycle and had higher AP than men at all time points (P=.06, P<.0001). The genders differed in the direction of their stress response (F=6.5, p<.001) since only women showed a stress-induced increase in AP, with both speech and math levels greater than baseline (p<.05), while at 30 min AP levels had returned to baseline. Men showed decreased AP levels at speech and math relative to baseline (p<.001), and AP returned to baseline levels at 30 min. Consistent with animal studies indicating differential regulation of neurosteroids in males and females, our results suggest gender differences in the regulation of AP responses to stress, and that the time to peak stress response, at least in healthy women, differs from animal models. These results are intended to inform the design of future studies on AP stress responses in humans.

Abstract 1782
STRESS ATTENUATES DIASTOLIC FUNCTION IN NORMOTENSIVE YOUTH
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Abnormalities of left ventricular filling (LV) and relaxation (i.e., diastolic dysfunction) are predictive of cardiovascular morbidity and mortality. Diastolic dysfunction is a frequent cause of congestive heart failure. However, LV filling adaptation to mental stress is still unclear. We hypothesize that stress related hemodynamic arousal will influence diastolic function. Sixty-five normotensive teenagers underwent a 3 hour protocol of one hour rest, five normotensive teenagers underwent a 3 hour protocol of one hour rest, one hour video game stressor and recovery. Mitral inflow and RR interval were measured every 30 minutes. Blood pressure (BP) and heart rate were obtained at 10 minute intervals. Increased measures ANOVAs were performed on filling indices using testing conditions (e.g., rest, stress, recovery) as factors. As predicted, systolic BP (SBP) (P=.01) and late (A) peak filling (p=.02) increased during stress. RR interval (p<.001), isovolumetric relaxation time
ENGAGING IN COGNITIVE TASK PRIOR SPEECH MAKES REDUCTION IN ANXIETY
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Distracting attention from emotional stimuli or stressful situations has been thought to have buffering effects on emotional responses. We propose a possibility that a pure cognitive task, as a distraction task, can have effects of shifting attention away from emotional stimuli, and can reduce emotional responses. Twenty-five participants (12 for a control group and 13 for a distraction group) underwent the experimental session composed of 5 periods: baseline (10 min), rest (10 min), speech preparation (10 min), speech (10 min), and recovery (30 min). We measured self-reports of subjective anxiety, and autonomic responses such as heart rate and skin conductance level through the experimental session. In the rest period, the participants in the control group were asked to just wait for 10 min for machines to be set up, whereas a cognitive task was conducted for the distraction group. After the rest period, the participants were informed that they would be asked to give a speech where they would be recorded by a video-camera, and that the topic of the speech was 1 m very interesting in &. Then the participants were given 10 min to prepare for their speech and had 10 min speech. After the speech period, the participants were asked to stay calm for 30 min. As results, there were no significant differences in self-reports of subjective anxiety between the distraction and the control group. However, in autonomic responses, heart rate was lower in the speech and recovery periods in the distraction group (p<.05), whereas skin conductance level was higher in the preparation, speech, and recovery periods in the distraction group (p<.05; p<.01; p<.05). These results in autonomic responses consist with findings in our previous study, which had participants engage in a cognitive task after the speech preparation. According to these results, we suggested that not only attention deployment towards emotional stimuli but also the characteristics of the task, which deprive attention from emotional stimuli or stressful situations has an important role for the distraction. From the point of view of interaction of emotion and cognition, we tried to discuss about a part of the general mechanisms of emotion regulation.

GRANULOCYTE ACTIVATION IS MODULATED BY PSYCHOLOGICAL STRESS / RELAXATION
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Our aim was to study the possible relationship between psychological stress and granulocyte activation 1/ in healthy college students (11) and in chronic anxious patients (15); 2/ in an other project, in medical (10) and in college students (9). We employed cell surface markers (1/ lactoferrin, L-selectin, aMib2-reinig, CD15s; 2/ lactoferrin, ICAM-1) to detect changes in the "excitement" of granulocytes - not only upon the start of stressed state in students (at the beginning of exam period), but also following a relaxation session. Blood samples were taken a) in the resting state, in the pre-exam period (students), and b) just before the first and right after the third relaxation session. (Relaxation methods: 1/ both students and patients: hypnosis; 2/ college students: relaxation training, medical students: hypnosis). Surface activation markers were analysed by immuno-fluorescent flow cytometry. (Significance of difference was determined using the t test or a non-parametric rank-sum test; consideration of significance: if p was less than 0.05.) In the first study, the ratios of all 4 types of marker-carrier granulocytes increased at the start of the exam period in students; especially dramatic (ca. 5-fold) enhancement was observed in the proportion of lactoferrin-bearing cells (p: less than 0.001). After hypnosis, percentage of lactoferrin-exposing granulocytes decreased considerably both in students and in patients (to about half values, p: less than 0.01/0.05); a similar drop was observed in the ratio of CD15s-carrier cells in patients (p: less than 0.001). In the second project, beginning of exams led to significantly enhanced ratios of labelled cells of ICAM-1 and lactoferrin in both groups; particularly great changes were observed in college students (4- and 3-fold of the resting values, respectively; p: less than 0.01/0.001). Following relaxation, significantly reduced percents of both marker-bearing cells (p: less than 0.01/0.02) were seen only in college students. Our study indicates that a) stress response is probably associated with granulocyte activation and b) some granulocyte activation markers, (especially cell surface lactoferrin), might be used as (a) stress indicator(s).

TEMPORAL CHANGE OF LYMPHOCYTE REDISTRIBUTION UNDER ACUTE PSYCHOLOGICAL STRESSOR: EFFECTS OF ADHESION MOLECULES
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Recent studies in psychoneuroimmunology have demonstrated that an acute psychological stressor elicited transient changes of lymphocyte redistribution. Further, it has been well know that direction and amount of the changes were different among lymphocyte subsets. For example, CD16+CD56+ natural killer cells (NK cells) remarkably increased in peripheral blood circulation however CD3+CD4+ helper T cells slightly decreased or showed no change. One possible explanation about such distinct responses was functions of adhesion molecules such as CD62L under acute psychological stressor, was mobilized more pronouncedly than CD62L+ NK cells. The present study was conducted to examine characteristics of such adhesion molecule dependent temporal changes of NK cells. Ten female participants experienced a 10 min baseline period and performed a 10 min mental arithmetic task as an acute psychological stressor. After the task, the participants experienced a 10 min resting period. Blood samples for measuring the absolute numbers of CD62L+ or CD62L- NK cell and CD4+ or CD8+ T cell were obtained immediately after each period. Furthermore, during the task, five blood
samples were obtained at each 2min of the task. As expected, CD62L+ and CD62L- NK cells increased in response to the stressor and showed different temporal response patterns. The elevation of CD62L- NK cells reached to a significant level at 3 min from the initiation of the stressor while CD62L+ NK cells took 5 min to show significant variation. Furthermore, the amount of the redistribution by the stressor was also different between CD62L+ and CD62L- NK cells. These findings suggest that expression of CD62L modulates not only the amount of redistribution of NK cells but also the temporal characteristic of the responses.

Abstract 1357
INTERACTIVE EFFECTS OF SOCIABILITY AND FAMILY HISTORY OF ALCOHOLISM ON HEART RATE VARIABILITY RESPONSES TO PSYCHOLOGICAL STRESS
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Individuals with a family history (FH+) of alcoholism are behaviorally disinhibited compared to those with a negative history (FH-). Disinhibition is part of a broader antisocial pattern mediating the relationship between FH and alcoholism risk, accompanied by reduced stress reactivity. Autonomic response deficits have not been examined in these groups. Accordingly we measured the present–past autonomic response of heart rate variability (HRV) to mental stress in 11 High Risk (FH+ and low sociability) vs. 13 Low Risk (FH- and high sociability) nonalcoholics, ages 18-29 yrs. Participants were enrolled in a long-term study on risk for substance abuse. Subjects completed two test sessions: On day 1, they performed 3 consecutive public speaking stressors. HRV was assessed during a 20-min. baseline and 15-min. of preparation for the 3 speeches. Day 2 was a rest day with measurements at baseline (5 min), rest (15 min. of continued rest. The Low Risk group had stress-induced drops in R-R interval (t = -4.2, p = .001) and in high frequency power (t = -2.01, p = .035) compared to rest day. In contrast, the High Risk group did not differ across days. Notably, HRV responses did not vary as a function of FH alone, suggesting that factors associated with low sociability explain the primary variance in alcoholism risk in FH+ individuals. These findings support our hypothesis of dysfunctional limbic system activation in response to psychological stress in individuals at high risk for alcoholism.

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Abstract 1745
COPEING STYLE AND NEURAL SUBSTRATES OF PSYCHOSOCIAL STRESS IN HUMANS
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It has previously been shown that coping styles influence mental well being, disease adaptation as well as the endogenous stress response. While active-expressive coping styles have been associated with successful adaptation, passive-repressive styles seem to be less adaptive. Accordingly, individuals expressing passive-repressive versus active-expressive styles show higher basal as well as stress-induced activation of the hypoalumus-pituitary-adrenal (HPA) axis.

Here we investigated the impact of coping styles on the neural substrates of psychosocial stress in 12 healthy volunteers. Participants were confronted with a stress condition and brain activation was assessed using positron emission tomography (PET) and Fluor-18-deoxyglucose. HPA axis function was monitored by repeated salivary cortisol sampling. Coping styles were assessed with the Carver Coping Questionnaire.

Cortisol levels were positively correlated with the glucose rate in the right superior frontal gyrus (x, y, z: 24, 58, 4; r = 0.81; p < 0.001) and the left rostral-cortical cingulate gyrus (x, y, z: -10, 40, -8; r = 0.68; p = 0.007). Activations in brain areas positively associated with cortisol were positively correlated with passive-repressive coping styles (e.g. restraint coping: r = 0.61; p = 0.037) and negative mood (e.g. general distress: r = 0.69; p = 0.013). Activations in brain areas inversely correlated with cortisol were positively associated with active-expressive coping styles (e.g. venting of emotions: r = 0.60; p = 0.038). Data indicate, that the prefrontal cortex is involved in human HPA axis regulation during instances of psychosocial stress and activity in these prefrontal areas might be influenced by individual coping styles.

Abstract 1616
INTERACTIVE EFFECTS OF ANGER EXPRESSION AND HOSTILITY ON HEART RATE VARIABILITY DURING MENTAL STRESS
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The purpose of this study was to determine whether hostility (HO) and overt anger expression (AO) are associated with heart rate variability (HRV) in young men. Bongard, al’Absi and Lovatto (1998) investigated the effect of HO and AO on cardiovascular reactivity during mental stress. They divided the sample in high and low on HO and AO and created four groups. They could show that a mismatch between hostile cognitions and habitual anger expression in the high AO/low HO group leads to greater cardiovascular reactivity, while interestingly the high AO/high HO group was least reactive. The reactions of the high HO/low AO group and low HO/low AO group were between the other groups. Data of HRV as index of vagal tone were not reported, but we expected similar reactions. Sloan et al (2001) demonstrated an inverting relation of HRV to hostility, Virtanen et al (2003) found no effect. 79 male students (mean age 25y) underwent a standardized mental stress task with continuous recordings of heart rate and blood pressure. HRV power spectra were computed by fast Fourier transformation. Subjects were divided into groups low or high on the Cook-Medley Hostility (HO) Scale and on the State-Trait Anger-Expression Inventory. Both high HO/low AO groups had significant high HRV [F(1,75)5.8; p =0.018]. HRV analysis revealed a significant interaction effect for hostility x anger out [F(1,75)4.71; p=0.033]. The high HO/high AO group showed highest HRV. The low HO/low AO group showed the lowest HRV. In our study we could find similar reactions in HRV as it was shown by Bongard, al’Absi and Lovatto (1998) in cardiovascular reactivity. Concerning high anger out, hostility made the difference: if there was a mismatch between cognitive attitude of hostility and habitual anger-expression the result was fight-flight reaction with increased cardiovascular stress responses and decreased HRV. If there was a match between hostility and anger expression, the result was lower cardiovascular reactivity and higher HRV because the persons might have been less engaged. This could be explained with a more differentiated startle blink modulation in persons with high HRV and should be investigated in further studies.

Abstract 1822
HEART RATE VARIABILITY, HEMODYNAMIC AND CATECHOLAMINE RESPONSES DURING REST AND MENTAL STRESS IN CAD PATIENTS FROM THE PIMI STUDY
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Altered cardiac autonomic balance of the heart is a predictor of adverse cardiac events in coronary artery disease (CAD) patients. Alterations of sympatho-vagal balance of heart regulation may be more evident during mental stress than rest. The high frequency (HF) component of heart rate variability (HRV) is a marker of the parasympathetic regulation of the heart. Low frequency (LF) of HRV may represent sympathetic modulation. Relationships among frequency domains of HRV, hemodynamics, and catecholamine levels at rest and during speech mental stress were studied in 147 CAD patients from the Psychophysiological Investigations of Myocardial Ischemia (PIMI) study. ECG monitoring, hemodynamic and catecholamine responses were obtained at rest and during mental stress. At rest, there were - 0.75; p = 0.002) and positively associated with the glucose rate in the right superior frontal gyrus (x, y, z: 24, 58, 4; r = 0.81; p < 0.001) and the left rostral-cortical cingulate gyrus (x, y, z: -10, 40, -8; r = 0.68; p = 0.007). Activations in brain areas positively associated with cortisol were positively correlated with passive-repressive coping styles (e.g. restraint coping: r = 0.61; p = 0.037) and negative mood (e.g. general distress: r = 0.69; p = 0.013). Activations in brain areas inversely correlated with cortisol were positively associated with active-expressive coping styles (e.g. venting of emotions: r = 0.60; p = 0.038). Data indicate, that the prefrontal cortex is involved in human HPA axis regulation during instances of psychosocial stress and activity in these prefrontal areas might be influenced by individual coping styles.
no significant associations between HRV measures, hemodynamic responses, and plasma catecholamine levels. At peak stress levels, there was a significant inverse relationship between LF and Epi and norepinephrine levels (p<0.01). At peak stress levels, HF levels were inversely related to systolic blood pressure (SBP, p=0.01) and heart rate (HR, p=0.01). At peak stress levels LF was inversely related to SBP (p=0.01) and HR (p<0.01). Inverse associations of the vagal component (HF) of HRV with sympathetic markers in CAD patients are only revealed under conditions of mental stress. In addition, the data suggest that the LF component of HRV in CAD patients may not be exclusively sympathetic. Understanding the interplay between HR, HRV, BP and catecholamine levels may allow for a more comprehensive evaluation the state of the sympatho-vagal balance during mental stress in CAD patients.

Abstract 1868

STRESS-INDUCED LYMPHOCYTE RESPONSES TO ACUTE MENTAL STRESS AND EXERCISE IN PATIENTS WITH CORONARY ARTERY DISEASE AND HEALTHY CONTROLS

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Background: Inflammatory processes play an important role in coronary artery disease (CAD). T-lymphocytes have been documented in early and advanced atherosclerotic plaques. These immune system parameters may partially account for the relationship between mental distress and adverse CAD outcomes. This study investigates the effects of mental stress and exercise on T- and B-lymphocyte activity, and whether these challenge tasks are associated with exaggerated lymphocyte responses in patients with CAD versus controls.

Methods: Using flow-cytometry, stress-induced changes in lymphocyte distribution (CD3, CD4, CD8, CD19) were determined in response to two mental stress tasks (anger recall, AR; mental arithmetic, MA) and treadmill exercise (EX) in CAD patients following successful elective percutaneous coronary intervention (N=33, age=59.4±8.1 yrs, 33% women) and controls without a history of CAD (N=23, age 53.6±9.7 yrs, 36% women).

Results: Among CAD patients, T-lymphocytes (CD3) decreased significantly from baseline (59.3±2.9%) to mental stress (AR=50.2±3.4%; MA=47.5±3.3%) and exercise (46.2±2.6; p's<0.01). Both mental stress and exercise induced significant decreases in T-helper (CD4) and increases in 1-tlyctoex (CD8) cells (p's<0.05). The T-cell responses in CAD patients did not differ from controls (p's>.2). CAD patients displayed elevated T-cell (CD3) levels at rest (p=.04), but no group differences in CD4 or CD8 were observed. The B-lymphocyte marker (CD19) displayed significant reductions (p<0.01) with mental stress and exercise in both groups. Importantly, CAD patients displayed elevated levels of this B-lymphocyte marker at rest (p=.09), anger recall (p=.05), and exercise (p=.02).

Conclusions: These data indicate significant shifts in T-cell and B-cell distributions in response to mental stress, and may suggest that B-cell activity is exaggerated in patients with coronary artery disease. Elevated B-cell activity may indicate the role of inflammatory processes related to microorganisms or other pathogens involved in the atherosclerotic disease process.

Abstract 1617

EFFECTS OF DEBRIEFING AMONGST SHOP ATTENDANTS TREATED FOR A VARIETY OF INCIDENTS?

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The purpose of the study was to investigate the psychological support reported by subjects who participated in a survey studying life events and robbery amongst shop attendants. A questionnaire was distributed to 5000 members of the trade union, 1700 participated (34 %), 86.3 % were female; mean age was 45 years. The questionnaire included, amongst others, PTSD checklist, HSCL-25, Positive States of Mind (PSOM; Horowitz), questions about debriefing, rating scales for work environment; general work environment, social support, and the Demand-Control instrument.

Fourteen hundred and ninety-nine subjects completed the PTSD checklist; of these, 10,1 scored above cut-off for PTSD. Subjects scoring above cut-off for PTSD reported worse working environment generally (Z=8.3, p<0.000), less social support in the work-place (Z=6.8, p=0.000), and higher demand/control ratio (Z=6.6, p=0.000).

439 subjects answered a question about participation in debriefing, of these 63 (14.4 %) affirmed having participated in debriefing. Subjects who reported debriefing did not differ in PTSD or anxiety symptom levels, but had less depression (t=2.424, p=0.017) and higher self-perceived functional level (PSOM; t=2.352, p=0.012).

In an attempt to dismantle the effect of debriefing from work environment effects in female participants, a number of MANCOVAs were carried out entering general work environment, social support at work, and demand/control balance as co-variates. This analysis showed that when entering general work environment, debriefing was associated with independent positive effects on PTSD (F=4.518, p<0.034), anxiety (F=4.779, p=0.03), and depression (F=6.497, p=0.011; and a tendency for PSOM (F=3.224, p=0.065). When social support was entered as co-variates, debriefing was associated with better scores for anxiety and depression (p<0.05). When demand/control was entered, PSOM was significantly better in subjects with debriefing (F=5.711, p=0.018).

There seems to be effects of debriefing in the present study. The effects are independent of, but modulated by the characteristics of the work environment, which are possible confounders in studies of critical incident stress management.

Abstract 1631

LIFE EVENTS, QUALITY OF LIFE AND PERSONALITY STRUCTURE

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The purpose of the study was to analyze the role of personality in coping with disease and death. Investigating the connections between personality and coping capability, we examined the relations of stressful life events, anxiety, Quality of Life and the Cloninger Temperament and Character factors. These effects were studied on a university student sample of 70 participants. The stress inducing disease- and death-related events were measured by the shortened version of the Rahe-Holmes Life Change Unit Questionnaire (LCU). The Quality of Life (QoL) was measured by various methods including Shortened BDI, Hopelessness Scale, Shortened WHO Wellbeing Score, Shortened Vital Exhaustion Questionnaire. The relationship between LCU and QoL were measured with the STAI. To study the role of personality dimensions we used the Cloninger’s Temperament and Character Inventory (TCI). We employed partial correlation and linear regression analyses. We demonstrated significant relationships between QoL, the STAI-S (r=0.627; p<0.01), and the STAI-T (r=0.787; p<0.01). The Disease- and Death-related LCU correlated with poor QoL (r=0.265; p<0.05) and STAI-S (r=0.238; p<0.05) but not with the STAI-T and the Cloninger’s TCI factors. Poor pQoL was associated with the Harm Avoidance (HA) factor (r=0.523; p<0.01), while good pQoL was associated with the Self-Directedness (SD) (r=0.325; p<0.05) and Cooperativeness (CO) factors (r=0.299; p<0.05). We draw the conclusions that the stressful state of a person mediates between the effects of Disease- and Death-related LCU and the destruction of the QoL. The anxiety personality trait impairs the QoL in itself and thus means a particular risk factor of successful coping. It is known that the personality affects the person’s own illness and death expectancy. We showed also that the encounters with one’s or with close others disease- and death-relating experiences are independent from the personality. The differences are in the coping: SD and CO stimulate while HA obstructs cognitive processing.

Abstract 1673

DEPENDENCE OF PSYCHOSOCIAL STRESS FACTORS ON CARDIOVASCULAR INDICES

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The prolonged effect of occupational and psychosocial risk factors might modify and increase work stress. The detection of early abnormalities in cardiovascular control, screening of workplaces for the effect of psychosocial
The results of our study indicate that screening of workplaces for the effect of cardiovascular indicators would prevent CVD.

Purposes of the study: The purpose of the study is to detect whether definite psychosocial factors discriminate occupational groups exposed to work stress and to determine whether functional associations exist between psychosocial factors and cardiovascular indices.

Subject sample and statement of methods: The variability of heart rhythm and psychosocial factors were measured in 99 operators working at the Bulgarian Telecommunication Company and in 61 employees working at the Gas Assembly and Construction industry. Heart Rate Variability (HRV) was analyzed by specialized hardware and software. Job stress was assessed by NIOSH Job Stress Questionnaire adapted for Bulgarian language and conditions.

Summary of results: The results of our study indicate that the probability an individual to refer to the risk group is registered with regressive equation which includes the following psychosocial factors: opportunity for control and decision latitude, quantitative work load, variations in work load, work satisfaction, cognitive skills, and self-esteem. Significant dependencies of psychosocial factors on cardiovascular indices: dependence of work satisfaction on PTHM; dependence of work satisfaction and cognitive skills on PRSA; dependence of skill utilization and social support on heart rate and health risk; dependence of skill utilization and cognitive skills on mean heart interval and were observed.

The results of our study indicate that screening of workplaces for the effect of psychosocial risk factors, and revealing of the dependencies of psychosocial factors on cardiovascular indicators would prevent work stress and CVD.

Abstract 1810

MEDICAL INITIATION AND STRESS QUALITY AND QUANTITY
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Purpose of the study: The purpose of the study is to detect whether definite cardiovascular indicators would prevent CVD.

Method: We hypothesized that during these transitions medical students undergo such experiences that transform their continuously gathered knowledge from quantitative into a qualitative change. As the qualitative part of our study we carried out 5 individual semi-structured deep interviews and 3 focusgroup interviews with 12 students. Among our selection criteria - they should not know each other, should be some experienced and of trying to grasp key elements that serve as milestones in the life of medical students. We hypothesized that during these transitions medical students undergo such experiences that transform their continuously gathered knowledge from quantitative into a qualitative change. As the qualitative part of our study we carried out 5 individual semi-structured deep interviews and 3 focusgroup interviews with 12 students. Among our selection criteria were: students had to be of upper years, more experience, no need to deal with definitions -, they should not know each other, should be some among them that already postponed a year (to test our hypothesis). As of the quantitative part we took approximately 80 students of upper years (third and fourth) of medical school who filled out two stress-related questionnaires that we assumed can be in strong correlation with initiation. These were the Postraumatic Growth Inventory (PTGI) by Tedeschi and Calhoun, Hungarian adaptation by Kulcsár et al.) and the Interpersonal Support Evaluation List (ISEL by Cohen and Wills). The introductory instructions of PTGI we modified to meet our needs to focus on initiation processes. Our results with the use of both quantitative and qualitative investigation methods show that medical initiations do exist and can well be grasped with both anthropological and psychological methods. It is thereby clear that initiation produces stress, the relative quantity of which determines its nature: eustress or distress. By qualitative research methods we mapped the critical amount of stress that make medical students even leave their profession.

Abstract 1265

STRESS AND FATIGUE RESEARCH BY PSYCHONEURO-ENDOCRINOLOGICAL APPROACH
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Continual stresses cause fatigue, and increased cortisol level and fatigue are known to affect cognitive functions, such as impairment of working memory. Therefore, in the present study, we examined the relationship between cortisol response to a stress task and: 1) fatigue and 2) working memory performance.

Forty-four male subjects were enrolled in our study. Written consent was obtained from each subject. After a brief introduction to the study, subjects completed several questionnaires (e.g., Chalder fatigue scale, Academic motivation scale, and Temperament and character inventory), then were exposed to the Trier Social stress test. After the stress test, subjects performed fatigue-inducing task (n-back test for 30 min followed by advanced trail making test for 30 min). For the evaluation of working memory function, they performed a digit span test just before and after the stress test / the fatigue-inducing task. We collected salivary samples during the experiment by using Salivette sampling devices (Salimetrics LLC, Philadelphia, PA).

Salivary cortisol level was increased after the stress test, but was not increased after the fatigue-inducing task. After the evaluation of area under the curve (AUC) of salivary cortisol response, we divided the subjects into 2 groups by cluster analysis [Cluster 1, a group that showed lower cortisol level after the stress session; Cluster 2, a group that showed increased cortisol level after the stress session]. Cluster 1 group showed significantly higher fatigue scores than Cluster 2 group. As for the working memory function, Cluster 1 group showed poorer task performance than Cluster 2 group in the digit span test. These results suggest that the attenuated cortisol response under the condition of stress was related to fatigue and impaired working memory function.

Abstract 1364

FUNCTIONAL BRAIN-IMMUNE ASSOCIATION ACCOMPANYING ROMANTIC FEELING
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When we look at our favorite person, our heart will be filled with fortunate feelings, and occasionally we will feel like 'flying in the sky'. Everybody knows that such romantic feeling is cheerful, strong and passionate. Accompanying romantic feeling, multiple responses in brain, peripheral autonomic nervous, endocrine and immune systems may occur. To investigate such associations among biological systems, we recorded simultaneously brain activity with positron emission tomography (PET), heart rate, blood pressure, serum levels of several hormones, and natural killer (NK) cell activity when twelve male healthy participants watched the film of their favorite persons. Interestingly, a component of innate immune system, NK cell activity, was activated when the participants looked at their favorite persons (p < .01). Various brain regions, such as the medial prefrontal cortex (MPFC), orbitofrontal cortex (OFC) and hypothalamus, were also activated (p < .001, uncorrected), and the activation in the OFC positively correlated with magnitudes of NK cell activity (p < .001, uncorrected). This study is the first observation demonstrating that romantic feeling activates innate immune functions and also the first observation showing functional brain-immune association accompanying romantic feeling.

Abstract 1176

EMOTIONAL REGULATION IN IDIOPATHIC MALE INFERTILITY
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Little is known concerning emotional regulation in infertile men. Is there an inhibition in the sense of a conscious suppression of emotions in reaction to the stigmatizing diagnosis of male infertility or is there evidence for an increased alexithymia in the sense of a neurobiologically founded deficit in communication of emotions? A recent study suggests that in particular in the group of idiopathic infertile men (pathologic spermogram, no organic cause) stress...
resulting from inadequate emotional regulation could be crucial to explain impaired spermatogenesis. 114 infertile men (70 idiopathic, 44 somatic) were consecutively included into the study and compared to 51 healthy controls. All three groups were comparable concerning sociodemographic characteristics. Alexithymia was measured by the Toronto-Alexithymia-Scale-20, psychopathology by the Symptom-Checklist-90-R and inhibition by the Self-Concealment-Scale. Compared to healthy controls merely idiopathic infertile men showed higher scores on all three subscales of the Toronto-Alexithymia-Scale and the subscale somatization (SCL-90-R). There were no differences on the Self-Concealment-Scale. In stepwise multiple regression analysis the TAS-20 subscale Difficulties identifying feelings was the only significant predictor of clinically relevant psychopathology (Global-Severity-Index) in idiopathic infertile men. Our results emphasize the importance of alexithymic personality features in idiopathic infertile men. We suggest a neurobiological model explaining the influence of alexithymia on spermatogenesis focusing on the central role of morphological and functional changes in the anterior cingulate cortex in alexithymics. Clinical implications of our findings with regard to psychotherapy are discussed.

Abstract 1220
THE INFLUENCE OF POSITIVE AND NEGATIVE AFFECT ON ISCHEMIA AND CHEST PAIN
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Background: Positive affect (PA: e.g., happiness, confidence, optimism) has been associated with a better outcome in cardiac patients. In contrast, negative affect (NA: distress, hostility) has been related to increased cardiac morbidity. In some chronic pain diseases (fibromyalgia, Sickle Cell Disease), a higher level of PA has been associated with lower pain perception. When experiencing myocardial ischemia, accurate chest pain perception is important for seeking appropriate medical treatment. However, few studies have evaluated the influence of PA and NA on chest pain perception in cardiac patients. This study evaluated the impact of PA and NA on both chest pain perception and the presence of myocardial ischemia in patients undergoing exercise stress tests. Methods: A sample of 98 patients (M age = 59 yrs) who were referred for myocardial perfusion (SPECT) exercise stress testing completed a psychiatric interview and questionnaire pack, including the PANAS-X scale, which measures both PA and NA. All patients underwent treadmill testing including assessments of chest pain, followed by SPECT imaging. Results: General Linear Model analyses revealed a significant interaction of PA and NA on the presence of chest pain during the exercise test (F = 4.21, p = .043), such that patients with lower NA and higher PA tended to experience less chest pain than patients with lower NA and lower PA. There were no main effects of PA or NA on chest pain, and there were no main or interaction effects of PA or NA on the presence of ischemia. Conclusion: This study reveals that the interaction between PA and NA is associated with chest pain perception but not the presence of ischemia. These findings also suggest that negative affect has a more important impact in this interaction. Future studies are needed to confirm these findings.

Abstract 1632
THE EFFECT OF TOTAL C6 SPINAL CORD TRANSECTION ON EMOTIONAL AWARENESS, EXPRESSIVITY AND MEMORY FOR EMOTIONAL MATERIAL IN MAN.
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It is widely believed that spinal cord damage impairs emotional experience, presumably due to a loss of afferent feedback from soma to psyche. In this study, 24 Spinal-cord injury (SCI) patients (total C6 transsection), 20 Orthopaedic injury control patients (OIC; matched for age, sex and education) and 20 healthy individuals were assessed for emotional awareness, expressivity and memory for emotional material. Participants completed the Levels of Emotional Awareness Scale (LEAS; which is designed to assess emotional awareness in self and others) the Berkeley Expressivity Questionnaire (BEQ; designed to assess positive emotional expressivity, negative emotional expressivity and strength of emotional expressivity), and viewed a slide presentation depicting emotionally arousing material. Thirty minutes following viewing of the slide presentation participants received free recall and recognition memory tests of the presentation. The SCI and OIC groups did not differ on any of the LEAS variables. There were also no differences between 3 study groups on BEQ variables. However, SCI patients reported significantly greater levels of strength of emotional expressivity and mean emotional expressivity AFTER their injury compared with before. Analysis of memory scores for the emotional slide presentation revealed no evidence that spinal-cord injury leads to impairment in memory for emotional events. The mainstream view in the Cognitive Neuroscience of emotion is that spinal cord injury impairs emotional capacities, the extent of which is greater the higher up the spinal cord the lesion occurs. The findings of this study challenge this widely held view.

Abstract 1802
THE PROCESS OF EMOTION
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We approach the topic of the emotion by considering the classic controversy between feelings and cognition, originating in Plato's and Aristotle's formulations. This theme is also seen in the works of Descartes and James as well as Aquinas, and Arnold. The more recent works of Zajonc and Lazarus continue to reflect this controversy, in which the primacy of affect and cognition is analyzed. The detailed analysis of both suggests that a major schism doesn't exist. Our contribution is based in two aspects: on one hand the existence of errors in the formulation of James, and on the other hand the importance of the cognitivist orientation. We defend the existence of a continuous interaction among affective and cognitive variables. Although it seems undeniable that the existence of knowledge (perceptive processes) begins an emotional process, no less undeniable is the fact that at any moment in the life of a subject a state of affective matter exists that influences, modulates and even determines the type and the quality of the perceptive process. We propose a model of emotion based on the analysis of the components that make up this process. Key words: feeling, emotion, cognition, current affective state

Abstract 1672
PROGRESSIVE MUSCLE RELAXATION IN HEALTHY YOUNG MALES REDUCES SALIVARY CORTISOL
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Progressive muscle relaxation (PMR) is an established relaxation technique which is comparatively easy to acquire. The aim is to achieve a state of neurovegetative relaxation. Cortisol is a robust stress marker which has been shown to increase with experimental stress. We wanted to explore A) whether the intended stress-relieving effect of PMR can be seen in a short-term decrease of peripheral cortisol. B) We wanted to check whether healthy young males are able to reach a state of relaxation by PMR within a relatively short time period. 18 healthy males (age 29±6.6 yrs; BMI 22.6±2.5 kg/m2) were recruited via advertisement on university black boards and enrolled in the study after undergoing a psychophysiological assessment with laboratory stress test. They participated in a 6-week relaxation intervention based on PMR guided by a trained psychologist with one group session per week. In addition, they performed PMR at home at least three times per week. The emotional state and cortisol levels were assessed by the Bf-S (von Zerssen). Salivary cortisol was measured in 9 subjects before and after each weekly session and analyzed by radioimmunoassay. Pre-post cortisol levels were compared by paired samples t-test. Valid cortisol data were available in 9 subjects in session 1-5 and 6 subjects in session 6. We observed a decrease of salivary cortisol from before to after PMR in each session. This decrease was statistically significant in session 2.
Hypertension. We explored HPA axis activity and feedback sensitivity to oral activity might contribute to atherosclerosis in hypertensive individuals. Our study shows that a significant decrease of peripheral cortisol can be reached within a short-term period of administering PMR under professional guidance. This is a very promising finding since cortisol represents a biological stress marker with detrimental vascular and immunological effects when chronically raised.

Abstract 1286
CORTISOL RESPONSE TO A WAKENING AND NEGATIVE FEEDBACK SENSITIVITY OF THE HYPOTHALAMUS-PITUITARY-ADRENAL AXIS IN SYSTEMIC HYPERTENSION
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Rationale: Alterations in the hypothalamic-pituitary adrenal (HPA) axis activity might contribute to atherosclerosis in hypertensive individuals. However, HPA axis functioning is not fully understood in systemic hypertension. We explored HPA axis activity and feedback sensitivity to oral administration of dexamethasone in systemic hypertension via assessment of the cortisol awakening response (CAR) and the circadian cortisol profile. Methods: The CAR and circadian cortisol profile were assessed in 20 unmedicated and otherwise healthy middle-aged hypertensive men and 22 normotensive male controls. Salivary free cortisol measures for the CAR were obtained immediately upon awakening with participants in a supine position, followed by the CAR at 30, 45, and 60 mins thereafter with and without administration of 0.5 mg of dexamethasone at 2300 h on the previous night. Circadian cortisol secretion was sampled at 0800, 1100, 1500, and 2000 h. Results: Hypertensives had a significantly lower CAR than normotensive men (p=0.023), but did not differ in circadian cortisol profiles. Moreover, hypertensives showed lower suppression of the CAR after dexamethasone administration compared to the controls (p=0.008). Cortisol levels at awakening were not significantly different between groups either with or without dexamethasone administration. Interpretation: We found evidence for dysregulated HPA axis activity in men with systemic hypertension evident with the CAR. Hypertensives showed relative attenuation in the CAR and in the HPA axis feedback sensitivity following dexamethasone suppression. Such a dysfunction in HPA axis regulation might contribute to the atherosclerotic risk in hypertensive individuals.

Abstract 1274
POST-AWAKENING CORTISOL AS A MARKER OF POSITIVE AND NEGATIVE WELL-BEING IN ACTIVE SENIORS
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It is now recognised that positive and negative well-being, though related, are not simply polarities of a single dimension. Historically cortisol has been studied mostly in relation to stress, especially stress. By contrast, policy initiatives aimed at older populations now routinely emphasise a 'positive ageing' perspective. In this study we examined full diurnal salivary cortisol profiles from 50 active seniors recruited into a wider community research project (mean age 74; 34F/16M). Participants’ wrist activity was continuously monitored by actimeters in their homes over a 48hr period. Two diurnal cycles of cortisol data were collected, with actimetric data being used as a covariate in regard to timing of self-administered saliva collections. Prior to the trial, participants had completed the 30 item GHQ scale which was scored separately to yield both positive and negative well-being scores which matched closely normative data from over 6000 cases in a large survey (see Huppert and Whittington: Br.J. Health Psychology (2003),8,107-122). For cortisol concentration in the 45m period following awakening (but not during the rest of the day) we found a significant interaction between positive and negative well-being (p<.024). Cortisol was 27% lower in participants with both higher than average positive well-being and lower than average negative well-being. This difference was in mean cortisol and there was no difference in the shape (dynamic) of the awakening cortisol response. Cortisol did not discriminate among other sub-groups. Subsidiary findings were that this same sub-group spent 43% more time out of the home (as measured objectively by actimeter data) and tended to show greater actimeter- recorded activity. We conclude that (lower) cortisol in the post-awakening period is a marker of exceptionally good well-being in this sample of elderly participants, as indicated by both positive and negative scales. In contrast there was no indication that higher cortisol characterised those with poorer well-being on either scale.

Abstract 1701
THE A WAKENING CORTISOL RESPONSE IN RELATION TO SEASONALITY
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There is a documented causal relationship between cortisol secretion and major depression however the links between cortisol and seasonal depression are less clearly understood. Seasonality is viewed as a single dimension ranging from the opposite extremes of change with the seasons, with the upper extreme being defined as seasonal affective disorder (SAD). Morning light therapy is the principal treatment for SAD and has been shown to increase mean cortisol levels following awakening in healthy participants. No study has yet investigated cortisol levels in the critical period immediately following awakening in relation to seasonality. Salivary cortisol was sampled on two consecutive weekdays during winter in 45 healthy participants: immediately on awakening and at 15, 30, 45, 60 mins post awakening (mean age 22y; 40F/5M). Participants also completed the Seasonality Scale Index of the Seasonal Pattern Assessment Questionnaire and the Hospital Anxiety and Depression Scale. Seasonality scores ranged from 2-21 (mean 9.40 +4.50); 12 participants reported scores in the clinical range for SAD. Depression scores ranged from 1-11 (mean 4.56+2.81). Participants with higher seasonality scores were more depressed (r=.325, p=.023). In both studies there was a marked increase in cortisol concentration following awakening (6.68-18.86nmol/l on average). A measure of the increase, the maximum cortisol value (either the 30 or 45 minute sample) minus the first sample was computed and averaged across the two collection days (mean 14.97 +9.55 nmol/l). A negative correlation was found between the increase in cortisol following awakening and seasonality score (r=-.296, p=.048) indicating that participants who were more seasonal had lower cortisol responses to awakening in winter. There was no relationship between seasonality and mean cortisol concentration (area under the curve) in the first 45 minutes post awakening and no association between composite cortisol measures and depression. In conclusion, in winter when the photoperiod is shortened and dawn is later, the awakening cortisol response is attenuated in those individuals who are more seasonal in comparison to those who are less seasonal.

Abstract 1849
DEPRESSIVE SYMPTOMS AND RESPONSES TO A WAKENING OF CORTISOL, SIGA AND ULTRA-WEAK CHEMILUMINESCENCE.
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The aim of the present study was to examine the response of salivary cortisol (Cor), sIgA and ultra-weak chemiluminescence (UWCL) to awakening in the morning. We have investigated the way to detect participants with excessive fatigue, demoralization, and severe depressive symptoms in an annual health checkup. The activity of the HPA axis, dysregulation of which is a potential pathogenic mechanism, is characterized by a circadian rhythm, and there is a pronounced release of Cor immediately after awakening in the morning. Since sIgA and UWCL can also be used to measure psychological stress or stress responses, these markers were measured simultaneously.
 Ninety-five male participants having an annual health checkup were agreed to participate in this study. Saliva samples were collected upon awakening and at +30 min thereafter. Questionnaire were used with regard to psychological conditions of the participants.

Salivary volume, Cor concentrations, slgA levels and UWCL upon awakening were compared with those at +30 min. Salivary volume and Cor concentrations increased significantly in 30 min, whereas slgA levels significantly decreased. UWCL also reduced, but not significantly. The ratio of slgA levels at +30 min to those at 0 min after awakening was significantly lower in higher depressive participants in comparison with lower depressive ones (unpaired t test). ANOVA revealed that subjects reporting moderate levels of depressive symptoms showed significantly higher concentrations of Cor compared with those displaying low and high depressive symptoms.

Although the mechanisms underlying the different responses between Cor, slgA and UWCL are not well understood, the data suggest that severe depressive symptoms are characterised by low levels of Cor and slgA.

Abstract 1318

RELATIONSHIP BETWEEN EVENING CORTISOL, AGE AND PSYCHOLOGICAL HEALTH.

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In a cross sectional study, we assessed evening cortisol and the psychological dimensions of stress, arousal and health. Salivary cortisol was measured 12 hours following awakening on three evenings, within a single week. Stress and arousal were assessed at the time of sampling by the Cor Mackay Stress-Arousal check list (SACL) and psychological health by the Goldberg General Health Questionnaire (GHQ) administered during the week of sampling. Test-retest correlational analysis revealed that both cortisol and stress were characterized by interindividual stability across measurement occasions (median values: r = 0.561 and r =-0.605 respectively). Mean cortisol was correlated with GHQ score (r =-0.287) indicating that high evening cortisol was associated with poor psychological health. GHQ scores also correlated with stress meaned across days (r =-0.479), but the relationship between the stress measure and cortisol was not significant. Overall, in the study population, there was a trend towards an increase in cortisol with age, but this was carried entirely by the males, for whom the cortisol - age correlation was significant (r =-0.361). There was a significant effect for smoking status-smokers had higher evening cortisol. In multivariate analysis, only the GHQ score remained an independent predictor of cortisol levels. Psychological health (distress) as determined by the GHQ score, was robustly associated with evening cortisol, more so than any other of the measured variables.

Abstract 1471

CIRCADIAN CORTISOL PROFILES AND PSYCHOLOGICAL SELF-REPORTS IN SHIFT WORKERS WITH AND WITHOUT RECENT CHANGE IN THE SHIFT ROTATION SYSTEM.

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Cortisol profiles including the cortisol rise in the first hour after awakening (CAR) were assessed during shift work and days off (8 saliva samples per shift). Participants were 102 healthy permanent day and night shift workers (comparison groups) and former permanent day and night shift workers after implementation of a new fast-forward rota including morning, evening, and night shifts. Results show that the CAR is detectable in day as well as night shifts. In permanent night workers cortisol profiles appear to be blunted during night work and days off. However, circadian cortisol profiles are not disturbed in former night workers who recently switched to the fast rotating shift schedule. In contrast, implementation of night work in former day workers seems to lead to initially blunted cortisol profiles that normalize after a short adjustment period. Results of a psychological assessment including exhaustion, chronic stress, effort-reward imbalance, and ratings of sleep quality and sleep length are also presented.

Abstract 1696

REPEATED MEASURES OF SALIVARY CORTISOL IN RECENT-ONSET MAJOR DEPRESSIVE DISORDER.

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Extensive research has established that the hypothalamic-pituitary-adrenal (HPA) axis is hyperactive in subgroups of individuals with major depressive disorder (MDD). Among the various methods used to assess HPA axis functioning, serial measures of salivary cortisol offer a non-invasive option that lends itself to repeated testing in an individual's natural environment. Studies that have used this measure to compare depressed individuals to well controls have yielded inconsistent results, however. To further explore this area we recruited 15 individuals who had first been treated for DSM IV MDD in the preceding six months and who had at least one first-degree relative also treated for MDD. They were compared to 15 well controls by salivary cortisol values obtained ½ hour after awakening and again at bedtime for 4 consecutive days. The procedure was repeated 3 months later. Neither morning nor evening mean cortisol values distinguished the MDD group from controls at the baseline assessment. At follow-up the MDD group had significantly lower evening salivary cortisol values (mean=1.9nmol/L, SD=1.0) than did controls (mean=3.6nmol/L, SD=2.0). Day-to-day cortisol values were more highly correlated among control subjects than among those with MDD, both at the baseline assessment and at follow-up. This is consistent with earlier evidence the HPA axis may function at a lower level of temporal coherence in MDD.

Abstract 1474

COMPLIANCE WITH AMBULATORY SALIVA SAMPLING IN THE CHICAGO HEALTH, AGING, AND SOCIAL RELATIONS STUDY (CHASRS) AND THE ROLE OF SOCIAL SUPPORT AND LONELINESS.

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Evidence has shown that noncompliance with given saliva sampling times in ambulatory settings can compromise resulting cortisol findings. Here, we analyzed the impact of noncompliance on the cortisol awakening response (CAR) over three sampling days in middle-aged and older adults derived from the first year of data of the Chicago Health, Aging, and Social Relations Study (CHASRS). Over the last decade, the CAR has been established as an important marker for hypothalamic-pituitary-adrenal (HPA) axis activity. Results show that subjects with noncompliant samples had a significantly lower cortisol rise after awakening (assessed by an awakening sample and a 30-min after awakening sample) at two of the three sampling days (both p<0.01). Furthermore, we found that social support measured by the ISEL correlated negatively with the amount of noncompliant samples (p=0.046), indicating that subjects reporting more social support had more compliant samples. Gender specific analysis revealed that this effect was true for women but not men. Loneliness (R-UCLA) showed a marginally positive correlation with noncompliance (p=0.08), indicating that lonelier subjects tended to have less compliant samples. In sum, these results confirm that nonadherence to saliva sampling in ambulatory settings can exert a significant impact on the resulting CAR. Furthermore, the data raises the idea that the extent of nonadherence might be systematically associated with psychosocial factors like social support (at least in women) and loneliness. For future studies on the relationship between CAR and psychological factors, we therefore recommend controlling for saliva sampling adherence since noncompliance might be systematically associated with the phenomenon being investigated.
SUBJECTS AND METHODS

Participants.

Participants were recruited via a variety of advertising media, including university newspapers, internet advertisements, and local community events. A total of 100 participants, including both smokers and nonsmokers, were enrolled in the study. The mean age of the participants was 25.3 ± 10.4 years, with a range of 18 to 60 years. The participants were divided into two groups: smokers and nonsmokers. Smokers were defined as individuals who had smoked at least 100 cigarettes in their lifetime and who smoked at least one cigarette per day for the past 30 days. Nonsmokers were defined as individuals who had never smoked or had smoked fewer than 100 cigarettes in their lifetime.

Procedure.

The study was conducted in a controlled laboratory setting. Participants were randomly assigned to either the smoker or nonsmoker group. Within each group, participants were further divided into two subgroups based on their ability to produce cortisol in response to stress: high responders and low responders. Cortisol production was assessed using a modified salivary cortisol assay, which measures the total cortisol concentration in saliva samples collected over a 40-minute period.

The study began with a baseline measurement of cortisol production, followed by a stressor exposure. The stressor was a public speaking task, which is known to elicit a significant stress response. Salivary cortisol samples were collected at baseline, immediately post-task, and 3 times throughout a 40-minute recovery period.

RESULTS

The mean cortisol concentration at baseline was 12.8 ± 6.3 nmol/L for smokers and 11.4 ± 5.8 nmol/L for nonsmokers, with no significant difference between the two groups. Following stressor exposure, the mean cortisol concentration increased significantly in both groups (smokers: 45.7 ± 18.2 nmol/L; nonsmokers: 42.1 ± 16.3 nmol/L; p < 0.01). However, smokers showed a significantly greater cortisol response compared to nonsmokers (45.7 ± 18.2 nmol/L vs. 42.1 ± 16.3 nmol/L; p < 0.05). The cortisol response was further analyzed using a mixed-effects model, which showed a significant interaction effect between group (smokers vs. nonsmokers) and time (baseline vs. post-stressor) (F(1,90)=25.244, p<0.0005). A 40.5% reduction from pre to during stress was observed for smokers, while nonsmokers showed a smaller reduction of 30.0%.

DISCUSSION

The results of this study provide evidence for a significant cortisol response to stress in smokers, which is consistent with previous research. The increased cortisol production in smokers suggests that the endogenous opioid system may play a role in regulating this response. The reduced cortisol response in nonsmokers may indicate a dysregulated opioid system in this group. The findings also suggest that the opioid system may be involved in the rewarding properties of tobacco use, as nicotine is known to stimulate opioid receptors.

The study has several limitations. First, the sample size was relatively small, which may limit the generalizability of the findings. Second, the study was cross-sectional, which precludes the establishment of causality. Future research should consider larger sample sizes and longitudinal designs to further explore the role of the endogenous opioid system in the stress response and its implications for smoking behavior.
Emotional factors play a significant role in modulating pain perception with negative emotions increasing pain sensitivity. Recent studies suggest that catastrophic responses, initiated by fearful images, activate the attentional components of fear driven behaviours and facilitate a bias, or hypervigilance, toward noxious stimuli. These interventions can create or exacerbate pain experience. A low noxious temperature that follows a brief rise to a more noxious temperature evokes reductions in pain experience disproportionate to that evoked by continuous application of the low noxious temperature. This disproportionate reduction in pain experience is known as offset analgesia. Catastrophising and offset analgesia are mechanisms whereby objectively matched noxious stimuli become more or less subjectively painful. The current investigation includes two experiments, one to examine whether priming of pain-related fear will increase sensitivity to noxious stimuli and a second to examine the phenomenon of offset analgesia across five sequential testing days. A modified version of the visual dot probe task was employed to prime the pain-related fear and a heat detection task was used to measure the effects of priming on sensitivity. The results indicate a significant facilitation of heat and pain perception, or algesia, at varying temperatures following emotional priming. In order to examine offset analgesia we applied noxious heat (45-48°C) to the volar forearm and compared pain intensity ratings for increases and decreases in temperature, repeated over 5 days. Offset analgesia was consistently demonstrated but was significantly enhanced during days 3-5. Our results demonstrate dramatic subjective changes in pain experience to the same noxious stimuli via simple behavioural manipulations. These experiments can be used to investigate chronic pain patients and can also be used directly with fMRI to investigate the neural mechanisms of catastrophisation and descending control of pain.

Abstract 1090

AUTONOMIC RESPONSES TO PSYCHOLOGICAL AND ORTHOSTATIC CHALLENGE ACROSS THE LIFESPAN IN THE MIDUS II STUDY

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Cardiac autonomic responses to psychological and orthostatic challenge are reasonably well established in young and middle adults but are not well characterized in older age groups. In MIDUS II, the NIA-funded study of midlife development in the US, a subsample of 457 subjects ages 32-84 years completed various evaluations during an overnight stay in one of 3 regional CRGC sites. Heart rate (HR) and R-R interval variability (RRV) were measured during resting baseline, two psychological stressors (Math + Stroop, MS) and orthostatic challenge (standing upright, UP) in a standard psychophysiology protocol. Age was stratified into 5 groups: 32-44, 45-54, 55-64, 65-74, 75-84. Condition by Age effects were tested in a 3 (baseline, MS, UP) x 5 (age group) mixed model analysis. Main effects of condition were in expected directions: HR increased from baseline (72.2 +/- 11.0 bpm) to MS (77.4 +/- 12.0 bpm; t = 5.1, p < .0001) and further to standing (79.9 +/- 13.1 bpm; t = 9.89, p < .0001). High frequency RRV (log transformed) decreased from baseline (4.9 ln msec2) to MS (4.5 ln msec2; t = -4.35, p < .0001) and further to standing (4.1 ln msec2; t = 9.63, p < .0001). Main effects of age were found. HR was different among all 5 age groups except the youngest two (32-44, 45-54). Contrary to some published reports, HR was inversely associated with age, possibly attributable to healthy subjects' self-selected participation. For HR-RRV, however, the only age difference was higher HR-RRV in the youngest cohort (32-44) compared with all older groups (p < .0001 all comparisons). There was no Age x Condition interaction i.e. no slope differences in cardiac reactivity based on age. These results reveal remarkable similarity across age groups, with trends in reactivity to stressors largely parallel to each other. These data extend knowledge of age effects on cardiac reactivity by suggesting that, although levels of HR and HF-HPV differ, the pattern of reactivity to psychological and orthostatic stress in a laboratory setting is very similar throughout the lifespan.

Abstract 1735

SUBJECTIVE VARIATION IN PAIN EXPERIENCE WHEN RECEIVING THE SAME OBJECTIVE STIMULUS

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ANATOMICAL CORRELATES OF AUTONOMIC CONTROL DURING A MOTOR TASK

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Multiple brain regions are involved in autonomic control. Anterior cingulate (ACC) is involved in parasympathetic control 1; anterior insula (AI) and amygdala are involved in parasympathetic and sympathetic function 2. Heart rate variability (HRV) is described by indices derived from spectral analysis of an ECG. High frequency power (HF) reflect parasympathetic vagal tone 3, low frequency power (LF) reflects mainly sympathetic tone, but is influenced by vagal tone 4. Total HRV is described by the time domain parameter rMSSD. Healthy male subjects (N=15) performed a task in which they squeezed a handgrip dynamometer. During the task, CBF images were acquired, and ECG signal was captured and analyzed to obtain HF, LF, and rMSSD. Image data were analyzed using SPM2. Small volume corrections were applied to the amygdala, ACC, AI, and lateral orbital cortex (OC).

HF was significantly positively correlated to CBF in the left ACC, left OC, and bilateral AI. LF was positively correlated with left ACC, CBF, and negatively correlated to CBF in the right AI. rMSSD, was positively correlated with CBF in the left ACC.

This is consistent with Critchley, et. al., who showed positive correlations between HF and activation in the left ACC and left AI, positive correlations with LF and BOLD activation in the bilateral dorsal ACC, and positive correlations between total HRV and ACC. In contrast, that study also found a positive correlation between LF and activation in the bilateral AI, adjacent to the region in which we found a negative correlation between CBF and LF; however, Critchley orthogonalized the autonomic variables, explicitly removing shared variance. While the exact segregation of autonomic function remains unclear, it is evident that ACC, OC, and AI are important regions in autonomic control, as well as part of a visceromotor network involved in autonomic expression of behavior 5.


INFLUENCES OF ATTENTION MANIPULATIONS FOR INTEROCEPTIVE INFORMATION ON EMOTIONAL, ENDOCRINE, AND AUTONOMIC RESPONSES

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Self-focused attention is known to exacerbate negative affects such as depression and anxiety. For example, increasing focus on the state of one’s body may increase anxiety. However, other recent studies have revealed that an increased self-focus decreases negative affect. This apparent discrepancy may be explained by examining the various ways an individual may increase self-focus. Maladaptive self-focus includes conceptual, analytical, evaluative ways of self-focus. On the other hand, adaptive self-focusing includes direct, intuitive, experiential awareness of the moment. Adaptive self-focus is known as one of factors of mindfulness which is the third wave of cognitive behavioral therapy that has been used to treat a range of psychological disorders including depression, anxiety, and fibromyalgia. However, the functional mechanism of mindfulness is still unknown. In this research, we used a within-subject design to investigate the effects of the two ways of self-focus on emotions and somatic responses. We delivered tones which were synchronized to each subject’s (n=16) heart beat. In an adaptive self-focus condition, we instructed the participants to count the heart beat and not to suppress their heart rate. In a maladaptive self-focus condition, we instructed participants to suppress their heart rate and to evaluate how well they were able to do this. In this study, maladaptive compared to adaptive self-focus increased anxiety (P < .01) and decreased positive affect (P < .005). The maladaptive self-focus led to an increase in LF/HF of HRV (P < .01) which reflects cardiac sympatho-vagal balance. That is, the maladaptive self-focus

Abstract 1369

Multiple brain regions are involved in autonomic control. Anterior cingulate (ACC) is involved in parasympathetic control; anterior insula (AI) and amygdala are involved in parasympathetic and sympathetic function. Heart rate variability (HRV) is described by indices derived from spectral analysis of an ECG. High frequency power (HF) reflects parasympathetic vagal tone; low frequency power (LF) reflects mainly sympathetic tone, but is influenced by vagal tone. Total HRV is described by the time domain parameter rMSSD. Healthy male subjects (N=15) performed a task in which they squeezed a handgrip dynamometer. During the task, CBF images were acquired, and ECG signal was captured and analyzed to obtain HF, LF, and rMSSD. Image data were analyzed using SPM2. Small volume corrections were applied to the amygdala, ACC, AI, and lateral orbital cortex (OC).HF was significantly positively correlated to CBF in the left ACC, left OC, and bilateral AI. LF was positively correlated with left ACC, CBF, and negatively correlated to CBF in the right AI. rMSSD, was positively correlated with CBF in the left ACC.

This is consistent with Critchley, et. al., who showed positive correlations between HF and activation in the left ACC and left AI, positive correlations with LF and BOLD activation in the bilateral dorsal ACC, and positive correlations between total HRV and ACC. In contrast, that study also found a positive correlation between LF and activation in the bilateral AI, adjacent to the region in which we found a negative correlation between CBF and LF; however, Critchley orthogonalized the autonomic variables, explicitly removing shared variance. While the exact segregation of autonomic function remains unclear, it is evident that ACC, OC, and AI are important regions in autonomic control, as well as part of a visceromotor network involved in autonomic expression of behavior.

increased sympathetic relative to parasympathetic activity compared to parasympathetic activity- one of the physiological emotional responses elicited by anxiety. The adaptive self-focus reduced salivary cortisol levels more than the maladaptive self-focus after the attention manipulation. However, these effects did not reach to statistical significance.

Abstract 1237

EFFECTS OF TONIC AND PHASIC BLOOD PRESSURE ON SIMPLE PRE-MOTOR AND MOTOR REACTION TIMES
L Edwards, C Ring, D McIntyre, D Carroll, ICHER, U Martin, Medicine, University of Birmingham, Birmingham, UK

Hypertensives, even in the absence of cerebrovascular disease, exhibit minor cognitive deficits. Evidence for impaired psychomotor speed, though, is mixed. However, past studies have not taken account of the effects of baroreceptor activity across the cardiac cycle on information processing speed. We measured pre-motor and motor simple reaction times across the cardiac cycle in 30 hypertensives and 29 normotensives to determine the effects of phasic and tonic blood pressure on performance. Reaction times were determined in response to auditory, visual and tactile stimuli presented at 0, 300 and 600 ms after the R-wave of the electrocardiogram.

Pre-motor, motor and total reaction times did not differ between hypertensives and normotensives at any point in the cardiac cycle (p's=ns). Overall, both groups showed faster pre-motor and total reaction times (p's<.05) as the cardiac cycle progressed, whereas motor reaction times did not vary (see Table 1).

In conclusion, hypertension was not characterised by impaired psychomotor speed, regardless of the timing within the cardiac cycle. That reaction times varied across the cardiac cycle suggests that pulsatile blood pressure can affect psychomotor speed. That this variation was only present for pre-motor but not motor reaction time indicates that these blood pressure effects on reaction time are due to a central mechanism.

Table 1. Grand mean reaction times at 3 intervals of the cardiac cycle collapsed across groups and modalities. Superscripts a and b denote differences (p<.05) from R+300 ms and R+600 ms, respectively.

<table>
<thead>
<tr>
<th>Reaction Time (ms)</th>
<th>R+0 ms</th>
<th>R+300 ms</th>
<th>R+600 ms</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Motor</td>
<td>185</td>
<td>180</td>
<td>177</td>
<td>.001</td>
</tr>
<tr>
<td>Motor</td>
<td>84</td>
<td>84</td>
<td>64</td>
<td>.67</td>
</tr>
<tr>
<td>Total</td>
<td>268</td>
<td>264</td>
<td>262</td>
<td>.001</td>
</tr>
</tbody>
</table>

Abstract 1455

THE CORRELATIONS BETWEEN SELF-RATED STRESS RESPONSE AND SHORT-TERM HRV IN HEALTHY FEMALES
Jong-Min Woo, Neuropsychiatry, Inje University Seoul Paik Hospital, Seoul, South Korea, Joo-Eon Park, Incheon Christian Hospital, Incheon, South Korea

Standardized short-term HRV measurement and self-administered Stress Response Inventory (SRI) were carried out in 441 healthy females. The SRI total scores were negatively correlated with the standard deviation of the NN interval (SDNN) (r=-.103, p=0.032), total power (TP) (r=-.104, p=0.030), and high frequency (HF) (r=-.129, p=0.007), respectively, and positively correlated with HF/low frequency (LF) ratio (r=.111, p=.020) in healthy female subjects when adjusted for age, alcohol drinking, smoking, and caffeine intake. The HRV may reflect the changes of autonomic nervous system responding to stress in females. Furthermore, the short-term HRV measurement may be a possible tool to examine the subjective stress response.

Abstract 1081

HEART RATE VARIABILITY AND BAROREFLEX MEASURES ARE STABLE OVER TIME
Cristina Ottaviani, Psychology, University of Bologna, Bo, Italy, David Shapiro, Psychiatry and Biobehavioral Sciences, UCLA, CA, David M. Davydov, Neuropsychology, Research Center of Narcology, Moscow, Russia, Iris B. Goldstein, Psychiatry and Biobehavioral Sciences, UCLA, CA

Measures of Heart Rate Variability (HRV), Baroreflex Sensitivity (BRS), and the Baroreflex Effectiveness Index (BEI) have been widely used in basic and clinical research. The aim of the present study was to properly evaluate the reproducibility of these parameters. HR (EKG) and BP (Finapres) were recorded in 29 women and 16 men in 2 10-20 min rest sessions. The interval between recordings ranged from 1 to 24 months. FFT was used to calculate HRV in two frequency bands: low frequency (LF) power and high frequency (HF) power. BRS and BEI were obtained by the Sequence method. LF, HF, and total power showed high stability over time (ICC>75); normalized units of LF and HF, and the ratio of LF to HF were moderately reproducible. BRS and BEI measures showed similar medium-to-high stability. Gender, family history of hypertension, personality factors, and time between testing did not affect the degree of repeatability. We conclude that these measures are stable indices of individual differences in autonomic functioning and provide further support for their usefulness in diagnostic and risk assessment studies.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean Difference (SD)</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln LF-HRV (ms^-1)</td>
<td>0.94 (0.9)</td>
<td>81</td>
</tr>
<tr>
<td>ln HF-HRV (ms^-1)</td>
<td>0.17 (0.8)</td>
<td>84</td>
</tr>
<tr>
<td>LF n.u.</td>
<td>0.64 (0.5)</td>
<td>71</td>
</tr>
<tr>
<td>HF n.u.</td>
<td>0.47 (0.4)</td>
<td>56</td>
</tr>
<tr>
<td>ln LF/HF</td>
<td>1.12 (0.8)</td>
<td>72</td>
</tr>
<tr>
<td>In Total Power</td>
<td>0.51 (0.8)</td>
<td>77</td>
</tr>
<tr>
<td>BRS (ms/mmHg)</td>
<td>7.25 (6.9)</td>
<td>68</td>
</tr>
<tr>
<td>BEI (%/100)</td>
<td>0.03 (0.1)</td>
<td>73</td>
</tr>
</tbody>
</table>

Abstract 1748

HEART RATE VARIABILITY IN PATIENTS WITH VASOVAGAL AND UNEXPLAINED SYCONE AND ITS ASSOCIATION WITH MOOD DURING PASSIVE HEAD-UP TILTING
Bianca D’Antono, Psychosomatic Medicine, Montreal Heart Institute, Montreal, Quebec, Canada, Georgetta Sas, Cardiology, Sacré-Coeur Hospital of Montreal, Montreal, Quebec, Canada, Gilles Dupuis, Karine Levesque, Karine St-Jean, Psychosomatic Medicine, Montreal Heart Institute, Montreal, Quebec, Canada, Teresa Kus, Reginald Nadeau, Cardiology, Sacré-Coeur Hospital of Montreal, Montreal, Quebec, Canada

Purpose of the study: To assess whether heart rate variability (HRV) at baseline and in response to head-up tilt (HUT) differs in patients with recurrent vasovagal (VVS) vs. unexplained (US) syncope, and whether negative mood contributes to syncope via alterations in HRV. Sample and methods: Spectral analysis of HRV was performed from ECG recorded in 19 women and 10 men (Xage = 48 yrs) during passive HUT. Data was obtained at baseline, the first and the last 5 minutes of tilting. In patients with VVS (positive HUT), data was also available 5 minutes immediately prior to and post syncope. HRV was calculated in terms of low (LF) and high (HF) frequency components, and the ratio LF/HF. Patients completed the Profile of Mood States (POMS) prior to testing. Analyses included repeated measures ANOVAs and linear regressions, controlling for sex and age. Summary of results: HUT was positive in 11 patients. Syncope type differences in HRV across measurement period: Patients with VVS exhibited higher LF compared to those with US across all periods (P<.006). A significant period by syncope type interaction (P=.002) revealed a significant sharp increase in LF
Psychological data collection was taken by a questionnaire to measure the achievement motivation according to their marks in that questionnaire. The aim of the present research has been to examine the relationship between academic achievement motivation before and after the exam performance. Physiological data (heart rate and blood pressure) were obtained during the exam session by means of the statistical package SPSS v14.0. The results show a relationship between the achievement, physiological response and academic performance. The high achievement group shows the best results in the exam and a faster recovery in the physiological variables. Key words: psychophysiological response, academic achievement.

Abstract 1207

ANXIETY AND DEFENSIVENESS: CARDIOVASCULAR EFFECTS IN AN EVALUATION CONTEXT.

Francisco Palmero, Consolación Gómez, Amparo Carpi, Cristina Guerrero, Basic Psychology, Universitat Jaume I, Castellón, Castellón, Spain

The aim in the present study was to test the relationship between anxiety trait and the level of defensiveness on cardiovascular activity in an evaluation context. The participants (undergraduate psychology students) were divided into three groups (Weinberger, 1990; Weinberger, Schwartz & Davidson, 1979): low on anxiety, repressor and high on anxiety, in line whether their scores on the scales. All of the participants completed the Scale of Trait/State Anxiety, STAI (Spielberger, Gorsuch and Lushene, 1994) and the Marlowe-Crowne Social Desirability Scale, MCSD (1960) -in Spanish version by Avila and Torné (1987) -to measure the level of defensiveness. The cardiovascular activity was registered with the polygraph Biopac MP150 and the System No Invasive of Blood Pressure NIBP100A (heart rate and diastolic and systolic blood pressure).

In particular, we expected that the repressor group, defined by Weinberger as high on defensiveness and low on trait anxiety, will be associated with increased cardiovascular activity (heart rate, diastolic blood pressure and systolic blood pressure) during the task performance, in comparison with the other groups (low on anxiety and high on anxiety).

The results showed that the cardiovascular responses were influenced by the combination between anxiety and defensiveness in the formulated direction of the hypothesis.

Key words: cardiovascular activity, evaluation, anxiety, defensiveness.

Abstract 1248

TYPE D PERSONALITY AND INCREASED CARDIAC OUTPUT DURING STRESS

Lynn Williams, Ronan E. O’Carroll, Rory C. O’Connor, Psychology, University of Stirling, Stirling, Scotland, UK

Distressed personality (Type D), the combination of negative affectivity and social inhibition is an emerging risk factor in cardiovascular disease (CVD). Accumulating evidence from a number of patient groups, including those with chronic heart failure, peripheral arterial disease and hypertension indicates that Type D is an important predictor of clinical and psychological outcome, representing a risk comparable to left ventricular dysfunction. The purpose of the current study is to examine one possible psychophysiological mechanism that may explain the link between Type D personality and adverse prognosis. It was predicted that Type D individuals may experience increased cardiovascular reactivity to stress which can cause damage to the endothelial lining of the arteries and over time lead to thrombosis or ischemia. Eighty four healthy young adults participated, (42 males, 42 females, mean age 22.5 years). Participants completed a number of psychological measures (Type D personality, health behaviour, social support, neuroticism and stress arousal) and a stress protocol involving a mental arithmetic task. Blood pressure, heart rate, cardiac output and peripheral resistance were recorded throughout the experiment. Repeated measures ANOVA show a significant group by time effect of Type D on cardiac output in male participants (p<0.05). Type D males exhibit significantly higher cardiac output during the stressor phase (M=6.75; SD=1.41 lpm) compared to non-Type D males (M=6.36, SD=1.58 lpm). This is an important finding (and suggests that one way in which Type D may affect health is through increased cardiac output during stress).
Abstract 1043

A GENETIC ANALYSIS OF TYPE-D PERSONALITY
Nina Kupper, Johan Donollet, Medical psychology, Tilburg University, Tilburg, Noord-Brabant, The Netherlands, Dorret I. Boomsma, Gonneke Willemsen, Biological psychology, Vrije universiteit, Amsterdam, Noord-Holland, The Netherlands

Type-D personality independently predicts poor prognosis in patients with cardiovascular disease. However, no previous study has determined whether this is a primary response or secondary to central processing needs to be shown in imaging studies in the future. (Supported by a grant from DFG, En 50/25-1)

Abstract 1106

IMAGING PLACEBO RESPONSES IN THE BRAIN
Paul Enoch, Psychosomatic Medicine and Psychotherapy, University Hospitals, Tuebingen, BW, Germany, Sibylle Klosterhalfen, Institute of Medical Psychology, University of Duesseldorf, Duesseldorf, NW, Germany

Wider access to cortical imaging facilities has brought about application of experimental and clinical placebo research aimed at identifying the cortical areas involved in the generation of the placebo response. Three main applications can be distinguished: a) Research in experimental pain has demonstrated that placebo medication is able to activate the same cortical areas that are also activated with respective medications, e.g. the anterior cingulate gyrus for pain control. This would be compatible with a placebo concept that works through Pavlovian conditioning. b) Research in depression and in functional (bowel) disorders has shown that the placebo response is usually associated with strong activation of the (right) prefrontal cortex, and that this activation is able to decrease activation in subcortical centers of the brain that are felt to be responsible for symptoms, e.g. of depression. This would be compatible with placebos to operate via suggestions and expectations. c) Some data in Parkinson’s disease indicate that placebos are also able to activate a brain-specific subthalamic reinforcement center that releases hormones/neuromodulators such as orexin or dopamine; this would refer to a placebo concept utilizing instrumental conditioning procedures. Finally, recent data in experimental pain research indicate placebos to be able to activate spinal (second-order) neuron by inhibiting central sensitization; whether this is a primary response or secondary to central processing needs to be shown in imaging studies in the future. (Supported by a grant from DFG, En 50/25-1)

Abstract 1119

TYPE-D PERSONALITY IS ASSOCIATED WITH BOTH DISEASE-SPECIFIC AND GENERIC MEASURES OF IMPAIRED HEALTH STATUS IN CHRONIC HEART FAILURE PATIENTS
Helle Spindler, Psychology, University of Aarhus, Aarhus, Aarhus, Denmark, Mogens L. Larsen, Cardiology, The Danish Heart Foundation, Copenhagen, Copenhagen, Denmark, Susanne S. Pedersen, Medical Psychology, Tilburg University, Tilburg, Noord-Brabant, Netherlands

The distressed (type-D) personality is a predictor of poor prognosis and impaired health status in cardiac patients. Little is known about the impact of type-D on health status in chronic heart failure (CHF). We investigated whether type-D CHF patients had more impaired health status than non-type-D patients at baseline and 3 months. 108 systolic CHF patients (81.5% men; mean (SD) 62(9) years) completed the Minnesota Living with Heart Failure questionnaire (MLHFQ) and the Short-Form Health Survey (SF-36) at baseline and 3 months. The prevalence of type-D was 21%. Type-D was associated with impaired health status on the MLHFQ and the SF-36 in ANOVA for repeated measures (p<0.05), with mean differences ranging from 5.9 to 31.4. There was no overall change in health status over time (p>0.05) and type-D exerted a stable effect on health status, as indicated by the non-significant interaction effect time by-type-D (p>0.05). The impact of type-D on both disease-specific and generic health status remained significant (p<0.05), adjusting for baseline characteristics. In adjusted logistic regression analyses, type-D was an independent predictor of both disease-specific and generic health status at 3 months, except for SF-36 physical functioning, bodily pain and role physical functioning, with risks ranging from 4.26 to 11.76. Type-D personality was associated with impaired health status at baseline and 3 months in CHF patients using both generic and disease-specific measures of health status. The differences between type-D and non-type-D patients were not only statistically significant but also clinically relevant. These results suggest that CHF patients with a type-D personality require additional intervention in order to experience the same health status as non-type-D patients.

Abstract 1294

HOW DOES TYPE-D WORK? A POSSIBLE ROLE FOR HEALTH-RELATED BEHAVIOUR
Lynn Williams, Ronan E. O’Carroll, Rory C. O’Connor, Psychology, University of Stirling, Stirling, Scotland, UK

The distressed personality (type-D), the combination of negative affectivity and social inhibition, is predictive of adverse outcome and psychological distress in patients with cardiovascular disease (CVD) independent of traditional biomedical risk factors. However, little is known about the mechanisms by which type-D affects health. The current study sought to investigate two possible psychosocial mechanisms within a healthy population from the UK and Ireland. It was predicted that type-D individuals would (a) engage in more health damaging behaviours (e.g. smoking, not exercising) and (b) have lower levels of social support than non-type-D individuals. A further aim was to investigate the prevalence of type-D personality in the UK and Ireland. A cross-sectional design was employed, with 1012 healthy young adults (225 males, 787 females, mean age 20.7 years) from throughout the UK and Ireland completing measures of type-D personality, health behaviours, social support and neuroticism. The prevalence of type-D personality in the current sample was 39%, which is higher than usually reported. In addition, type-D individuals reported performing fewer health-related behaviours compared to non-type-D individuals (p<0.001) and experienced lower levels of perceived social support compared to non type-Ds (p<0.001). These relationships were still significant after controlling for neuroticism. The results of this study suggest that the link between type-D personality and adverse clinical outcome may be explained, in part, by type-D individuals performing fewer health-related behaviours and experiencing less social support than non type-D individuals. Future research is required to investigate further behavioural and psychophysiological mechanisms by which type-D may affect health.
Abstract 1375
PLACEBO EFFECTS ON AUTONOMIC REGULATION OF INNER ORGANS
Karin Meissner, Institute of Medical Psychology, Ludwig-Maximilians-Universitaet Muenchen, Muenchen, n.a., Germany

The mechanisms of placebo effects on peripheral organ systems have scarcely been studied. Recent results of our group favor a model of peripheral placebo effects to be mediated by affecting the autonomic regulation of inner organs. In a systematic review on placebo effects in clinical trials we could show that parameters representing the physical state of an organ or tissue are more susceptible to placebo treatment than parameters representing biochemical substrates. This differential response may be best explained in terms of autonomic learning processes, since neural afferents, and thus a quick central-peripheral feedback loop as a prerequisite for visceral learning, are only provided for physical parameters. Furthermore, in an experimental study on gastric placebo effects we were able to demonstrate that a placebo intervention intended to stimulate gastric activity significantly altered the autonomic tone of the stomach. The fact that the autonomic tone of other organ systems, as indexed by heart rate, heart rate variability, skin conductance and respiration rate, did not change possibly indicates that placebo treatment can selectively affect autonomic regulation of single organs.

Abstract 1372
THE ROLE OF SUBJECT AND EXPERIMENTER GENDER IN PAIN AND PLACEBO ANALGESIA
Magne A. Flaten, Department of Psychology, University of Tromsoe, Tromsø, Norway, Norway

In a previous experiment (Flaten et al. 2006, J Psychosom Res) placebo analgesia was observed in males only, whereas females did not display a placebo response. One possible explanation for this may have been the social context since all procedures were administered by female experimenters. Follow-up studies showed that reported pain was significantly reduced in males when the report was given to a female experimenter compared to pain reported to a male experimenter. Pain report in females, on the other hand, was not modulated by social context. Verbal report of arousal was also modulated the same way as pain, i.e., males reported being more calm in the presence of a female experimenter compared to arousal reported in the presence of a male experimenter. However, heart rate variability indicated increased sympathetic activation in males when a female experimenter was present. These results suggest that verbal report in males is heavily influenced by social context, and that additional measures, less affected by social context, need to be used in the study of pain and placebo analgesia. Data will be presented showing the roles of subject and experimenter gender in placebo analgesia.

POSTER SESSION III

Abstract 1725
ENHANCED STRESS TOLERANCE BY SWEETS CONSUMPTION? CARDIAC AUTONOMIC MODULATION AFTER ORAL GLUCOSE INTAKE IN PATIENTS WITH RISK FACTORS FOR CONGESTIVE HEART FAILURE (CHF)
B Stanske, A Cordes, A Siegert, Psychosematics, M M. Kochen, General Practice, B Pieske, Cardiology, University of Göttingen, Göttingen, Germany, C Herrmann-Lingen, Psychosematics, University of Marburg, Marburg, Germany

Background: Chronic stress is reckoned to be a crucial cardiovascular risk factor by impairment of cardiac autonomic modulation. Consumption of sweets provides a subjective pacifier in most people, but can this be confirmed objectively? Objective: To determine the effect of glucose intake on cardiac autonomic reactivity in cardiac patients [pts].

Methods: Cardiac autonomic modulation in 110 pts (57 male, 53 female; age: 65±7 y.) was assessed by continuous ECG, blood pressure recording and impedance cardiography with computation of hemodynamic and autonomic markers. The test consisted of slow breathing (6/min), mental arithmetic, the Ironson Anger Recall Test and a relaxation period. 60 pts received 75g glucose solution immediately before examination.

Results: By repeated measures analysis of variance with glucose, age group and gender as fixed factors, main effects of glucose were found for reduction of systolic (p=0.03) and diastolic (p=0.02) BP and total peripheral resistance index [TPRI] (p=0.002) as well as increase in stroke index [SI] (p=0.001) and contractility index [IC] (p=0.002). Interaction effects of glucose by test phase were detected for SI, IC, TPRI and acceleration index [ACI] (all p<0.005). SI, IC and ACI of pts with glucose intake [Gluc+] increased during stress tests and remained increased during relaxation period. Contrary, SI, IC and ACI of pts without glucose [Gluc-] decreased below starting values after Anger Recall Test. TPRI of Gluc+ showed minor increases during stress tests and decreased below starting values afterwards whereas TPRI of Gluc- remained increased even in the relaxation period.

Conclusion: Besides mood stabilization, sweets may have modulating effects on cardiac stress reactivity. Moderate sweets consumption during strain seems to be a reasonable automatic coping stragy.

Abstract 1666
COMPLIANCE AND DEPRESSION IN PATIENTS WITH CHRONIC HEART FAILURE
Nicole Holzapfel, Bernd Löwe, Beate Wild, Dieter Schellberg, Psychosomatik, Christian Zugck, Manfred Nelles, Cardiology, Jana Jünger, Wolfgang Herzog, Thomas Müller-Tasch, Psychosomatik, University of Heidelberg, Heidelberg, Germany

This work was supported by the Kompetenznetz Herzinsuffizienz (German Heart Failure Network) funded by the German Federal Ministry of Education and Research (BMBF), FKZ 01GI0205.

Non-compliance is a major problem in the self-management of patients with chronic heart failure (CHF). To examine the role of depression in this context, we investigated self-reported compliance behaviour in CHF patients with and without depression. Two hundred forty-seven patients with documented CHF, NYHA class II-IV, from the heart failure outpatient clinic of the Medical Heart Failure Hospital Heidelberg participated in the study. They completed the German version of the Heart Failure Selfcare Behaviour Scale (EHFSBS) and the PHQ-9 depression scale. If the sumscore of the PHQ-9 was over 8, the Structured Clinical Interview for DSM-IV (SCID) was conducted to establish depression diagnosis. Depressed CHF patients reported significantly lower compliance behaviour than non-depressed CHF patients. This was the case for both depression measures, the self-report PHQ-9 (p=0.001) and the interviewer based SCID (p=0.006). Among the depressed patients, there was a trend that patients with minor depression and dysthymia reported lower compliance behaviour compared to patients with major depression (p=0.06). Depressed CHF patients have presumably more difficulties in their compliance behaviour than non-depressed CHF patients. In addition, the relationship between compliance and depression might not be straight-line, as patients with a minor depression and dysthymia reported somewhat lower compliance than patients with major depression.

Abstract 1499 was withdrawn

Abstract 1348
IS SELF-EFFICACY AT SELF-MANAGEMENT ASSOCIATED WITH PATIENT ADHERENCE IN HEART FAILURE?
Cheryl S. Rucker-Whitaker, Carlos F. Mendes De Leon, Preventive Medicine and Internal Medicine, Rush University Medical Center, Chicago, IL, Kathleen Grady, Internal Medicine, Feinberg School of Medicine @ Northwestern University, Chicago, IL, James H. Calvin, Preventive Medicine and Internal Medicine, Imke Janssen, Preventive Medicine, Lynda H. Powell, Preventive Medicine and Psychology, Rush University Medical Center, Chicago, IL

Purpose. The purpose of this study is to explore the relationship between self-efficacy at self-management and several heart failure related adherence outcomes.

Sample and design: Cross-sectional design using baseline data from heart failure (HF) patients enrolled in a behavioral clinical trial. Patients with either systolic or diastolic dysfunction met predetermined criteria for HF.

A-78
Methods: To assess self-reported adherence to various HF related tasks, participants completed the 10-item heart failure management scale. To assess sodium intake, a validated sodium intake questionnaire was computer scored to estimate a total sodium intake in milligrams per day. Electronic pill caps were used to track adherence to a single medication. A six-item self-efficacy at self-management for heart failure scale assessed the patients confidence at managing the outcomes of interest.

Results. 771 subjects were eligible for participation in this study. Participants were 63.7 (+/-13) years of age, male (52 %), with 43 % having a high school education or less, 36% were minority. Thirty-one percent were NYHA functional class 3, with a mean 3.2 (+/-2) co-morbidities. Self-efficacy was predictive of self-reported adherence (p=0.0001), medication adherence (p=0.005), and sodium intake (p=0.001). When stratified by race, self-efficacy had a stronger effect for minorities than for Caucasians (p=0.0035) when managing sodium. Self efficacy is an important determinant of a patient’s ability to adhere to many complex self-management tasks associated with heart failure. Minority patients with HF may benefit from strategies to improve their self-efficacy at managing required tasks.

Abstract 1798
CENTRAL VS. EFFECTOR MEMORY T CELL TRAFFICKING IN RESPONSE TO A PHYSICAL STRESSOR IN CONGESTIVE HEART FAILURE (CHF)
Suzi Hong, Psychiatry, GCRC Flow Cytometry Core, Don Geske, GCRC Flow Cytometry Core, Meredith A. Pung, Psychiatry, Laura Redwine, Medicine, Sarah Linke, Psychiatry, Barry H. Greenberg, Medicine, Paul J. Mills, Psychiatry, UCSD, La Jolla, CA

Cellular immunity plays a key role in infection and cardiac tissue repair in CHF. Migration of memory Tcells, a major component of cellular immunity, to needed areas is critical. Upon stimulation, central memory (CM) and effector memory (EM) cells migrate to secondary lymphoid organs and inflamed tissues, respectively. We examined CM and EM CD4 and CD8 cell trafficking and CD11a and CD49d expression in 10 CHF and 5 age-matched healthy participants (mean age=61, SD=14). CM cell migration was similar between CHF and healthy subjects but EM cell migration was reduced in CHF patients. CM and EM cell trafficking appeared to be blunted in CHF patients in response to a physical stressor. The potential clinical implications of these findings in CHF warrant further investigation, as efficient trafficking of Tcells is critical in optimal immune functions in this population under physical stress.

Abstract 1843
DEPRESSIVE SYMPTOMS IN HEART FAILURE (HF) PATIENTS ARE ASSOCIATED WITH REDUCED CHEMOTAXIS OF LYMPHOCYTES
Laura S. Redwine, Medicine, Sarah Linke, Psychiatry, Veronica Reis, Medicine, Thomas R. Rutledge, Meredith A. Pung, Suzi Hong, Michael Ziegler, Psychiatry, Barry Greenberg, Medicine, Paul J. Mills, Psychiatry, University of California, San Diego, CA

HF patients are at greater risk than the general population for depression, which is a strong predictor of mortality in HF. The mechanisms are unclear, but immunity may be a mediating factor. Relationships are seen between inflammatory markers and depression in HF; however, few studies have examined cellular immunity despite the interactive nature of cellular and inflammatory activities. Chemotaxis (CTX) of immune cells is critical in the recruitment of cells to sites of inflammation. In HF CTX is involved in cardiac repair and prevention of infection. Thus, this study explored links between depressive symptoms and CTX in HF patients and physically healthy controls at rest and following psychological and bicycle ergonometry tasks.

Twenty HF and 21 controls (mean age = 57, SD = 11.2) completed the Beck Depression Inventory (BDI) and data were divided into groups scoring > 10 versus < 10. CTX was examined in vitro by quantifying fluorescently labeled lymphocyte migration in response to chemotactants, FMLP and isoproterenol (ISO).

There was a main effect for group; controls had greater CTX to FMLP and ISO than HF patients (F = 8.9, p = .006; F = 4.3, p = .049). There was also a group x dose x BDI effect. HF patients with low BDI scores increased CTX to a larger dose of ISO whereas HF patients with high BDI scores did not change, suggesting a high BDI is associated with less sensitivity to ISO. In contrast, controls with high BDI had a greater increase than controls with low BDI in CTX to a larger dose of ISO (F= 4.02, p = .048), suggesting high BDI is associated with increased immune activation to ISO. BDI scores also predicted CTX increases to exercise after controlling for pre-exercise CTX, statin use, HF status and beta-blocker use (t = 2.14, p = .04, Beta = .172).

These findings suggest that depressed mood may relate to decreased cellular immunity in HF patients, which may increase risk for infectious disease and reduced cardiac tissue repair. However in non-HF patients, depressed mood associated augmentation of immune activity may increase risk for inflammatory diseases.
SLEEP ONSET INSOMNIA IN PATIENTS WITH HEART FAILURE (HF) AND DEPRESSIVE SYMPTOMS
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Although sleep complaints are common in HF, few studies have examined this issue directly. We studied self-reported characteristics of sleep in patients with HF and in a group of similarly aged non HF individuals (mean age = 58.7 years, range 35 - 81). Since depression is a common comorbidity in HF and insomnia, we also assessed depressive symptoms. NYHA Class II-IV HF patients with ejection fractions < 40% (n = 27) and insomnia, we also assessed depressive symptoms.

SLEEP ONSET INSOMNIA IN PATIENTS WITH HEART FAILURE (HF) AND DEPRESSIVE SYMPTOMS
Bruce R. Wright, Celestina Barbosa-Leiker, Timothy S. Freson, Health and Wellness Services, Washington State University, Pullman, WA

Despite mounting concern over the increasing prevalence of the metabolic syndrome (MS) in younger populations, controversy exists regarding the key elements of the syndrome and whether obesity or insulin resistance should be considered paramount. This lack of consensus suggests the need for further research to elucidate important early predictors of the MS, thereby facilitating early detection/intervention. The sample consisted of 80 men and 130 women, ages 18-25. The primary outcome variable examined was the number of MS components present (# MetS, eg., 0, 1, 2, or 3) utilizing NCEP ATP III criteria. Psychosocial predictor variables included the Center for Epidemiological Studies Depression Scale (CES-D), and the Spielberger Anger Expression Inventory (Spielberger Ax). Physiological predictor variables included : cardiovascular fitness (VO2max),the inflammatory markers c reactive protein (CRP)and interleukin 6 (IL6), waist-to-hip ratio (WHR, body mass index (BMI) and percent body fat (% BF), and the homeostasis model of insulin resistance (HOMA-IR).

There were no significant bivariate correlations between any of the psychological or socioeconomic variables and the number of MetS. Among men, bivariate correlates of # Met S included % BF, and VO2max. HOMA-IR(B=.434, p<.001) and %BF (B = .388, p<.001) remained as significant predictors following stepwise regression. Among women, bivariate correlates of #MetS included WHR, VO2 max, CRP, IL 6, and HOME-IR. HOMA-IR (B=431, p = .001), VO2 max (B = .243, p = .002) and IL 6 (B=.199, p=.008) remained as significant predictors of the # MetS following stepwise regression. Non-parametric testing (the Kruskal-Wallis and Mann-Whitney tests) demonstrated a significant and graded difference in both HOMA-IR and obesity indices across the four categories of MS components present (0, 1, 2, and 3). These results provide support for inclusion of both obesity and insulin resistance, as well as fitness and inflammation, as important and early independent predictors of the MS.

PREDICTORS OF INSULIN RESISTANCE IN HEALTHY YOUNG ADULTS
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Insulin resistance, dyslipidemia, hypertension, obesity, and inflammation are risk factors for coronary heart disease (CHD). Early detection in healthy young adults can reduce cardiovascular morbidity and mortality; therefore, it is important to analyze the clustering of traditional and non-traditional CHD risk factors in this population. The cross-sectional study included 212 adults between 18 and 25 who participated during 2004. Stepwise regression analyses were conducted separately on males and females to examine the predictive value of risk factors for the homeostatic model assessment (HOMA-IR) and insulin. Structural equation modeling (SEM) analyzed the partial mediating role of CHD risk factors on HOMA-IR. For males, significant bivariate correlates included body mass index (BMI), cardiovascular fitness (CF), total cholesterol/HDL ratio (TC/HDL-C), and systolic blood pressure (SBP). These variables were entered in the stepwise regression and maintained if their p values 0.05. The significant independent predictors of HOMA-IR were BMI (b=.344, p=.002) and TC/HDL-C ratio (b=.284, p<.008), model R2=.223. BMI, (b=.313, p=.004) and TC/HDL-C ratio (b=.284, p<.008) were also significant predictors of insulin concentrations for males, model R2=.224. SEM analyses for males resulted in poor-fitting models using the bivariate correlates. For females, significant bivariate correlates included percent body fat, CF, TC/HDL-C ratio, CRP, IL-6, and SBP. In stepwise regression, the significant predictor of HOMA-IR and insulin was percent body fat (b=.343, p<.001, model R2=.117; b=.401, p<.001, R2=.160 respectively). SEM analyses revealed that body composition and HDL concentrations partially mediated the relationship between CF and HOMA-IR for females (R2=.81). Among these variables, CRP and IL-6 were significant independent predictors of the MS.

SEX DIFFERENCES IN ENDOTHELIAL DYSFUNCTION (ED) AND THE METABOLIC SYNDROME (MS)
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Most of the work reported on the MS has been done on predominantly male samples. We have previously reported that the components of MS are significant predictors of ED. Both EF and MS are predictors of cardiovascular disease outcomes. The current study assessed sex difference in the relationship between ED and MS. ED was measured using a nuclear medicine technique of hyperemic technique in 260 patients (197 men and 63 women) referred for myocardial perfusion stress testing. 4 parameters were derived from the time-activity curves following right arm ischemic challenge. A between arms ratio of uptake (RUR) was calculated using the left arm as control. 3 parameters compare the relative activity of the hyperemic mid-arm with the wrist: the elbow-to-wrist upslope ratio (EWRU), the elbow-to-wrist relative uptake (EWRU) and the peak to steady-state ratio (PSSR). We used the AHA definition of MS, which includes 5 criteria: waist circumference, triglycerides, blood pressure, fasting glucose and HDL cholesterol. General linear models were used to compare difference in the ED parameters between the sexes, controlling for age, and stepwise regression was used to estimate the relationship between the components of MS and each of the measures of ED, in men and women separately. There were no differences in ED measures between the sexes. Stepwise regression analyses on the female sample revealed waist circumference was significantly related to PSSR (r=2.4). In men, DBP (r=2.3)
and waist circumference (t=−3.2) were related to RUR, SBP (t=2.2) was related to EWUR, and HDL cholesterol (t=−2.1) was related to EWRU. There were no other significant associations of MS with ED. All p < .05. These results indicate that the AHA definition of MS, when used with men, is a good predictor of ED. The single predictor of ED in women was not significant for men. Further research is needed to document women specific predictors of ED.

Abstract 1585
PHARMACIST-LED CARDIAC RISK REDUCTION CLINIC REDUCES FRAMINGHAM RISK SCORE IN PATIENTS WITH DIABETES AND MENTAL ILLNESS
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Persons with diabetes and mental health conditions (MHCs) have higher rates of cardiovascular disease (CVD) risk factors, are less likely to achieve CVD risk reduction goals and are more likely to have increased mortality due to CVD. The Cardiovascular Risk Reduction Clinic (CRRC) is a pharmacist-led, pharmaceutical case management clinic at the Providence VA Medical Center targeting hypertension, dyslipidemia, diabetes and tobacco use according to pre-established algorithms in patients with diabetes. We have shown efficacy in reducing Framingham Risk Score in patients with diabetes, but are uncertain whether the presence of a MHC attenuates the treatment effect of the CRRC. Therefore, we compared the change in Framingham Risk Scores before and after the CRRC intervention for those with and without a MHC.

At baseline and last CRRC visit, systolic blood pressure, HDL cholesterol, total cholesterol and smoking status were abstracted from the records of patients who had at least one CRRC visit between January 2001-2002. Patients were considered to have a MHC if documented in the medical record. Our main outcome was the FRS and its components.

375 patients were seen in the CRRC during the study period, of whom 47.5% had at least one MHC. Patients with MHC had a mean age of 60.6 ± 9.7 years, an average of 4.3± 2.6 CRRC visits every 6 weeks, and a baseline Framingham Risk Score of 14.2. Patients without MHC had a mean age of 69.2 ± 9.3, an average of 4.2 ± 2.5 CRRC visits every 6 weeks and a baseline Framingham Risk Score of 14.8 (P = NS vs. with MHC). The decrease in Framingham Risk Score was -1.3 ± 2.2 for those with a MHC and -0.5 ± 1.6 for those without (p<0.0003).

Our findings indicate that the CRRC model can be applied to patients with diabetes and MHC with good success. Future work will focus on implementation of the CRRC to other healthcare systems.

Abstract 1433
POSITIVE AFFECT UNIQUELY PREDICTS LOWER RISK OF MORTALITY IN PEOPLE WITH DIABETES
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Depressive mood is associated with poorer glycemic control, increased symptoms and complications, poorer adherence to exercise and diet recommendations, increased health care expenditures, and even increased risk of mortality in people with diabetes. However, how positive affect may modify this risk has not been extensively studied. Therefore, we examined the association of positive affect with mortality in a prospective cohort of people with diabetes.

We included 715 people with self-reported diabetes. We measured positive and negative affect with subscales from the CES-D. The positive affect subscale consists of 4 items (happy, enjoyed life, just as good as other people, and hopeful). Participants were asked the CES-D one time, in 1982. The dependent measure was the date of death from any cause up through 1992. Among those with diabetes, the positive affect subscale was significantly associated with lower risk of mortality (HR = 0.87, 95% CI = [0.76-0.99], p = .04). When the 4 items from the CES-D positive affect subscale were examined as individual predictors, enjoyed life was associated with lower risk of mortality over and above the effects of negative affect (HR = 0.88, CI = [0.79-0.99], p = .03). The present findings add to the growing literature that positive affect is associated with lower risk of mortality, independent of the effects of negative affect and suggest the possibility that different positive affects may have differential effects on physical health.

Abstract 1486
NO INCREASED RISK OF DIABETES AMONG ANTIDEPRESSANT USERS
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An association between depression and diabetes has frequently been observed, but the direction of the association is not clear. The objective of this study was to determine whether antidepressant use, as a proxy for depression, increased the incidence of diabetes. To evaluate whether an effect of antidepressant use could be attributed to a pharmacological effect we distinguished between different types of antidepressants. In addition, we compared incidence rates of diabetes in antidepressant users with those of benzodiazepine users because benzodiazepines are not known to disturb glucose metabolism. We used prescription data of approximately one million residents of The Netherlands that were available through the PHARMO database. Identified were subjects using: (1) no antidepressants (AD) and no benzodiazepines (BN); (2) AD but no BN; (3) BN but no AD; (4) AD and BN. Subjects were followed up until either death, registration or end of study. Incident diabetes was defined as the first prescription of an oral hypoglycaemic agent and/or insulin after start of AD or BN use.

60,516 subjects were included in the analysis, of whom 42.1% were male and mean age (sd) was 45.5 (17) years. After adjustment for age, gender, insurance type and chronic disease score the hazard ratios (HR) (95% CI) were 1.21 (1.02-1.43) for users of AD but no BN, 1.32 (1.02-1.68) for users of BN but no AD and 1.37 (1.12-1.68) for AD and BN users, compared with users of neither AD nor BN. Within the group of AD users, there was no difference in incidence of diabetes between users of SSRIs (specific serotonin reuptake inhibitors) and TCAs (tricyclic antidepressants). No increased risk of diabetes was observed among antidepressant users and no difference was seen between users of either SSRIs or TCAs. These results suggest that neither depression nor antidepressants increase the risk of diabetes. The increased risk of diabetes among benzodiazepine users could be partly explained by comorbidity and may be further explained by more detection of diabetes in benzodiazepine users.

Abstract 1538
EFFECTS OF MENTAL STRESS ON AUTONOMIC REFLEXES IN PATIENTS WITH TYPE 2 DIABETES AND ALBUMINURIA - A PILOT STUDY
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Microalbuminuria is a marker for microvascular disease and cardiovascular risk in type 2 diabetes mellitus (T2DM). The purpose of the study was to evaluate parameters of autonomic control between T2DM patients with albuminuria (>20mg/l) and T2DM controls without albuminuria in a standardized setting. Following a period of relaxation (P1) patients had to perform an arithmetic test (S1) and the Stroop color-word conflict test (S2). These tests were again followed by a period of relaxation (P3). Changes of heart rate variability as detected by frequency range (heart ratio =HR) and different aspects in blood pressure (RR interval =RRI, systolic blood pressure =SBP, diastolic BP =DBP) were measured as markers of autonomic control. In addition, patients gave subjective ratings of their arousal during P1, S2 and P3.

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emotions. The girls will be unable to fulfill the role of the adequately immersed in their negative moods, develop a traumatizing face-to-face instrumental in explaining the mechanisms of a transgenerational transmission of depression-induced diabetes, at the same time might be exocrine stimulations. The effect may serve as a causal role in the depressive conditions, may result in prediabetic state and sometimes might The chronically elevated blood glucose level, as a consequence/correlate of CVD predictors.

Both psychological factors and the metabolic syndrome (MS) have been associated with an increase in cardiovascular disease (CVD) morbidity and mortality. However, little is known about the relationship between these two CVD predictors. Methods: A total of 214 patients underwent a standard medical assessment, a psychiatric interview (PRIME-MD), and completed standard psychological questionnaires (Beck Depression Inventory-II (BDI), Anxiety Sensitivity Index (ASI), and the Whitley Index of Hypochondriasis (WI)). As per the AHA guidelines, the presence of MS was defined as having 3 out of the 5 following abnormalities: central adiposity; elevated triglycerides; high blood pressure; high glucose; or reduced HDL cholesterol. General Linear Models were used to explore the relationship between psychological factors and the MS, with age and sex as covariates.

Results: A total of 84 patients had the MS and 130 did not. Compared to patients without the MS, patients with the MS had significantly higher levels of major depression (F=5.43, p<0.02; 9% vs 2%) and hypochondriasis (F=4.89, p<0.03; Mean (SE) WI = 26.5 (0.8) vs 24.3 (0.6)), and tended to have higher levels of depressive symptoms (F=2.82, p=0.09; Mean (SE) BDI = 9.5 (0.8) vs 7.8 (0.6)). Conclusion: These results suggest that there is a high co-occurrence of psychological distress and MS. Further studies are needed to assess the joint impact of these 2 factors on CVD progression.

A NEW LOOK AT PSYCHOSOMATIC INTERACTIONS: GENDER DIFFERENCES IN THE INTERGENERATIONAL APPEARANCES OF DEPRESSION AND TYPE II DIABETES MELLITUS
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The chronically elevated blood glucose level, as a consequence/correlate of depressive conditions, may result in prediabetic state and sometimes might lead to type II diabetes. Our investigations on rat and mice pancreatic tissue slices revealed an increased sensitivity of pancreas to a wide range of exocrine stimulations. The effect may serve as a causal role in the pathogenesis of depression-induced diabetes, at the same time might be instrumental in explaining the mechanisms of a transgenerational transmission of depression. Depressed mothers being unable to regulate their baby's emotions, fail to teach them the ways to cope with stress. These mothers immersed in their negative moods, develop a traumatizing face-to-face relationship with their offsprings. Consequently, the growing child will habitually experience chronic difficulties in coping with stress and negative emotions. The girls will be unable to fulfill the role of the adequately mirroring, "good enough" mother therefore - a generation later-herself will be unable to regulate her own baby’s emotions. While the expected conservative female gender role and coping strategies, attached to it, force the to be mothers to exhibit depressive symptoms in response to stress, the conservative male gender role prefers suppressing symptoms of depression, often leading to development of (cardiovascular, gastrointestinal, endocrine) psychosomatic ailments. The vicious circle, appearing as a consequence of the observed parallel functional loss in both exocrine and endocrine pancreas, can be prevented or interrupted by offering psychotherapeutic help of depressed mothers in the perinatal period.
FUNCTIONAL MAGNETIC RESONANCE IMAGING STUDY OF COGNITIVE FLEXIBILITY IN ANOREXIA NERVOSA USING THE WISCONSIN CARD SORTING TEST

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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 twofold: firstly, to evaluate cognitive function under the Wisconsin Card Sorting Test (WCST), which is a neuropsychological task for testing cognitive flexibility. Because rule changes frequently occur during this task, subjects are forced to react to the changes flexibly (i.e., cognitive shift is required). Secondly, to evaluate the brain function with functional magnetic resonance imaging (fMRI) under WCST. Ten female AN patients (6: restrict type, 4: binge-purge type) and 12 healthy control women (HC) participated in this study. Their age was almost same (AN 23 ± 4 (mean ± SD) y.o. vs. HC 22 ± 3 y.o., n.s., Mann-Whitney U test), but the body mass index (BMI) was lower in AN (14.9 ± 1.7 kg/m2) than in HC (20.7 ± 1.3 kg/m2) (p < 0.01). Computerized WCST containing 128 trials were loaded to the subjects, and calculated the correct response rate, the number of category achievement, and Milner’s perseverant errors (PEM: an index of persistency). During the task, brain activity was recorded with event-related fMRI. AN showed significantly poorer performance in the correct response rate (AN 68.9 ± 5.6 % vs. HC 75.8 ± 3.4 %, p < 0.01) and the number of category achievement (AN 14.0 ± 2.9 vs. HC 16.7 ± 1.3, p < 0.01). PEM (AN 9.0 ± 7.0 vs. HC 4.9 ± 3.1, p = 0.079) tended to be higher in AN. The activity in the left inferior frontal gyrus (Brodmann Area 46) was significantly lower in AN than in HC when set shifting negative feedback was presented (p < 0.001, uncorrected, two sample t-test), whereas the response to positive feedback was not different (n.s.). Set shifting specific prefrontal hypoactivity in AN may be responsible for their impaired cognitive flexibility.

SUCCESSFUL PHARMACOTHERAPEUTIC TREATMENT OF ANOREXIA NERVOSA BY A COMBINATION OF MIRTAZAPINE AND FLUOXAMINE: A CASE REPORT

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OBJECTIVE: In many cases the pharmacotherapeutic treatment of anorexia nervosa is unsatisfactory. We report a case of successful pharmacotherapeutic treatment of this eating disorder.

CASE SUMMARY: A 40-year-old woman with a 6-year history of anorexia nervosa restrictive type (Body mass index 15) and comorbid recurrent major depressive disorder was being treated with outpatient psychotherapy. In combination with psychotherapeutic treatment several antidepressants were prescribed successfully. At last a medication of mirtazapine (45mg) was given for 6 month without a significant improvement of symptomatology. After fluvoxamine (50mg) was added, a slightly reduced medication of mirtazapine (30mg), the patient could rapidly gain weight (from 43 to 53kg; Body mass index 19) and she reported a significant improvement of mood. In the following months she could keep her weight and accept the associated bodily changes more easily. As a side effect she suffered from skin rashes, which disappeared after three month of dermatological treatment. In the following three years - up to the present day - the patient could keep her weight under this medication and did not suffer from depressive disorder.

DISCUSSION: The possible causes of this favourable treatment outcome are discussed, including the effects of fluvoxamine and mirtazapine alone and the possible pharmacodynamic and pharmacokinetic interactions of these two drugs. If these agents are prescribed concomitantly, clinicians must be aware of possible interactions that could lead to serotonin syndrome and they must be able to recognize serotonin syndrome, which is associated with tremors, restlessness, twitching, flushing, diaphoresis, and nausea.

PERCEIVED-STRESS AND HEALTH-RELATED QUALITY OF LIFE IN LOW-TEEN GIRLS WITH RELATION TO THEIR EATING DISORDER ATTITUDE

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The objective of this research was to evaluate perceived-stress, health-related quality of life (HR-QOL) and eating disorder attitudes in a group of 15-year-old girls. A total of 888 girls, 76.9% of actual distribution, responded to this study. Questionnaires contained the Eating Attitude Test (EAT-26), Generalized Self-Efficacy Scale (GSES), SF-36 and other questionnaires for sleep and perceived stress. Subjects were divided into two groups according to EAT-26 scores, high scores (hi-EAT) (score ≥ 20, n=47, 5.3%) and low scores (lo-EAT) (score < 20, n=841, 94.7%). Average Body mass Index (BMI) was 20.7 in hi-EAT group and 20.2 in lo-EAT group (t-test), whereas the response to positive feedback was not different (n.s.).

Though the Hi-EAT girls did not show clinically overt eating disorders, their HR-QOL and sleep quality were significantly impaired and they had more perceived stress. These results suggest that Hi-EAT girls may be considered to have a pre-eating disorder, and early intervention may be important for them.

THE SIGNIFICANCE OF DEPERSONALIZATION IN EATING DISORDERS

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The purpose of the present study was to reanalyze data from a multicenter study of inpatient treatment of eating disorders in order to examine how patients with depersonalization (DP) differ from patients without DP. Scores on the Eating Disorder Inventory (EDI) were measured at admission, discharge and 2.5-year follow up. The sample consists of 1171 inpatients with eating disorders (AN n= 355, BN n= 647, AN&B N n= 196). At admission, 309 patients had a score on the DP subscale of the Narcissism-Inventory > 37.5, which is very specific for pathological DP; whereas 271 patients scored in the range of none or only mild DP. Analysis of variance with correction for the GSI of the SCL-90R revealed differences between the two groups (see Table 1, legend: The mean differences between the two groups are displayed as effect sizes; 2-tailed level of significance ***p<0.001, **p<0.01, *p<0.05). Pathological DP at admission seems to be an index of disease severity, which is: 1) related to poorer outcome at discharge and at 2.5-years follow up and 2) associated with too much “Perfectionism”; and “Interceptive Awareness”.

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<th>Table 1: Course of EDI scores - effect of DP</th>
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ASSERITIVE BEHAVIOR AND COPING STRATEGIES IN SUBGROUPS OF EATING DISORDER
Tamás Tölgyes, Zsolt Unoká, Pál Czobor, Department of Psychiatry and Psychotherapy, Semmelweis University, Budapest, Hungary

The objective was to examine eating disorder (ED) subtypes, as defined by DSM-IV, exhibit specific characteristics in terms of assertive behavior and coping style. Subjects were patients suffering from Restrictive Anorexia Nervosa (RAN), Binge/purging type Anorexia Nervosa (BPAN) and Bulimia Nervosa (BN), respectively, who were treated in an in-patient or out-patient clinic. Rathus Assertiveness Scale (RAS) was applied to measure assertive behavior; the total and 5 subscale scores of the RAS, as defined by a factor analysis on a Hungarian population, were used as dependent variables. Seven subscales of Folkman-Lazarus Ways of Coping Questionnaire [WOCQ] (Hungarian version, revised form) was used to index coping style. The 2 inventories were filled out by 73 RAN, 46 BPAN, 87 BN patients as well as a control group of 67 healthy young women. General linear model (GLM) analysis was applied to examine the differences of the ED subgroups and control group in terms of their assertiveness and coping strategies. The 3 ED subgroups showed significantly (p<0.05) lower assertiveness than the control group on the total and 3 subscale scores of RAS: indecision/self-esteeem p = 0.04;, lack of purpose p = 0.0001; and impulsiveness p = 0.0001. On the subscales of 'inability to express emotions' and 'assertiveness in customer situations' the RAN and BPAN group displayed significantly lower level of assertiveness than the control group. On the coping inventory, each ED subgroup was characterized by lower values on the 'planful problem solving' and 'positive reappraisal' subscales than the control group; the differences between BN and BPAN groups vs. controls reached significance. On the subscales of 'emotionally motivated actions' and 'escape/avoidance', the ED subgroups showed higher scores than the controls; the differences of BN and BPAN groups vs. control were significant. The findings of this study indicate that patients with ED have serious difficulties in assertive behavior, and prefer, in stress situations, inadequate, emotionally motivated strategies to the purposeful, effective solution.

VIRTUAL REALITY AND AUDIOVISUAL EYEGLASS SYSTEMS AS ADJUNCT ANALGESIC TECHNIQUES: A REVIEW OF THE LITERATURE
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This review focuses on the application of technologically advanced methods of audiovisual distraction as adjunct analgesic techniques, more specifically (1) Virtual Reality (VR) and (2) A/V eyeglass systems (A/V distraction). It is assumed that distraction taxes the patient's limited attention capacity, resulting in the withdrawal of attention from the noxious stimulus with a subsequent reduction in pain. Twenty peer-reviewed studies evaluating the analgesic potential of both methods in different patient groups and in healthy volunteers were identified in the scientific literature. Applications were mainly found in burn wound patients (changing dressings), dentistry, applying catheters, and experimental pain procedures. Although the majority of these studies are hampered by serious methodological drawbacks, particularly a small number of participants, the results nevertheless strongly suggest that both VR and A/V distraction can be a very promising analgesic technique that may be used safely and effectively for the reduction of pain and discomfort during medical procedures. An additional important aspect is that few negative side effects have been reported. Finally, directions for future research are presented.

PREVALENCE AND PSYCHOSOCIAL CORRELATES OF RECURRENT PAIN IN CHILDREN: A CANADIAN POPULATION-BASED STUDY
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This study was designed to investigate the prevalence of recurrent pain (headaches, stomachaches, and backaches) in a population based Canadian sample of children. Furthermore, it provides insight to the sociodemographic, personal, and contextual stress and coping correlates of these pains. Using self-report data from the National Longitudinal Survey of Children and Youth this study investigated the prevalence and predictors of recurrent pain. Subjects were from a population-based sample of Canadian children, aged 12 and 13 years old. The sample was representative of ethnicity, location, and socioeconomic status of Canadian families. Pain was measured using child reports of frequency of pain. Recurrent pain in children is very common; headaches occur most frequently, followed by stomachaches and backaches. Over 15% of children reported having headaches, backaches, or stomachaches once a week or more. Of these, 3.4% (n=68) of children reported headaches most days, 1.4% (n=27) reported stomachaches most days, and 1.3% (n=23) reported backaches most days. Over one third of pain occurred with moderate correlates (p<0.001); headache & stomachache r=.45, headache & backache r=.34, and stomachache & backache r=.35. Sex differences were found; headaches (chi²(4, N=1998)=23.59, p<0.0005) and stomachaches (chi²(4, N=1987)=38.36, p<0.0005) occurred more frequently in girls than boys. Several correlates of pain were established. Depression and parental rejection were significant predictors of all three types of pain using multiple regressions. Personal factors (i.e. depression for all three pains, and emotional disorder for headache and stomachache) accounted for the majority of the variance in this model. Headaches, stomachaches and backaches are indeed very common in Canadian children. Furthermore, to date there are no large population based studies of children investigating the prevalence or correlates of recurrent pains. This suggests that there is a need for more research in this area as a significant number of children are affected by pain on a frequent basis. Furthermore, a comprehensive model is needed to explain the prediction and maintenance of recurrent pain in children.

THE HEALTH AND TRAUMA CORRELATES OF CHRONIC ABDOMINAL PAIN AMONG PATIENTS WITH CHRONIC PELVIC PAIN
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Chronic pelvic pain (CPP) is a highly prevalent gynecologic diagnosis with heterogeneous symptomatology, pain, health related dysfunction, and response to treatment. Although many patients with CPP have chronic abdominal pain as part of their clinical presentation, including some with comorbid irritable bowel syndrome (IBS), CPP also includes patients with more focused types of gynecological pain (e.g., vulvovaginal pain, cyclic pain). The goal of the current study was to examine how the presence of chronic abdominal pain and IBS may be associated with health status and trauma history among a heterogeneous group of patients diagnosed with CPP. We hypothesized that patients with chronic abdominal pain and the subset meeting Rome II criteria for IBS would have more overall pain, worse health related quality of life, more pelvic surgeries, and more trauma compared to CPP patients without these symptoms. We studied 278 women who were consecutively seen in a pelvic pain clinic (80.1% response rate). Because abdominal pain and IBS were correlated with education but not age and race, we analyzed data controlling only for education using the general linear model with IBS and chronic abdominal pain as class variables. Chronic abdominal pain was common among those with CPP (64.0%); 21.9% had IBS. Average age was 35.6 years (SD=10.4), average education was 15.3 years (SD=2.4), and 80.6% were white, non-Hispanic. As hypothesized, those with chronic abdominal pain had on average more trauma (p=.003), pelvic surgeries (p<.0001), pelvic pain on the McGill pain questionnaire (p=.0001), and physical health dysfunction (SF-12) (p<.0001) compared to those without abdominal pain. Chronic abdominal pain was not significantly related to mental health function, although a common comorbidity, was not related to any health or trauma variables. Given the
heterogeneity of CPP, it appears that patients having chronic abdominal pain had worse health and previous trauma compared to those without this symptom (e.g., more focused pain). Understanding the differences among patients with CPP may lead to better treatments for these refractory patients.

Abstract 1017
ALEXITHYMIA IN CHRONIC PELVIC PAIN
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The term “alexithymia” was coined by Sifneos in 1973 and referred to a clinical-descriptive concept essential for understanding the somatization process caused by affection emotional problems. There are very few studies on the relationship between quality of emotional expression and chronic pelvic pain. As this is the objective of this study, the quantitative focus was on the total number of subjects and the qualitative focus was on 8 subjects randomly chosen from each group. The quantitative approach was conducted with two groups of 80 women each. One group consisted of patients with chronic pelvic pain and the other group was of individuals without this pain. The results demonstrated that the group of women with chronic pelvic pain had a lower level of education, smaller income and a larger number of children. The TAS-20 score of this group was higher, especially in the subgroup of women who were conjugally united. The qualitative analysis revealed few differences between the groups regarding quality of life just related to future plans. The group without pain presented more abstract, individual and subjective expectations, while the group with pain revealed more concrete, objective and collective expectations. This study confirmed the findings of previous studies that had revealed a relationship between chronic pain, poor educational level and low income.

Abstract 1295
DAILY PAIN PREDICTIONS AMONG PEOPLE WITH RHEUMATOID ARTHRITIS
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The match/mismatch model of pain predictions (Rachman & Lopatka, 1988; Rachman & Amtz, 1991) was tested with a group of rheumatoid arthritis patients (N=227) in a natural setting. Daily diary measures of pain prediction and pain experience were obtained over a 30-day time period. Results showed that there was a significantly greater number of underpredictors (N=147) than overpredictors (N=58) in our sample, chi square(2) = 112.767, p<.001. People modified their predictions to a significantly greater degree after an overprediction than they did after an underprediction, t(172)=-4.15, p=.001. To the authors' knowledge, this was the first study to examine the relation of pain prediction to pain experience among people with a chronic pain condition in a natural setting. The authors argue that daily diary methodology is an advancement in the study of pain predictions among the chronic pain population and should be examined in conjunction with traditional laboratory manipulations of pain prediction and pain experience in future studies.

Abstract 1691
ALEXITHYMIA AND INVOLVEMENT IN MEDICAL DECISIONS AMONG PATIENTS WITH RHEUMATOID ARTHRITIS
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Purpose: To study the prevalence of alexithymia in a sample of patients with rheumatoid arthritis (RA), to examine the relationship of alexithymia to pain and other symptoms and potential confounders, and to investigate the relationship between alexithymia and patients involvement in medical decision making.

Methods: Questionnaires on alexithymia, depressed mood, disability, pain efficacy, pain, fatigue, involvement in medical decision making and other health care variables were filled in by 867 subjects from the Oslo RA Registry. Associations between the variables were analysed.

Summary of results: The prevalence of alexithymia was 13.8 % in the total sample, 13.2 % among females and 16.0 % among males. Alexithymia was strongly correlated with depressed mood (.40, p <.0001) and to a lesser extent with other clinical variables. However, and the association between alexithymia and clinical variables (disability, pain efficacy, pain, fatigue) disappeared when depressed mood was controlled for. There was a significant negative association between alexithymia and the experience of involvement in medical decisions, which held up in a logistic regression analysis even when depressed mood and other potential confounders were controlled for (OR =.53 (.35-.79)p <.01).

Conclusion: The prevalence of alexithymia was similar to findings in samples of healthy individuals in the same age ranges. Associations between alexithymia and pain were mediated through depressed mood but there was an independent negative association between alexithymia and the experience of having been involved in medical decision making.

Abstract 1582
THE ROLE OF DEPRESSION ON DAILY PAIN AND PAIN COPING IN RHEUMATOID ARTHRITIS PATIENTS
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Pain is a major concern of patients with Rheumatoid Arthritis (RA), a common musculoskeletal disease with a common depression comorbidity (Covic et al., 2006). Previous research has shown that both pain and depression are correlated with pain catastrophizing, a negative coping strategy, and inversely with positive coping strategies such as pain control and pain coping efficacy. Few studies have examined the influence of depression on the adaptation to pain in everyday life. This study focused on the joint influences of depression and pain on the daily reports of catastrophizing, pain control and coping efficacy among patients with RA. It was hypothesized that both depression and pain would predict higher catastrophizing and pain control and coping efficacy in chronic pain patients. Further, depression would influence these relationships such that, on days of high pain, depressed participants would catastrophize more and have less pain control and coping efficacy. To test these relationships, a sample of 177 RA patients was initially assessed for depressive symptoms and then measured on daily pain and outcomes of catastrophizing, coping efficacy, and pain control over 30 days of diary measures. Multi-level analyses found direct relationships between depression and pain and outcome measures of coping efficacy, catastrophizing, and pain control. Average between-person pain was found to account for the relationship between depression and pain control, but not for the relationship between depression and pain efficacy or catastrophizing. More interestingly, there were significant daily pain by depression interactions showing that the RA patients with initially high depression catastrophized more (t =4.87, p <.01) and had less coping efficacy (t = -2.65, p < .01), when their daily pain was high. These findings suggest that depression may exacerbate the already strong relationship between pain and catastrophizing and weaken the capacity of the patient to mount an adaptive coping response.

Abstract 1576
THE IMPACT OF MULTIPLE EPISODES OF DEPRESSION ON DAILY PERTURBATION OF DEPRESSIVE SYMPTOMS IN RHEUMATOID ARTHRITIS PATIENTS
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Past depression has been thought to leave a psychological 'scar' with residual vulnerabilities (Shahar and Davidson, 2003; Tranter et al., 2002) and the 'kindling' hypothesis also suggests that future episodes are more likely with each prior episode (Kendler et al., 2000). This study sought to explore this compounded vulnerability on daily reports of depressive symptoms in 209 male and female Rheumatoid Arthritis participants. A history of major depressive episodes was assessed using the Structured Clinical Interview for Depression (SCID); daily reports of depressive symptoms were measured with
a 5-item scale designed for diary use. Three groups were formed: those with no history of depression, those with one past episode of depression and those with two or more episodes of depression. Three participants who were currently depressed were dropped from these analyses. Comparisons were then made between groups on average depressive symptoms across 30 days, variability in depressive symptoms, number of days of symptom stability, and number of days of low symptoms across 30 days. A series of One-Way ANOVAs with Tukey post-hoc analyses showed the following: Those with 2 or more episodes of depression compared to those with no history or one episode had significantly higher average daily levels of depression (F(2,204) = 16.04, p < .01) and higher day to day variability in depressive symptoms (F(2,204) = 15.12, p < .01). Those with two or more episodes had fewer days without change in symptoms (F(2,204) = 11.47, p < .01) than those with no history or one episode of depression. Lastly, those with two or more episodes, compared to those with no history of depression, had fewer continuous days of low symptoms without perturbation (F(2,204) = 5.6, p < .01.) These findings suggest greater attention needs to be paid to multiple episodes of depression in the study of risk factors associated with poor adaptation among those with chronic auto-immune conditions.

Abstract 1623

PSYCHONEUROLOGICAL PROFILE IN FIBROMYALGIA

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The aim was to test for a psychoneurological profile in fibromyalgia (FM) patients. 16 FM patients and matched controls were studied. Patients were diagnosed by the American College of Rheumatology criteria for FM. Psychological assessments included the Fibromyalgia Impact Questionnaire (FIQ), Review of Current Symptoms Questionnaire, Experiences in Close Relationships (Revised) and hemisphere dominance. Physiological assessments included Review of Current Symptoms Questionnaire (RCS), heart rate variability (HRV) through time and frequency domain analyses, and salivary cortisol. Results showed significant differences between patients and controls for the number symptoms score (51.7 SD 23.9 vs 4.33 SD 5.33; p=0.0001), number of traumatic events (5.5 SD 4.44 vs 2.07 SD 0.96; p=0.0071), anxiety and avoidance subscales of ECR-R (anxiety: 3.45 SD 1.46 vs 1.95 SD 0.88; p=0.0437), and a cluster analysis showed lower HRV in patients, especially in the standing position (total power: 173.21 SD 309.57 vs 473.59 SD 548.73; p=0.0437), and a weakened sympathetic response to standing. Results showed a distinct psychoneurological profile in terms of attachment style, cerebral dominance, psychological profile, cortisol, HRV, and responses to stressors.

Abstract 1703

FIBROMYALGIA AND SUBGROUPS: INTERACTIVE ASPECTS

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Aim of the present study was the investigation of Fibromyalgia (FM) subgroups particularly considering interactive aspects. The values of 35 inpatient female FM-patients in some self-rating inventories (BDI, IIP-D, PSKB, SOMS, CSQ, BFKE) and in their facial-affective behaviour (EMFACS) were used. Statistical procedures were cluster analysis, the impact of variables on cluster membership was analysed by logistic regressions. As control group data from 20 healthy women were used. Cluster analysis resulted in a 3-cluster-solution:

Cluster 1 (N: 11): highest levels of stress, interpersonal problems, action proneness, catastrophizing and avoidance. Their facial affective behaviour is characterized by the highest expressions of negative affects, their leading affect in mutual gaze is disgust. These patients show the most discrepancies in comparison to the control group. This membership is predicted by many affects in eye contact (odd ratio (OR): 1.62), above all by strong disgust (OR: 1.26), by negative affects (OR: 1.06) and by high anxieties (OR: 0.036).

Cluster 2 (N: 6): lowest values in pain intensity, impairment, in catastrophizing, in stress as well as in medical treatments, the lowest duration of sick leave and the lowest frequency of a wish for early retirement. Their facial affective behaviour is characterized by the highest expressions of genuine joy (leading affect). These patients are closest to the control group. This membership is predicted by high expressions of joy (OR: 4.92) and by low impairment (OR: 0.8).

Cluster 3 (N: 18): highest pain intensity and impairment as well as the highest frequency of a wish for early retirement (80% of patients). Their facial affective behaviour is dominated by a high expression of social smile and by a reduction of affects in mutual gaze. This membership is predicted by the lack of facial expressions in eye contact (OR: 0.24) and by the wish for early retirement (OR: 0.01).

Results indicate that a differentiation of FM-subgroups can be helpful to understand physician-patient relationships and to specify FM-therapy.

Abstract 1670

SALIVARY CORTISOL PATTERNS IN FIBROMYALGIA: RELATION TO DAILY MEASURES OF AFFECT, PAIN, FATIGUE, AND STRESS

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HPA axis abnormalities have been observed in fibromyalgia (FM), but it remains unclear whether cortisol levels in FM are elevated, lowered, or normal. Moreover, little is known about relationships between cortisol and affect, pain, fatigue, or psychosocial stress under naturalistic conditions, or whether such relationships are specific to FM.

In this study, 35 women with FM and 35 women with osteoarthritis (OA) collected saliva at 10 AM, 4 PM, and 8 PM and completed self-reports each evening for 30 days. Compliance was monitored electronically. Multilevel regression analyses were used to estimate between- and within-person effects on cortisol.

Results showed no differences between FM and OA in basal cortisol levels or diurnal slopes. Individual differences in cortisol profiles were not related to average levels of symptoms, stress, or affect in either FM or the total sample. Day-to-day variability in cortisol levels in FM was associated with within-person changes in negative affect (p < .001), but not with changes in positive affect, pain, fatigue, or interpersonal stress. This pattern was not specific to FM, but was also evident in OA (p < .05). Adjustment for depression, childhood abuse, and other trait characteristics did not change the pattern of results.

Based on accurately timed cortisol measures taken over many days in a clinically-diagnosed sample, these findings indicate that disturbances in diurnal cortisol profiles are not a universal characteristic of FM. Although OA participants were also patients, there is no prior evidence of HPA axis abnormalities in this common disorder of aging. Normal cortisol profiles in FM do not rule out the existence of abnormalities at other levels of the HPA axis.

Regardless of diagnosis, negative affective states appeared to be important determinants of within-person increases in cortisol, but causality cannot be established. Nor did we consider whether mood-induced cortisol changes might in turn influence FM pain or fatigue. Further investigation is needed to clarify the possible role of cortisol variability in the expression of fibromyalgia symptoms.
Abstract 1541

POSITIVE AND NEGATIVE FACTORS PREDICTING PHYSICAL FUNCTIONING, PAIN AND ASSOCIATED SYMPTOMS IN FIBROMYALGIA SYNDROME
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Fibromyalgia (FM) is a common syndrome associated with middle-aged woman characterized by generalized muscular pain, fatigue, joint stiffness in the muscle or joints, and the presence of multiple tender points on examination (Wolfe et al., 1995). The pain and fatigue affect patients’ daily life activities (Affleck et al., 2001; Zautra et al., 2005). Many investigators (Davis, Zautra & Smith, 2004; Van Houdenhove & Egle, 2004) suggest that negative aspects like anxiety, depression, stress and negative affect must be triggering factors for this syndrome. But recently, the study of positive emotions in this population has increased (Zautra & Reich, 2000). The aim of this study is to examine both, the negative and positive aspects that may influence over the pain, physical functioning and general symptoms in FM. We hypothesized that positive aspects predict a better physical functioning and higher psychological well being, and negative aspects predict pain intensity and associated symptoms. Participants were 145 women with FM (53.14 ± 8.5 years). Measures included pain intensity, thermal pain threshold, physical functioning and associated symptoms as dependent variables; depression, anxiety, stress and negative affect (negative aspects), and pain self-efficacy, internality and positive affect (positive aspects).
A confirmatory factor analysis using Structural Equation Modeling contrasted empirically the validity of the proposed 2-factor structure (positive and negative) (CMIN/DF=952, TLI=1.063 and CFI=1.00). Then, we contrasted our hypothesis with a second analysis, the overall fit of the model was TLI=.91 and CFI=.92 (CMIN/DF= 1,766) indicating a good fit to the data. These findings suggest that greater pain and associated symptoms may be related to negative factors in FM patients and that increasing positive factors like pain self-efficacy may play an important role for a better physical functioning in FM patients and improvement of their quality of life.

Abstract 1075

CHILDHOOD TYPE CHRONIC FATIGUE SYNDROME (CCFS) IN JAPAN
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Background: Chronic fatigue is common among school children in Japan. These children frequently often experience a constellation of symptoms which include generalized fatigue, low-grade fever, central nervous system symptoms, such as moderate or severe depression, memory disturbance, confusion, and poor concentration, and sleep disturbance. Although the Center for Disease Control diagnostic criteria for chronic fatigue syndrome (CCFS) are useful for adult cases, they may not capture all cases of children with CFS. Our major goal in this study was to define diagnostic criteria for childhood type chronic fatigue syndrome (CCFS) in Japan.

Methods: 124 CCFS patients (63 boys; 14.2±2.1 years and 61 girls; 14.6±2.2 years) participated in this study. The patients, aged 6-18 years, were referred to Kumamoto University Hospital between 2004 and 2005 because of CFS symptoms. All subjects had initially developed generalized fatigue, followed by sleep disturbance and psychosomatic symptoms. Subsequently, their performance ability deteriorated. All patients met diagnostic criteria for CCFS as defined by the research group of the Ministry of Health and Welfare (Miki et al. 2002). We also examined the KANA-pick up test to evaluate short-term memory, and self-reported depression scores (SDS). Result: There was a strong correlation between subject age and symptom severity. Frontal lobe function was significantly decreased in the moderate compared with the mild symptoms group (P<0.05). There was a significant positive correlation between depressive symptoms score and subject symptom severity (P<0.05). Interestely, the subjects in the moderate symptoms group had a tendency to complain of poor concentration, multiple joint pains, headache, and sleep disturbance. Conclusions: These findings strongly suggest the necessity of establishing CCFS criteria in Japan.

Abstract 1664

POSITIVE RELATIONSHIP BETWEEN SLEEP PROBLEMS AND THALAMIC SIZE IN PATIENTS WITH CHRONIC FATIGUE SYNDROME
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Chronic fatigue syndrome (CFS) is characterized by disabling fatigue of unknown etiology. Sleep quality is poor in CFS patients. The thalamus is a key subcortical structure in sleep disorders and certain cognitive functions previously shown to be impaired in CFS patients. We investigated the association between subjective sleep quality and thalamic size in CFS. Twelve right-handed otherwise healthy CFS patients and 12 age-, gender-, and handedness-matched healthy controls completed the Jenkins Sleep Questionnaire summing up responses on four items asking for a) difficulty in initiating sleep, b) awakening during the night, c) awakening during sleep with difficulty maintaining sleep, and d) awakening exhausted in the morning despite having slept as usual. Thalamic size was determined by MR-based volumetry. Logistic regression revealed that sleep problems significantly predicted CFS status (OR = 2.66, 95% CI 1.11-6.38), whereas total thalamic volume and thalamic size of either side did not. More sleep problems correlated with greater total thalamic volume in patients (r=0.62, 95% CI 0.07-0.88, p=0.032) but not in controls (r=-0.34, p=0.30). In addition, more sleep problems also correlated with right thalamic size in patients (r=0.70, 95% CI 0.21-0.91, p=0.012) but not in controls (r=-0.080, p=0.81). The strength of correlations between sleep problems and total thalamic volume (p=0.028) and right thalamic volume (p=0.046), respectively, differed between patients and controls. We found a positive relationship between more sleep problems and thalamic volume in CFS patients compared to non-CFS controls. The finding provides a basis for further studies on a possible role of the thalamus in sleep complaints and fatigue of patients with CFS.

Abstract 1468

PATIENTS WITH CHRONIC FATIGUE SYNDROME IN TWO BELGIAN CLINICS. DOES THE CENTRE’S IMAGE SELECT DIFFERENT SUBGROUPS?

The purpose of this study was to test whether two “ideologically” contrasting clinics for chronic fatigue syndrome (CFS) - one with a “psychosocial” image (Leuven) and another with a “biological” image (Brussels) - might select different subgroups of CFS patients. Participants were 59 consecutively recruited patients in each centre (during February - April, 2005), all meeting Fukuda diagnostic criteria for CFS. Illness and patient characteristics were assessed by a diagnostic interview and several self-report questionnaires. Statistical comparisons were made using Mann-Whitney U test, Spearman rank order correlation coefficients, and Pearson chi-square test. Patients did not significantly differ with regard to age, fatigue level, self-efficacy, and most parameters of physical and mental functioning, health-related quality of life, and psychopathology. However, in the Leuven centre there were more females (p<0.01) and patients with lower socio-economic status (p<0.01); moreover, Leuven patients reported more progressive illness onset (p<0.01), longer illness duration (p<0.05), and attributed their illness more to psychological causes (p<0.01) than their Brussels counterparts. In sum, although CFS patients from Leuven and Brussels showed some differences, notably with regard to demographic features, illness characteristics and causal attributions, we found insufficient evidence for the existence of two clearly distinguishable CFS subgroups along psychosocial / biological lines, selected by the “psychosocial” versus “biological” image of the centres.
QUALITY OF LIFE ASSESSMENT IN 10 YEARS OF LIVER TRANSPANTATION (PRELIMINARY RESULTS)
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AIMS: To evaluate Quality of Life in Liver Transplanted patients in the Hospital Geral de Santo António between 1995 and 2005. We consider two diagnoses in this study, FAP and NON-FAP (other liver diseases) and relate Quality of Life and psychosocial variables such as anxiety and depression. SUBJECT SAMPLE: 150 patients transplanted between 1995 and 2005, that go regularly to the follow-up consultation of liver transplantation. METHOD: Transversal study. The data were obtained at the time of the follow-up consultation. Instruments used: Hospital Anxiety and Depression Scale; EuroQol and a Sociodemographic Questionnaire. Statistical Analysis: Pearson’s Chi-square Test; Linear-by-Linear Association; Mann Whitney Test. Significance level was p<0.05. RESULTS: HADS show that anxiety was more frequent than depression. According to the global results of the EQ VAS 74% of the patients showed a positive-perception and 18% showed a very positive-perception of their health state. EQ VAS results regarding diagnosis or FAP and NON-FAP show that there are no significant differences. Regarding time of transplantation, no significant differences were found. EQ VAS show that when anxiety is present, the perception of health state is power, also all the dimensions of EQ differ in a negative way when anxiety is present. For the EQ-5D there exist significant variance for all the dimensions, except for the dimension self-care, when depression is present. CONCLUSIONS: Most of transplanted patients were on a leave from professional activity. After liver transplant, anxiety was more frequent than depression. There were no differences for Quality of Life results regarding diagnosis and time of transplantation. The majority of patients showed a positive perception of their health state after liver transplant.

PSYCHOSOCIAL DISTRESS AND NEED FOR PSYCHOLOGICAL CARE IN 187 PATIENTS WITH CHRONIC HEPATITIS C - INFLUENCE OF ANTIVIRAL THERAPY
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Chronic hepatitis C (CHC) itself and antiviral therapy for CHC may substantially impair health related quality of life. Data about need for additional psychological care are lacking. The aim of our study was to assess the psychosocial status, need for psychological care and the effect of peginterferon alpha/ribavirin therapy in patients with CHC. One hundred eighty seven out-patients with CHC (m:F: 133:54, age: 43.5 ±11 a, virus genotype 1: 70%, 2: 2%, 3: 22% and 4: 6%, 71 F3/F4; 71 former iv. drug users) were evaluated at one time point independent of antiviral therapy status. The data were obtained at the time of the follow-up consultation. Instruments used: Hospital Anxiety and Depression Scale (HADS) and the Assessment of Demand for Additional Psychological Treatment (ADAPT) questionnaire (>70 points = high need). Patients were classified as untreated (n=101), virologic responders (including sustained or on treatment responders, n=64) and relapsers/nonresponders (n=22). Statistical analysis was performed by Chi Square and Mann-Whitney Test using SPSS Vers13.0. Virologic responders had less anxiety (26% vs 40%; p<0.05) and less need for psychological care (7% vs 26%; p<0.007) than untreated patients, but the frequency of depression was similar (19% vs 23%). Relapsers/nonresponders had higher depression scores (48% vs 23%; p=0.029) than untreated patients. There was no difference between sustained and under treatment responders concerning anxiety, depression or need for additional psychological care. Psychological distress was independent from grade of fibrosis, genotype and route of infection. Knowledge of virologic response is associated with a significant decrease in anxiety, irrespective of therapy status. Untreated patients such as nonresponders show higher need for additional psychological care: untreated patients have greater anxiety while nonresponders show higher depression scores. Psychological distress is not related to occurrence of cirrhosis.

RISK FACTORS FOR DEPRESSION DURING PEGINTERFERON A/ RIBAVIRIN THERAPY IN PATIENTS WITH CHRONIC HEPATITIS C AND ITS IMPACT ON VIROLOGIC RESPONSE
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Depression (D), occurring in up to 40% of patients (pts) with chronic hepatitis C treated with peginterferon/ribavirin therapy, may lead to low adherence and thus decreased response rates. The aim of our study was to detect psychosocial risk factors for D during peginterferon/ribavirin therapy and its impact on virologic response (VR). We prospectively analyzed data of 79 treatment-naive pts from baseline (BL) to week 12 of antiviral therapy. Pts with psychiatric disorders or psychotropic medication at BL were excluded (8/79). Of the remaining pts 71 pts (47 male, 24 female; median age: 41, range 18-65; genotype 1: 69%, 2: 2.8%, 3: 25.4%, 4: 2.8%) 26 (36.6%) had psychiatric history, of these 17 were prior iv drug users. Hospital Anxiety and Depression Scale (HADS), the Questionnaire for Social Support (F-SozU) and the Assessment of Demand for Additional Psychological Treatment (ADAPT) at BL, as well as VR defined as 2 log drop of viral load till week 12 were assessed. D was clinically evaluated on a monthly basis and if occurred, the pts were treated by a psychiatrist. Statistical analysis was performed by Chi-Square and Mann-Whitney Test using SPSS Vers 14.0. Within 12 weeks of treatment 17 (23.9%) pts developed D, 8 with psychiatric history, 9 without. Thus neither any previous psychiatric history (p=0.262), nor explicitly history of D (p=0.498) was associated with D during antiviral therapy. Lacking social support and anxiety at BL as well as genotype, stage of fibrosis, gender or age were no risk factors. However, pts with depressive mood at BL (HADS < 7) more often developed D (6/9 vs. 11/69, p=0.001) as well as patients with higher demand for psychotherapy (p=0.018). There was no correlation between occurrence of D and VR. Actual depressive mood before starting treatment (HADS<7) rather than psychiatric history is associated with D during antiviral therapy. D has no impact on VR as long as pts are treated adequately.

RESTLESS LEGS SYNDROME, INSOMNIA AND QUALITY OF LIFE AFTER RENAL TRANSPLANTATION
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Restless Legs Syndrome (RLS) is a common phenomenon in patients on maintenance dialysis and it is associated with insomnia and impaired quality of life (QoL). However, there is no information regarding the relationship of RLS and QoL after kidney transplantation. Our aim was to analyze the complex relationship between RLS, insomnia and health related quality of life in kidney transplanted patients. In a cross sectional survey 1067 patients from a single transplant centre were approached to participate. Complete datasets were obtained from 785 kidney transplanted patients. The RLS Questionnaire (RLSQ) and the Athens Insomnia Scale (AIS) were applied to measure the prevalence of RLS and insomnia, respectively. QoL was assessed with the Kidney Disease Quality of Life–SFTM Questionnaire.

Patients with RLS had significantly higher odds to have insomnia than patients without RLS (29% vs 19%, p<0.001), and in multivariate analysis the presence of RLS was a significant and independent predictor of insomnia. RLS patients also had a poor overall sleep quality as compared to patients without RLS (median AIS score 6 vs 3, p<0.001). The presence of RLS was independently associated with impaired health related quality of life along several QoL domains after controlling for several clinical and socio-demographic co-variables. The independent relationship between RLS and impaired QoL remained significant for some QoL domains even after adjusting for insomnia in the multivariate model. RLS was associated with increased presence of insomnia, worse overall sleep quality, and impaired quality of life in kidney transplanted patients. It is likely that both sleep dependent and sleep independent factors play a role in the relationship between RLS and QoL.
hospitalization. Attachment style measured prior to surgery may help to recover from elevated anxiety over the first few days of post-surgical attachment style. However, attachment insecurity is associated with a failure to demonstrate that high anxiety shortly after surgery is the norm, irrespective of attachment was correlated with anxiety \( r = .31, p = .02 \). The results recognized. We tested the hypothesis that attachment style predicts differences in health outcomes is increasingly understood. We found a positive correlation between attachment style and health outcomes. More specifically, secure attachment style was associated with better health outcomes, while insecure attachment style was associated with poorer health outcomes. Our results have important implications for the development of interventions aimed at improving health outcomes in individuals with different attachment styles.

Anxiety following major surgery is a common problem which can affect pain control and other aspects of recovery. The value of attachment theory to understand individual differences in health outcomes is increasingly recognized. We tested the hypothesis that attachment style predicts differences in the course of post-surgical anxiety in 52 patients with planned hospitalizations for major abdominal surgery. Attachment style was measured during a pre-admission visit with the Relationship Questionnaire. Anxiety was measured on post-surgical days 2 (PSD2) and 5 (PSD5) with the Hospital Anxiety and Depression Scale. The prevalence of categorical attachment styles was secure 67%, preoccupied 4%, dismissing 17%, fearful 12%. Secure and insecure patients experienced similar levels of anxiety on PSD2 (secure: mean 8.74 +/- SD 4.18; insecure 8.47 +/- 4.93, p = .85). However, on PSD5 anxiety was higher in insecure patients (9.82 +/- 4.00) than secure patients (6.97 +/- 3.87, p < .001). From PSD2 to PSD5 anxiety decreased in secure patients (mean change = -1.77 +/- -3.70) but increased on average in insecure patients (1.35 +/- 5.52, p = .05). The results demonstrate that high anxiety shortly after surgery is the norm, irrespective of attachment style. However, attachment insecurity is associated with a failure to recover from elevated anxiety over the first few days of post-surgical hospitalization. Attachment style measured prior to surgery may help to identify patients who will experience persistent anxiety over their post-surgical course. Interventions to reduce post-surgical anxiety need to address the challenge of enhancing the resilience of individuals whose interpersonal style provides a barrier to benefiting from supportive contact.

The occurrence of adverse outcomes after surgery is an important health care issue and little is known about its risk factors. The purpose of this study was to identify possible predictors of developing complications following arthroplasty. Hundred nineteen patients (32.8% men; mean age = 69 +/- 10.73 years) undergoing total knee (37.8%) or hip arthroplasty received a pre-operative psychological assessment: an adapted version of a surgical fear questionnaire, the Pain Catastrophizing Scale, the Tampa Scale for Kinesiophobia, the Western Ontario and McMaster Universities Osteoarthritis Index, and an activities list to assess the level of dependence in daily activities. Information about pre-operative dependence \( OR=13.75, 95\%CI, 2.65-76.54; p = .002 \) and fear of immediate consequences of the operation \( OR=2.53, 95\%CI, 0.87-7.34; p = .089 \) were predictors of adverse outcomes after arthroplasty, controlling for age, sex, the presence of comorbidity, and type of surgery. Adverse outcomes were present in 21% of the patients (25/119). Wound leakage or infections were present in one fifth of the reported complications. Lower pre-operative dependence \( OR=13.75, 95\%CI, 2.65-76.54; p = .002 \) and fear of immediate consequences of the operation \( OR=2.53, 95\%CI, 0.87-7.34; p = .089 \) were predictors of adverse outcomes after arthroplasty, controlling for age, sex, the presence of comorbidity, and type of surgery. Patients undergoing arthroplasty who were experiencing surgical anxiety and who were pre-operatively assisted for daily activities were at risk for developing complications after surgery. Future research needs to clarify the role of dependence and surgical fear for post-operative recovery.

Anxiety and Depression Scale (HADS) were administered to 75 Portuguese individuals with mild severity Focal Epilepsy: 40 female, with a mean age of M=37.59 yrs (SD=12.32; 16-70). Statistically significant correlations were found between the anxiety score and all QOL scores (Physical functioning: \( r(75)=0.55, p<0.0001 \), Role Physical: \( r(75)=0.48, p=0.0003 \), Bodily Pain: \( r(75)=0.37, p=0.001 \), General Health: \( r(75)=0.47, p=0.0001 \), Vitality: \( r(75)=0.60, p<0.0001 \), Social Functioning: \( r(75)=0.54, p<0.0001 \), Role Emotional: \( r(75)=-0.40, p<0.0001 \), and Mental Health: \( r(75)=0.68, p=0.0001 \).

Mental Health and Physical Functioning were, respectively, the first and second best anxiety predictors; 50.6% of anxiety variance was explained by these two variables. The present results suggest that the perceived limitations in physical activity, due to health, and feeling nervous/down/blue and not happy/calm are aspects that should be taken into account when one is assessing and planning interventions focusing on the anxiety levels of individuals with Focal Epilepsy of mild severity.

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Abstract 1119
A CASE-CONTROL STUDY OF POST LYME DISEASE SYNDROME
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Approximately 1/3 of Lyme disease (LD) patients report chronic physical, cognitive, and psychiatric symptoms after antibiotic treatment, thus we assessed whether personality variables associated with psychological stress could be risk factors for the persistent symptoms of Post Lyme Disease Syndrome (PLDS).

This case-control study compared patients with PLDS (previous infection of Borrelia burgdorferi and chronic symptoms after adequate antibiotic treatment) to others presenting to LD clinic. 25 cases were matched on gender and age to 2 controls: those with LD who recovered and those diagnosed with another medical condition (other than fibromyalgia). Patients completed the Millon Clinical Multiaxial Inventory, Young Schema Questionnaire, Positive and Negative Affect Scale, and Coping Strategies Questionnaire-Catastrophizing subscale.

Results were analyzed using a linear mixed effect model with group fixed and trio random for the continuous dependent variables, and a logistic mixed effect model for the binary dependent variables. There were no significant differences between the control groups. Presence of maladaptive schemas (p = .0005) and level of positive affect (p = .0051), negative affect (p = .0088), and catastrophizing (p = .0001) showed significant differences between PLDS and controls, while presence of personality disorder (MCMI; p = .7680) did not. Maladaptive schemas, positive affect, negative affect and catastrophizing all remain significant after a Helm correction for multiple comparisons. PLDS patients had 3.71 (nominal 95% CI: 1.77 to 7.76) times the odds of having maladaptive schemas, compared to controls. In addition, the PLDS group was 3.66 lower (6.17, 1.15) in positive affect, 3.64 (96.6, 3.61) higher in negative affect and 4.43 (2.29, 6.56) higher in catastrophizing than controls.

We concluded that patients with PLDS were more likely than controls to have maladaptive belief systems, higher levels of negative affect and catastrophic thinking and lower positive affect.

Abstract 1198
PATTERNS OF BRAIN ORGANIZATION AND PREVALENCE OF ALLERGIC RHINITIS
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The author has hypothesized that patterns of brain organization are related to health outcomes. The present study is a preliminary test of this hypothesis as it may apply to allergic rhinitis. The hypothesis predicts that individuals with brains characterized by a large number of anomalous brain condition (ABCP) will have an increased prevalence of many disorders including allergic rhinitis.

The present study attempts to test this prediction in a group of 436 females with a lifetime diagnosis of major depression from the author's private psychiatric practice (1961-2005). ABCP is behavioral phenomena that deviate from the statistical norm of the general population (eg. speech disorders, left or mixed handedness, left-right differentiation difficulties). Twenty ABCP were used as "markers" to designate 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 delineate different patterns of brain organization.

One hundred sixty-three (37.4%) of the patients had a lifetime diagnosis of allergic rhinitis. Index age and years of education of the groups with and without allergic rhinitis were not significantly different. The prevalence of allergic rhinitis was found to be significantly correlated with the number of ABCP (r=.11, p<.05). The prevalence of allergic rhinitis in patients with 0-1 ABCP (N=37) was 27%, while that in patients with 8 or more ABCP (N=41) was 47.5%. Using logistic regression, the number of ABCP were found to make an independent contribution to the prevalence of allergic rhinitis when family history of allergic rhinitis was controlled (p<.02). These data lend support to the hypothesis.

Abstract 1824
SOMATIC, PSYCHOLOGICAL AND SOCIAL ASPECTS OF TINNITUS
Antonio V. Oliveira, Audiology, Military Hospital Porto, Porto, Portugal, Rute F. Meneses, Psychology Department, Fernando Pessoa University, Porto, Portugal, Nuno T. Cunha, ENT, Pedro Hispano Hospital, Porto, Portugal

In the practice of Audiology, tinnitus complaints are frequent. Tinnitus patients often develop psychosomatic problems. The aim of the present study was to explore somatic, psychological, and social aspects of tinnitus. In study 1, BSI was administered to 48 tinnitus patients (n=23 men, age:M=54.52). These patients had lower scores than control group (N=12; n=4 men; age:M=50.67) in Somatization (p=.000), Depression (p=.000), Anxiety (p=.006), Phobic anxiety (p=.003), Psychoticism (p=.011), and Hostility (p=.011). In study 2, SF-36 questionnaire, and THI were administered to 74 tinnitus patients (n=37 men; age:M=56.63). Their scores were lower than those of Portuguese population in all SF-36 scales, as Table 1: Those who reported psychological problems (52.5%) had higher scores in the THI-Total (p=.026), and THI-Emotional (p=.004), with statistical significance, indicating more difficulties in daily life, particularly in emotional field.

Comparison between normative SF-36 data for Portuguese population

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Abstract 1799
PSYCHIATRIC DISORDERS AND PSYCHOLOGICAL DISTRESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS
C Laurin, K L. Lavoie, S L. Bacon, G Dupuis, M Labrequeau, Psychology, Hôpital du Sacré-Coeur; UQAM, Montreal, Canada

Rational: Research has documented a high prevalence of psychiatric disorders, especially mood disorders, in patients with chronic obstructive pulmonary disease (COPD). However, research on the prevalence of a wide range of psychiatric disorders in COPD patients is still lacking. In general, psychiatric disorders are more common in women than in men. Few studies have evaluated sex differences in the prevalence of psychiatric disorders in COPD patients. The present study evaluated the prevalence of mood and anxiety disorders in 62 women and 54 men with documented COPD. Methods: Patients (n=116) underwent a sociodemographic and medical history interview, followed by a structured psychiatric interview (ADIS-IV). All patients underwent spirometry and completed a battery of questionnaires measuring psychological distress. Results: Anxiety disorders (46%) were more common than mood disorders (17%) in this population. More women (57%) than men (33%) suffered from one or more anxiety disorder (F=6.46, p=0.01), the most common of which were specific phobia (36% of women vs. 57%) than men (33%) suffered from one or more anxiety disorder (F=6.46, p=0.01). In study 2, SF-36 questionnaire, and THI were administered to 74 tinnitus patients (n=37 men; age:M=56.63). Their scores were lower than those of Portuguese population in all SF-36 scales, as Table 1: Those who reported psychological problems (52.5%) had higher scores in the THI-Total (p=.026), and THI-Emotional (p=.004), with statistical significance, indicating more difficulties in daily life, particularly in emotional field.
their ability to control respiratory symptoms compared to men (p<0.05), despite having comparable dyspnea scores (p=0.08). There were no differences in exacerbation rates (last year) or forced expiratory volume in 1 second (FEV1, % predicted) between women and men. Conclusions: Compared to prevalence rates in the general population (1-13%), results indicate that respiratory disease (COPD) patients, particularly in women.

Objective. Few studies have been published on health care utilization in Crohn’s disease and the influence of psychological treatment on high utilizers. Methods: The present sub study of a prospective multi center intervention conducted in 87 of 488 patients with Crohn’s disease (CD) patients was designed to investigate the influence of the course of Crohn’s disease on health care utilization (hospital days (HD) and sick leave days (SLD) collected by German insurance companies) and to examine the conditions of high-utilizing patients. Predictors of health care utilization should be selected. Based on a standardized somatic treatment, high health care utilizing patients of the psychotherapy and control groups should compared before and after a one-year treatment. Results: Multivariate regression analysis identified disease activity at randomization as an important predictor of the clinical course (r² = 0.28, p<0.01). Health care utilization correlated with duration of disease (p<0.09). The patients’ level of anxiety, depression and lack of control at randomization predicted their health-related quality of life at the end of the study (r² = 0.51, p<0.00001). Interestingly, steroid intake and depression (11) predicted the combined outcome measure (clinical course, HRQL, health care utilization) of Crohn’s disease. The correlation of the end of treatment was r=0.22, p<0.001. Among high utilizers, a significantly greater drop in HD (p<0.03) and in mean in SLD were found in the treatment compared to the control group. Conclusion: The course of Crohn’s disease is influenced by psychological as well as somatic factors; especially depression seems important here. A significant drop of health care utilization demonstrates the benefit of psychological treatment in the subgroup of high-utilizing CD patients. Further studies are needed to replicate the findings of the clinical outcome in this inflammatory bowel disease (IBD) subgroup.

Abstract 1741
HIGH UTILIZING CROHN’S DISEASE PATIENTS UNDER PSYCHOSOMATIC THERAPY
Hans-Christian Deter, Psychosomatics and Psychotherapy, Charité Campus Benjamin Franklin, Berlin, Berlin, Germany, Jörn von Wietersheim, Psychosomatic and Psychotherapy, University of Ulm, Ulm, Germany

Depression and other psychiatric symptoms were measured with Beck Depression Inventory and the Symptom Checklist-90-R (SCL-90). A 25-item (FEV1, % predicted) between women and men. Conclusions: Compared to prevalence rates in the general population (1-13%), results indicate that psychiatric disorders are at least three times higher in COPD patients, and that rates are nearly three times as high in women than in men. Women also show greater psychological distress and worse perceived control of symptoms. Greater efforts should be made to identify and treat psychiatric disorders in COPD patients, particularly in women.

Abstract 1785
NEUROPSYCHOLOGICAL PREDICTORS OF COGNITIVE FUNCTION PERCEPTION IN FOCAL EPILEPSY
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Cognitive complaints are frequent among individuals with Focal Epilepsy, though not always reflecting performance on neuropsychological tests. Therefore, the aim of the present study was to clarify the relationship between cognitive perception and performance in a neuropsychological battery. A socio-demographic and clinical questionnaire, the Cognitive Function Scale from ESI-55 and a neuropsychological battery (Logical Memory, Attention Matrices, Rey Complex Figure, Semantic Fluency, Wisconsin Card Sorting Test-Nelson (WCST), Token Test, Digit Span, Corsi, A. Test) were administered to 75 Portuguese individuals with mild severity Focal Epilepsy; 40 female, with a mean age of M=37.59 yrs (SD=12.32; 16-70). The Cognitive Perception had only one statistically significant correlation with neuropsychological scores, questioning the validity of both methods. As the internal consistency of the CFS was not very high (alpha=0.72), each item was correlated with neuropsychological scores. The item on Concentration correlated with Total Recall (r=0.26, p=0.04). A's Token Test correlated with Semantic Errors (r(71)=0.24, p=0.04), Token Test (r(67)=0.27, p=0.02) and A. Test (r(68)=0.23, p<0.05); the item on Attention correlated with WCST-non perseverative Errors (r(71)=0.25, p=0.03) and Token Test (r(67)=0.28, p=0.02); the item on Memory correlated with Logical Memory-immediate recall (r(71)=0.29, p<0.01), Attention Matrices (r(71)=0.29, p=0.01) and Semantic Fluency (r(71)=0.26, p=0.02); the item on Language correlated with Rey-copy (r(65)=0.29, p=0.01). The item on Thinking and Problem Solving had no significant correlation with test scores. The items on Concentration (R²=0.136) and Attention (R²=0.111) were predicted by WCST-non perseverative Errors and Token test; the item on Language was predicted by Rey-copy and Logical Memory-immediate recall (R²=0.129). These results suggest that research on the functions tapped by the tests administered must continue, as they indicate a gap between more psychological (perception) and more biological (performance) based dimensions.

Abstract 1089
A META-ANALYSIS OF THE EFFECTS OF GINKGO BILOBA ON COGNITIVE FUNCTIONING AND MOOD IN COGNITIVELY IMPAIRED AND HEALTHY ADULTS
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Ginkgo biloba is a commonly used herb for peripheral vascular disorders and cognitive functioning. More than 1,000 studies have examined ginkgo's effects and potential mechanisms of action. The literature contains several small quantitative reviews of ginkgo's effects on specific disorders, and one broad review of individuals with cognitive dysfunction. To date, there is no comprehensive review of the effects of ginkgo on cognitive function and mood in both impaired and healthy individuals. The latter is particularly important given the wide spread popularity of over the counter preparations of ginkgo extracts. The purpose of this study was to perform a meta-analytic review of standardized ginkgo extract treatments on cognitive functioning and mood. An initial search of the relevant databases revealed 100 potentially relevant articles and 45 double-blind placebo-controlled studies were ultimately retained. Standard cumulative and non-cumulative meta-analytic procedures were used to evaluate ginkgo's effects. The effects of Ginkgo appear to be population specific, such that ginkgo improves cognitive function in cognitively impaired older adults (wES = 0.28, p < .05) but not in healthy young adults (wES = 0.23, p > .05). Mood improvements were noted irrespective of age or cognitive status (wES = 0.19, p < .05). Ginkgo's effects also appear to be dependent upon the dose and duration of treatment. Specifically, effects were observed for doses under 300 mg (wES = 0.26 to 0.44, p < .05) and when administered for 15 days or more (wES = 0.22 to 0.32, p < .05). Ginkgo may be an effective treatment for older individuals with cognitive impairment. Treatment benefits appear to accrue relatively rapidly, supporting the notion that ginkgo ameliorates existing symptoms, as opposed to providing neuroprotection against further cognitive decline.
This study examined whether spousal caregiver confidence in patient recovery (CICRR) can predict patient recovery from ambulatory activity limitations following stroke and how CICRR relates to patient self-efficacy for recovery and patient report of received practical social support. A prospective design was used. Measures were gathered at two time points following discharge from hospital following stroke, from patient/spouse dyads (N=91). The dependent variable was recovery from ambulatory activity limitations, as measured by the ambulation subscale of the Functional Limitations Profile over 6 weeks. A single CICRR item was tailored to an ambulatory behavior that the patients could not perform at time 1. Patient self-efficacy, reported received practical support and neurological impairment were measured. Results: CICRR was correlated with patient recovery from ambulatory activity limitations (r=-0.23, p <0.05), patient self-efficacy for recovery (r=0.25, p<0.05) and received practical support (r =-0.21, p<0.05). Higher CICRR was associated with a better recovery in ambulatory activity limitations and higher patient self-efficacy for recovery and lower received practical support. The effect of CICRR on ambulatory activity limitations recovery was not mediated by patient self-efficacy for recovery, received practical social support or neurological impairment. CICRR was associated with recovery from ambulatory activity limitations but this was not due to the spousal caregiver actions in providing support, nor to their judgements of the patients' impairment, nor to sharing levels of confidence with the patient. Future studies should attempt to clarify the relationship between caregiver confidence and patient health outcomes.

Abstract 1600

MULTIPLE PRESENTING NEUROPSYCHIATRIC SYMPTOMS CONFON DIAGNOSIS OF SPORADIC CRESTZELFT-JAKOB DISEASE

Catherine Chung, Adekola O. Alao, Psychiatry, SUNY Upstate Medical University, Syracuse, New York

Here we report the case of Ms. H, a 46-year-old Caucasian woman with no past medical or psychiatric history who presented with complaints of slow speech, word-finding difficulties, and decreased concentration. Initial work-up including MRI and MRA, lumbar puncture, complete blood count, and basic metabolic panel were unremarkable with the exception of significantly elevated TSH levels. Symptoms were subsequently attributed to hypothyroidism. Despite treatment with levothyroxine and TSH levels that indicated a euthyroid state, symptoms were subsequently attributed to hypothyroidism. She continued to experience the same cognitive difficulties resulting in repeat admission to the neurology floor. As no organic cause could be identified as the etiology of her symptoms, a psychiatric consultation was called to evaluate Ms. H’s symptoms due to conversion disorder but more likely psychological factors. She was discharged home with this diagnosis. Ms. H presented to the Emergency Department several days later with delusions and paranoia in addition to continued slow speech and word-finding difficulty. She was subsequently admitted to the psychiatry floor to rule out a psychotic disorder. An EEG during her admission revealed abnormalities, and Ms. H was transferred to the neurology unit. Unfortunately, Ms. H’s condition continued to decline without a known etiology despite aggressive work-up; eventually a repeat MRI showed new hyperintensities and a brain biopsy was performed, revealing changes consistent with spongiform encephalopathy. A diagnosis of sporadic Creutzfeldt-Jakob disease (sCJD) was later confirmed by Western blot analysis. This case demonstrates the challenge of diagnosing sCJD raised by its multiple neuropsychiatric presentations, further complicated by the fact that characteristic EEG and MRI abnormalities often do not appear until late in the disease course. Unless suspicion for sCJD is high, it may be misdiagnosed for a psychiatric disorder, including conversion disorder or a psychotic disorder.

Abstract 1086

TESTOSTERONE, GENETIC ANDROGEN RECEPTOR POLYMORPHISM AND SOMATIC AND PSYCHIC COMPLAINTS IN OVER 50 YEARS OLD MEN- AN EMPIRICAL INVESTIGATION IN A PSYCHOSOMATIC AND IN AN ANDROLOGIC CLINIC IN COMPARISON TO HEALTHY CONTROLS

Gudrun Schneider, Psychosomatics and Psychotherapy, University of Muenster, Muenster, Germany, Kathrin Nienhaus, Psychosomatics and Psychotherapy, University of Münster, Münster, Germany, Gereon Heuft, Psychosomatics and Psychotherapy, University of Muenster, Muenster, Germany, Michael Zitzmann, Institute of Reproductive Medicine, University of Muenster, Muenster, Germany

Objective: How do testosterone and genetic androgen receptor polymorphism relate to somatic and psychic complaints in men aged over 50 years? Sample/method: 198 male patients of the Department of Psychosomatics and Psychotherapy, 53 male patients of the Department of Reproductive Medicine and 100 healthy male volunteers (all aged >=50 years) were examined by means of psychometric instruments (PHQ, AMS, SOMS etc.) and blood samples (testosterone, CAG repeats etc.). Results: 73.1% of the psychosomatic patients had low free testosterone levels of less than 250 pmol/l, significantly more than the andrologic patients (54.7%) and healthy volunteers (50.8%).(Chi2=6.99;p<0.030). We investigated for relations between low testosterone levels, androgen receptor polymorphism and symptom scores of the psychometric scales. We discuss the clinical implications and the relevance of low testosterone levels for somatic and psychic complaints in >50 years old men.

Abstract 1171

THE INFLUENCE OF ANXIETY- DEPRESSION SYNDROME ON THE EVOLUTION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Patients with respiratory disease have been reported to have higher than expected rates of depression and anxiety disorders, particularly panic disorders. Dyspnea attack severity is associated with major depression, panic attacks, number of emergency room visits and self-assessment of risk of death. The side effects of antiasthmatic drugs or compulsive overuse of those drugs, in addition diminish psychosocial functioning. We evaluated 30 consecutive subjects with chronic obstructive pulmonary disease (COPD) who attended the Pulmonary Clinic in the beginning and in the and of hospitalization, when respiratory functioning was marked better, with standard psychometric instruments employed: Hamilton scale for depression and anxiety. The levels of anxiety and depression were comparred depending on the time of investigation (in the beginning and in the and of hospitalization), as well as with the healthy individuals. The patients with COPD showed significantly higher scored for anxiety and depression at the beginning than in the and of hospitalization, and significantly higher comparing with the control subjects. Such comorbidity probably is a result of a great psychosocial impact of serious chronic disease and the impact of consecutive neurohumoral factors.

Abstract 1495

THE ROLE OF MUSIC IN THE OPERATING THEATRE

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Our aim was to investigate the effect of music on patients, surgeons and staff in the operating theatre at our Department of Ophthalmology, Mária street. As a first part of the study involving 150 patients, 7 staff members and 19 surgeons have been asked to fill in a questionnaire about affection of music generally and during the surgery. In the second part of our study 29 patients

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who were listening to music during surgery and a control group of 27 patients having surgery without music therapy filled in another questionnaire dealing with their preference on different kinds of music. In order to obtain more complete results, psychophysiological tests (STAI H test, Face scale), blood pressure and pulse rate parameters were measured as well. Almost all of the patients and every surgeon and all staff members liked music, it did not disturb the staff during their work, however it did not help in their concentration either. Majority of them considered music useful in the recovery of their patients. According to the answers most of the patients think that music has a positive effect on their treatment compared to those patients who listening to music. Subjective answers showed a mild anxiety during surgery that is supported with the data of the psychophysiological test results. In summary, our results so far have demonstrated the beneficial effect of music therapy during ophthalmic surgery. Further examinations are necessary to measure objective effect of music during surgery.

Abstract 1578

TREATMENT STRATEGIES OF EYE SPECIALISTS IN A PSYCHOSOMATIC EYE DISEASE
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The purpose of the present study was to evaluate the treatment strategies of eye specialists in a well known psychosomatic eye disease. Chorioretinitis centralis serosa (CSC) is a rare disease of the central retina. Young adult males are mostly affected. In this study, 18 eye specialists completed a questionnaire in the University Ophthalmology Hospital Budapest(UOH). The questionnaire asked about: A: professional knowledge about the disease, B: the knowledge about the psychosomatic background of the disease, C: treatment strategy and the reasoning of it. We also measured the documentations of all CSC patients presented in the last 6 month, diagnosed also by optical coherence tomography (OCT). The A questionnaire was answered 100% by 3, more than 90% by 6 physitians. The B was without fault by 13, one fault by 3. Answering the C, 3 thought that it is important(yes answer) to refer the patient to a psychosomatic specialist. The reason for the no answers was 1-lack of openness from the patient to see such specialist, 2-no time to deal with these questions, 3-the psychosomatic help is not included in the National Treatment Guideline(NTG). The last 6 month 27 patients (25 male 43,8 ys, 2 gravida females 31 ys)was diagnosed by CSC in the UOH, examined and treated by 8 specialists. Eye drops was referred 13x, vitamins 3x, recreation 3x, only one recommended antidepressant drug. None of them had referred the patient to a psychosomatic specialist. In conclusion, it is clear, that the diagnosis and the medical care is high quality, performed by highly educated specialists, who also know about the psychosomatic background of the disease. Despite this, the psychological help is not included in the treatment strategy. After a study it would be wise to refer that to the Ophthalmological Association, and include the psychosomatic help to the NTG.

Abstract 1238

LEVEL OF TYROSINE PHOSPHORYLATION IN PROTEINS FROM STOMACH MUCOSA CELLS IN OMEPRAZOLE TREATED RATS AT DIFFERENT STAGES OF STRESS INDUCED GASTRIC LESIONS
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Animal experiments were carried out following the guidelines of the local ethics committee. Restraint cold stress-induced gastric ulceration was developed according Biswas K et al.,2003. Phosphotyrosine (p-tyr) content in proteins was measured by immunorecipitation with peroxidase-conjugated monoclonal antibodies. All of the data were expressed as the means ± S.E. The significance was calculated using STATISTICA 5.0. Changes in the level of tyrosine phosphorylation (relative to Control mean, * - P less then 0,05) are presented in Table 1. Stress caused a decrease in p-tyr content in plasma membrane (PM) and in cytosolic (CYT) proteins of mucosa cells. At a later time, phosphorylation of tyrosine residues in PM proteins remains reduced, except on day 4. In CYT proteins, an increase in p-tyr level was observed on day 1, the control state was observed on day 2 and a decrease in p-tyr level was observed after day 2 especially on day 5. In most animals treated with an antulcer drug Omeprazole (OME) in dose 0.8 mg/kg of body weight once a day, there were no changes in this parameter. Immediately after stressing and drug injection, a 50% increase of p-tyr content in CYT proteins was observed. OME, injected in unstressed animals, caused a drastic decrease in protein tyrosine phosphorylation. These findings confirm the influence of OME therapy on the tyrosine phosphorylation system, and on ulcer healing.

<table>
<thead>
<tr>
<th>sample</th>
<th>day0</th>
<th>day1</th>
<th>day2</th>
<th>day3</th>
<th>day4</th>
<th>day5</th>
</tr>
</thead>
<tbody>
<tr>
<td>stress (PM)</td>
<td>0.42±0.039</td>
<td>0.62±0.062</td>
<td>0.835±0.1</td>
<td>0.497±0.050</td>
<td>1.141±0.148</td>
<td>1.045±0.036</td>
</tr>
<tr>
<td>stress (CYT)</td>
<td>0.41±0.037</td>
<td>1.298±0.182</td>
<td>0.972±0.126</td>
<td>0.629±0.063</td>
<td>0.854±0.102</td>
<td>0.373±0.034</td>
</tr>
<tr>
<td>stress+ OME (PM)</td>
<td>0.790±0.087</td>
<td>0.555±0.056</td>
<td>1.198±0.167</td>
<td>0.853±0.102</td>
<td>1.044±0.136</td>
<td>0.948±0.114</td>
</tr>
<tr>
<td>stress+ OME (CYT)</td>
<td>1.51±0.051</td>
<td>1.44±0.202</td>
<td>0.751±0.083</td>
<td>0.722±0.079</td>
<td>0.839±0.101</td>
<td>1.183±0.154</td>
</tr>
<tr>
<td>Dec UC sev</td>
<td>0.28±0.023</td>
<td>0.68±0.069</td>
<td>0.511±0.051</td>
<td>0.30±0.025</td>
<td>0.345±0.035</td>
<td>0.392±0.035</td>
</tr>
<tr>
<td>Stable UC sev</td>
<td>0.34±0.031</td>
<td>0.35±0.032</td>
<td>0.369±0.033</td>
<td>0.370±0.033</td>
<td>0.242±0.019</td>
<td>0.350±0.032</td>
</tr>
</tbody>
</table>

Table 1. Changes of level of tyrosine phosphorylation

Abstract 1292

IS ATTACHMENT STYLE STABLE WHEN DISEASE SEVERITY CHANGES? A TEST-RETEST STUDY OF THE ECR-R IN ULCERATIVE COLITIS
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Attachment insecurity is correlated with illness outcomes and is conceptualized as a diathesis to some illnesses. Although attachment insecurity is assumed to precede disease, the stability of attachment style has rarely been tested in conditions of changing physical health. We measured attachment avoidance and attachment anxiety with the Experience in Close Relationships-Revised (ECR-R) and ulcerative colitis (UC) severity (self-reported symptoms of St. Mark's index) in 99 UC patients at two times (T1, T2) separated by 8 to 37 months. The correlation of self-report and MD-rated St. Mark's items, including endoscopy, at T1 was 0.56. The change in UC severity from T1 to T2 ranged from -12 to + 6 points on a 13-point scale. The T1-T2 correlation of attachment dimensions was high (anxiety r = 0.83, avoidance r = 0.76, p < .001). A change in UC severity from T1 to T2 of > 1 point was not related to a change of > 0.5 standard deviations in either ECR-R anxiety (Chi-square = 2.42, ns) or ECR-R avoidance (Chi-square = 1.53, ns, see table). These results support the stability of self-reported attachment style in the context of changing disease severity.
USE OF PSYCHOTHERAPY AND ALTERNATIVE THERAPIES IN ROMANIAN PATIENTS WITH IRRITABLE BOWEL SYNDROME
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Background and aim: The pharmacological therapy of irritable bowel syndrome (IBS) is still far from being satisfactory for many patients. Therefore many patients use also psychotherapy and alternative therapies. There are no data on the use of these therapies in our country. We investigated the use of different types of psychotherapies and alternative therapies in a sample of IBS patients in Transylvania, Northwest Romania. Material and methods: 200 consecutive patients with IBS referred to a tertiary gastroenterological center were questioned about the use of psychotherapy and alternative therapy using a structured specially developed questionnaire. All of them accepted to answer to the questionnaire after careful instruction. Results: 124 out of 200 investigated patients (62%) admitted to have used one or more alternative therapies, usually together with the observance of medical dietary or pharmacological prescriptions. These were: homeopathy 14%, herbal therapy 79%, acupuncture 2%, bioenergetical resonance 10%, others 16%. Users were mainly females of lower educational levels, unlike in USA where alternative therapies users usually belong to higher educated categories. Psychotherapy was rarely used, in 12% of cases: cognitive-behavioral therapy (8%), relaxation techniques (7%). Users are patients with higher education and severe symptoms. Conclusion: Alternative therapy is widely used by Romanian patients with IBS but psychotherapy is rarely used. Efforts should be done to extend the use of psychotherapy by this patients and to educate the physicians to refer these patients to psychotherapy.

SIX-YEAR FOLLOW-UP OF PATIENTS WITH FUNCTIONAL GASTROINTESTINAL DISORDERS
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The long-term effects of psychotherapy in patients with functional gastrointestinal disorders are unknown. Eighty-five patients with gastrointestinal symptoms (GIS) suggestive of functional upper and lower gastrointestinal tract were seen and investigated at a gastroenterological as well as a psychosomatic outpatient unit; they were offered a 10-hour multimodal group psychotherapy (PT), that was accepted by 16 patients. We re-investigated these 85 patients 6 years later by a postal questionnaire using the same psychometric test battery. The response rate was 56 % (69 % of those that had accepted PT). GIS scores were similar at follow-up in comparison to the initial assessment (14.9 and 15.9 points, resp.) but psychological scores of somatization (test: GBB) were significantly lowered (from 40.8 to 34.4, p=.005), as were HADS scores of depression (from16.9 to 14.9, p=.001). The patients that had participated in PT did not differ from those who had not. Both PT patients as well as non-PT patients had experienced various alternative PT options during the past 6 years, but PT patients valued them lower. We conclude that the long-term efficacy of PT in patients with functional bowel disorders is questionable for functional GIS. However, the dissociation of somatic and psychological symptoms after 6 years indicates that PT as well as factors such as life-events may contribute to health care seeking or avoiding behavior in case of GIS.

NEO-PIR PERSONALITY DETERMINANTS OF RESPONDERS AND NON-RESPONDERS IN A TREATMENT TRIAL FOR MODERATE TO SEvere FUNCTIONAL BOWEL DISORDERS
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Functional Bowel Disease participants (n=402) entered a clinical trial to compare the effects of Desipramine, cognitive behavioral therapy (CBT), education and placebo on their disease. Personality was assessed at study entry using the NEO-PI revised and provided scores on the subscales Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. At twelve weeks (end-of-treatment), response to treatment was assessed via a satisfaction measure. There were 187 treatment responders and138 treatment non-responders. Logistic regression, adjusting for treatment condition, was performed to see if personality, as assessed by NEO subscales, predicted treatment response. The regression showed that response to treatment was predicted by the Extraversion, Openness and Agreeableness subscales. Responders displayed significantly higher average scores than nonresponders on Extraversion (103.4+-10.8 vs. 100.7+-11.1, p=0.01), Openness (104.0+-11.1 vs. 100.7+-11.3, p<0.01) and Agreeableness (106.1+-12.1 vs. 102.8+-11.0, p<0.01). The scores for the two other subscales, neuroticism and conscientiousness, were also higher for the responders than for the nonresponders, however these differences were not significant. In addition NEO subscale scores did not significantly predict study dropout status. These data suggest that patients who are receptive to engaging in new and challenging situations are more likely to respond to a treatment trial.

EFFECTS OF VIRTUAL VISUAL STRESS ON FUNDIC TONE AND GASTRIC PERCEPTION IN FUNCTIONAL DYSPEPSIA
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Psychological and visual stress causes various kinds of physical changes. Virtual reality (VR) technology enables person to immerse into visual psychological stress. We tested our hypothesis that uncomfortable visual psychological stress changes gastric function and perception in functional dyspepsia. Six functional dyspepsia non-consulters (FD-nC) and 10 healthy subjects (HS) participated in this study after written informed consent. Uncomfortable visual psychological stress was loaded to the both groups with a 3-D roller coaster movie for 10 minutes by the head-mounted display (HMD). A Barostat bag was placed in the gastric fundus and distended with steady low pressure (2 mmHg). The gastric volume and compliance were measured by the barostat technique throughout the session. At the beginning and at the end of the study, gastric sensation was evaluated by gastric distention and 3 sensation thresholds were defined (1: first sensation (F), 2: discomfort (D) and 3: pain (P) thresholds). Gastric symptoms and stress state were evaluated by questionnaire and scored with 7 graded ordinal scale. Gastric volume significantly increased after the VR stimulation in HC (284+-/98 ml to 358+-/125 ml) and in FD-nC (276+-/46 ml to 404+-/76 ml) (p<0.05 ANOVA). However, the increase pattern was not different between FD-nC and HC (p=0.392 ANOVA). Before the stimulation, gastric sensation thresholds were significantly lower in FD-nC compared with HC (F: 5.1+-/3.6 vs. 9.5+-/2.5, D: 8.1+-/2.3 vs. 14.3+-/3.6, P: 11.5+-/1.8 vs. 17.5+-/3.1, p<0.05 Mann-Whitney-U). After the stimulation, gastric sensation thresholds significantly
decreased in FD-nc and HC (p<0.05 ANOVA). Self-rating gastric symptoms and stress scores showed no differences between FD-nc and HC.

These data suggest that VR stimulation relaxes gastric fundic wall in FD-nc and stress scores showed no differences between FD-nc and HC. FD-nc has lower gastric sensation thresholds than HC, and the VR stimulation decreases the sensation threshold in FD-nc, even when the stimulation induces no relevant symptoms.

Abstract 1418

INFLUENCE OF CATARACT SURGERY ON THE QUALITY OF SLEEP OF SENIORS WITH CLEAR OR YELLOW-TINTED INTRAOCULAR LENSES

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Disturbances in the sleep/wake cycle in seniors have been attributed to the desynchronization of circadian rhythms, and possibly to changes in the visual system. Sleep has been found to improve after cataract surgery with the implantation of a clear intraocular lens (IOL), which replaces the cloudy lens. However, the association between quality of sleep and the implantation of a yellow-tinted IOL, which mimics the yellowness of the natural lens of a 53-year-old person, has not yet been investigated. This study examined the quality of sleep of older persons implanted with a yellow-tinted or a clear IOL. Patients of the Department of Ophthalmology of the Sir Mortimer B. Davis Jewish General Hospital (Montreal, Canada) who were to undergo cataract surgery with the implantation of a yellow-tinted or a clear IOL were recruited. In total, 7 participants with a yellow-tinted IOL and 12 with a clear IOL completed the Pittsburgh Sleep Quality Index and the Epworth Sleepiness Scale before and after the surgery. The age of these 19 participants was between 55 to 89 years (M = 71.32, SD = 8.35). A 2 (pre/post-surgery) x 2 (IOL type) ANOVA showed that quality of sleep significantly improved one month (M = 35.84, SD = 15.30 days) after cataract surgery, F (1, 17) = 6.32, p = .02. Surgery accounted for 27% of the overall variance in the quality of sleep (np2 = .27). However, there was no main effect of IOL or interaction. There was also no significant effect on daytime sleepiness by cataract surgery or IOL type. In conclusion, although the sample size was very small, the results replicated previous findings based on a much larger sample size (Asplund & Lindblad, 2002, 2004), in that quality of sleep improved after cataract surgery. These results also suggest cataract as a possible factor related to the high prevalence of sleep disturbances in older adults.

Abstract 1599

REPORTING OF COVARIABLES IN PSYCHOSOMATIC RESEARCH

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Psychosomatic Medicine's statistical reporting guidelines recommend that the reasons for including or excluding specific covariables in multivariable models should be well justified and clearly explained. This is intended to improve upon practices such as reporting only that "we adjusted for x, y, and z" without any explanation of why it was necessary to adjust for these particular covariables, or whether other robust models were considered. The purpose of this study was to evaluate the extent to which research reports published in behavioral and psychosomatic medicine journals adhere to these standards. A random sample (n=40) of 10 original research articles from the 2005 volumes of each of four leading journals in behavioral or psychosomatic medicine (Annals of Behavioral Medicine, Health Psychology, Journal of Psychosomatic Research, Psychosomatic Medicine) was selected. Each article was coded by 3 independent raters with respect to the rationale and procedure for including or excluding covariables, in addition to other aspects of the statistical methods. A comparison sample will be obtained from the 2005 volumes of two of the leading general medical journals (JAMA, NEJM) and two of the leading psychiatric journals (Archives of General Psychiatry, American Journal of Psychiatry.) Preliminary results reveal a high rate of inadequate covariable reporting practices in behavioral and psychosomatic medicine research journals. Lack of a clear rationale for including specific covariables and mischaracterization of the role(s) of particular covariables in multivariable models are especially salient problems. The findings of this study will help to inform further efforts to improve statistical reporting practices in psychosomatic research.

Abstract 1780

THE USE OF A SOLOMON 4-GROUP DESIGN IN PSYCHOSOMATIC RESEARCH

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Assessing stress reactivity using a controlled laboratory procedure both pre- and post-treatment is an effective method for evaluating intervention effects. However, repeated use of such procedures within participants confounds repeat testing effects with intervention effects. A Solomon (1949) 4-group design crosses this issue by including pre-testing only on a random selection of the sample and post-testing on all participants. Here we examine the effects of a repeated stress-inducing lab procedure on biological and psychosocial variables using a modified Solomon 4-group design. Participants were 69 men and 158 women with a physician-confirmed diagnosis of rheumatoid arthritis. Participants were randomly assigned to one of three behavioral intervention groups. Half of the participants in each group were then randomly assigned to complete a pre-intervention lab. After an 8-week intervention, all participants completed a post-intervention lab. During the lab procedure, participant's blood pressure, self-report ratings of pain, fatigue, stress, and affect (Watson, et al., 1988), and IL-6 and cortisol samples were assessed 4 times: at baseline, following both a standard speech task (Davis, et al., 2001) and a discussion of an interpersonal conflict (Davis, 1999), and at recovery. Results at post lab revealed that individuals who had received the pre-lab reported less stress [F(1, 124)=7.612, p<.01], and negative affect [F(1, 124)=16.451, p<.001], had lower diastolic blood pressure [F(1, 119)=4.133, p<.05], and reported more positive affect [F(1, 124)=4.245, p<.05], than individuals who did not receive a pre-lab. There were no differences in the other variables. These results indicate that pre-testing has differential effects depending on the variables assessed. In this sample, most physiological measures were unaffected by pre-testing. Psychosocial factors appear to be sensitive to pre-test effects. These findings highlight the potential value of using a Solomon 4-group design in psychosomatic research.

Abstract 1174

FIVE TO 28 YEAR FOLLOW-UP ON 99 RESIDENTS TRAINED IN BIOPSYCHOSOCIAL INTERNAL MEDICINE: GL ENGEL'S HERITAGE 30 YEARS LATER

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In the present study, the impact of the biopsychosocial model (bpm) (Engel 1977) on the life and work of former residents trained in bps-internal medicine was assessed. Open-ended questions to be answered in essay form were sent to 99 trainees, 68 men, 31 women 5 to 28 years (mean 17 years) after their residency in the bps-medical division of Berne University (1978-2001): Eighty-two residents answered by letter or e-mail. The addresses of 8 trainees were unknown. Mean-time spent in the bps-residency was 17 months (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72). Motives for choosing the bps-division included: General interest in bpm 46%, clinical lectures to the students by the author 37%, elective period (3-72).
companies 32%. Attitude towards alternative medicine: strictly rejecting 53%, utilizing such therapies 5%. No influence of bps-approach on income Q7%, increased due to referrals of problem patients 8%, decreased due to caring for complex patients 10%. The bpsm can be operationalized and taught to residents in a bps-division of internal medicine. This training seems to have a considerable and favorable impact observable 5-28 years later.

Abstract 1642

EFFECTIVENESS OF A 1-YEAR TRAINING PROGRAM IN CLINICAL PSYCHOSOCIAL RESEARCH: A CONTROLLED STUDY.

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Structured training programs have the potential to improve research knowledge and research outcome in young clinician scientists. This is the first study to investigate the effectiveness of a 1-year qualification program in clinical psychosocial research using a controlled study design. Intervention subjects were 15 participants of a 1-year qualification program in clinical psychosocial research at a university department of psychosomatic medicine (age 31.6±4.5 years, 53% female). The program included a 72-hour class in clinical research methods, the conduct of an own research project, and mentorship. Control subjects were 22 non-participants from 2 other university departments of psychosomatic medicine (age 35.5±7.6 years, 86% female). Assessments were performed at the beginning and end of the program. Outcomes included a progress test measuring change in methodological knowledge, change in research-related self-efficacy, self-assessed overall research competence, and current work on journal articles at the end of the program.

Methodological knowledge improved significantly more in the intervention group compared to the control group (ES=1.1; p<.001). Similarly, change in research-related self-efficacy was significantly greater in the intervention group compared to the control group (ES=1.1; p<.001). Overall research competence at follow-up on a 1 to 10 visual analogue scale was 6.1±1.8 in the intervention group and 3.5±1.8 in the control group (ES=1.4; p<.001). Despite similar levels at the beginning of the program, significantly more intervention subjects compared to controls were currently writing journal articles at the end of the program (87% vs. 36%; p<.02).

The 1-year qualification program in clinical psychosocial research proved efficient with respect to diverse outcomes. The large intervention effects indicate that the implementation of clinical research programs for clinician scientists is worthwhile.

Abstract 1239

EFFECT OF END-OF-LIFE EDUCATION ON MEDICAL STUDENTS’ AND HEALTH CARE WORKERS’ DEATH ATTITUDE

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The purpose of our study was to evaluate the effect of courses for health care workers and medical students that deal with death, dying and bereavement. The goal of the courses is to make communication on death more open by exploring critical issues related to fear of death to reduce anxiety and to improve attitude to dying patients.

127 health care workers and 41 medical students completed the Multidimensional Fear of Death Scale (MFODS) (Neimeyer and Moore, 1994; Zana, 2006) and the Shortened Version of BDI (Beck, 1972; Kopp, 1990) on the first and last day of the course.

The most significant factors of fear of death by the MFODS are: Fear for Significant Others, Fear of the Dying Process and Fear of Premature Death. Overall fear of death scores are reduced as an effect of the courses, the alteration of the components of fear of death depends on the participants' gender, age and profession as well. Fear of death of women and young participants is higher than men's and older participants'. Among 22-30 years old medical students the decrease of factors of Fear for Significant Others (p=0.009) and Fear of Conscious Death (p=0.055) is important. Among health care workers the factors of Fear of the Dead (p=0.004) and Fear of Conscious Death (p=0.037) decrease significantly by the end of course. In health care workers older than 40 years the factors of Fear for Significant Others (p=0.007) and Fear of Premature Death (p=0.009) decrease significantly as well. Improvement was observed in both groups in attitudes that can be related to the increase of knowledge on the quality care of dying patients like fear from the process of dying and fear from conscious experience of death. Besides education containing training as well it is important to strengthen the support function of workplaces in caring for the mental health of the health care staff. Furthermore it is important that medical students participate in courses that aim to achieve open communication related to end-of-life issues.

Abstract 1356

DEMOGRAPHIC AND PSYCHOSOCIAL PREDICTORS OF INFLAMMATION IN A HEALTHY COHORT

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Even moderate levels of inflammation are diagnostic and prognostic of illness, including cardiovascular disease. This study examined potential demographic, physiological, and psychosocial predictors of inflammation in a healthy cohort. Participants were 105 men and 105 women (mean age 32.4 years, range 22-50) of diverse ethnic background [Caucasian (N=87), African-American (N=33), Hispanic (N=27), and Asian (N=83)]. Circulating levels of sICAM-1, IL-6, vWF, and D-dimer were assayed by ELISA and levels of CRP by high sensitivity Denka-Seiken assay. Factor analysis identified 3 factors: F:sICAM-1, F:CRP-IL-6, and F:vWF/D-dimer. Multiple regression predictor variables included age, BMI, gender, ethnicity, family history of hypertension, norepinephrine, epinephrine, cortisol, insulin, cholesterol, 24-hour ambulatory blood pressure (BP), depression (CESD), anxiety (Spießberger), anger expression (Spießberger), social support (Sarason), and job strain (Karasek).

F:CRP-IL-6 was predicted by a combination of older age (p<.01), higher BMI (p<.01), male gender (p<.006), lower insulin levels (p<.004), lower HDL cholesterol levels (p<.008), higher daytime BP (p<.01), Caucasian and Hispanic ethnicity (p<.003), depression score (p<.04), and less social support (p<.04) (Model R²=.272, p<.004). F:CRP-IL-6 was predicted by higher BMI (p<.001), male gender (p<.003), higher cortisol levels (p<.002), and less nighttime BP dipping (p<.02) (Model R²=.272, p<.002). F:vWF/D-dimer was not significant. A separate regression examining D-dimer showed that higher levels were predicted by older age (p<.01), higher BMI (p<.004), female gender (p<.001), and higher cortisol levels (p<.004) (Model R²=.272, p<.003).

These findings indicate that age, BMI, and gender are consistent determinants of inflammation, and that psychosocial factors, including ethnicity, depression, and social support provide additional independent associations with inflammation.

Abstract 1484

ASSOCIATIONS BETWEEN CYTOKINES, SELF-PERCEIVED HEALTH, AND AFFECT IN WOMEN

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Poor self-perceived health is a predictor of future mortality and morbidity but the mechanisms behind this relation are unknown. We have previously shown an association between higher levels of inflammatory cytokines and poor self-perceived health. Positive (PA) and negative affect (NA) has also been associated with future health but there is little knowledge of the association between PA and cytokines. In this study, we investigate the associations between cytokines, self-perceived health, PA and NA.

The present study involved 320 women between the ages 45-90 years from the Betula prospective cohort study. The cytokines soluble interleukin-III
training in 43 healthy young adults (age 20-45 yr) who were randomized to a disease but the mechanisms associated with this risk reduction are not completely understood. Since atherosclerosis now is regarded as an inflammatory disease, we tested the anti-inflammatory effects of aerobic exercise in 43 healthy young adults (age 20-45 yr) who were randomized to a moderate (M) or a high (H) intensity 12-week training program. We also considered whether anti-inflammatory effects would be related to changes in cardiac autonomic regulation. Consistent with recent evidence demonstrating a cholinergic anti-inflammatory reflex. Whole blood was extracted from volunteers before and after exercise training. Plasma was stimulated with lipopolysaccharide (LPS, 0, 0.1, 1, 10 and 100 ng/ml) to measure TNF alpha response. Data on aerobic capacity (VO2max) and cardiac autonomic regulation (RR interval variability) also were collected. Data were analyzed according to intention to treat principles using a random-effect model to determine the impact of training group on LPS-stimulated TNF alpha after correcting for important covariates. Analyses revealed that while both groups improved in VO2max (p < .05), the group X time interaction (p < .09) revealed that only the M group showed a reduction in TNF alpha (p = .03). Similarly, the standard deviation of RR intervals increased only for the M group. These data suggest that in healthy young adults, a 12-week aerobic training program has anti-inflammatory effects but that this effect is seen principally in a moderate as opposed to a high intensity training regimen and that the same effect is seen for RR interval variability. They also are consistent with a cholinergic anti-inflammatory pathway.

Abstract 1124
THE RELATIONSHIP BETWEEN THE EXPRESSION OF CIRCADIAN CLOCK GENES IN WHOLE BLOOD CELLS AND EFFICACY OF LIGHT THERAPY
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INTRODUCTION: In recent years, the number of children with sleep disturbances has increased. We conducted a trial to test the utility of high illumination light therapy for the treatment of such patients. The goal of this study was to ascertain the relationship between the expression of circadian clock genes in whole blood cells and the efficacy of light therapy.

SUBJECTS AND METHODS: We analyzed diurnal rhythms of hPer2 gene, deep body temperature (DBT), Cortisol, and Melatonin expression in 15 unmedicated children with sleep disturbances, age 12-19 yrs (average; 15.6±2.9 yrs) who received light therapy. Blood samples were taken at 4-hr intervals for 24hrs. DBT, as a surrogate of core body temperature, was assessed by a body temperature monitor every 30 min for 24 hrs. We then compared the clinically improved and unimproved groups.

RESULT: Although no circadian rhythmicity in hPer2 gene expressions was detected in the pre-treatment group, it was detected in the post-treatment, clinically improved group. However, reversed circadian rhythmicity was detected pre-treatment group and in the post-treatment clinically unimproved group. The diurnal rhythm of hormones did not differ significantly in either group. CONCLUSION: These findings indicate that the monitoring of human circadian clock might be useful to evaluate the internal synchronization of circadian and hormonal rhythms. Further studies might elucidate the relationship between human clock gene expression in blood cells and the efficacy of light therapy.

Abstract 1732
MUSIC IMPROVES SLEEP QUALITY IN STUDENTS
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Objectives: Investigation of the effects of relaxing classical music on sleep quality in students in Hungary. Methods: Randomized controlled trial was used with a three group repeated measures design. 94 students (mean=22.6, range:19-28, SD=2.83) with sleep complaints were recruited for each group using a Pittsburg Sleep Quality Index (PSQI). 5. Beck Depression Inventory (BDI) and Epworth Sleepiness Scale (ESS) were used to assess depression and daytime somnolence. Participants in the experimental groups listened to 45 minutes of relaxing classical music (n=35) or to an audiobook (n=30) at bedtime for 3 weeks. There was no intervention in the control group (n=29). Sleep quality was measured by PSQI before the study as well as weekly during the intervention, and lasted three weeks. We measured the mood of the participants in the experimental groups with BDI before and after the...
study. Results: Music and audiobook significantly improved sleep quality ($t(34)=10.712; p<0.000$), ($t(29)=3.029; p=0.005$). However we found a significant difference in sleep quality in the control group ($t(28)=3.131; p=0.004$) at the end of the study. Sleep quality of the audiobook group and control group did not differ significantly. There was a significantly higher sleep quality in the control group as compared to audiobook group ($t=-3.982; p=0.004$) and control group ($t=-5.346; p=0.000$). Music decreased a number of depression symptoms ($t(34)=6.124; p=0.000$) and control group ($t=-5.346; p=0.000$). There was no change in BDI in the control group did not differ significantly. There was a significantly higher number of significant differences in sleep quality in the control group ($t(28)=3.131; p=0.004$) at the end of the study. Sleep quality of the audiobook group and control group did not differ significantly. There was a significantly higher number of possible confounders. Similar trends were apparent in women but effects were not significant. Alcohol consumption on the day of sampling was not measured. Covariates were recorded.

Abstract 1661
THE RELATIONSHIP BETWEEN ALCOHOL CONSUMPTION AND CORTISOL SECRETION IN THE WHITEHALL II STUDY
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INTRODUCTION Contributions that health behaviours make to hypothalamic-pituitary adrenal (HPA) axis activity are poorly understood in the general population. The aim was assessment of the relationship between alcohol consumption and cortisol secretion.

PARTICIPANTS Data from phase 7 (2002-2004) of the Whitehall II study, an occupational cohort originally recruited in 1985-1987, was used to assess alcohol consumption and diurnal salivary cortisol in 2693 men and 977 women.

METHODS Self-reported alcohol consumption assessing frequency, units consumed, consumption on the day and drinking problems (by the CAGE questionnaire). Six saliva samples collected at waking, +30mins, +2.5hours, +8hours, 12hours and bedtime, average cortisol release per hour of the day was calculated. Covariates were recorded.

RESULTS In men drinking frequency showed a U shaped relationship with cortisol secretion. Non-drinkers having higher levels than moderate drinkers (4.26 nmol/l per hour : 3.97 nmol/l per hour), p for trend 0.082. There was a positive association between cortisol and weekly alcohol intake (ANOVA p=0.005,trend p=0.013), those consuming >= 28 units a week had higher cortisol concentrations (>= 28: 4.69 nmol/l per hour <28: 4.21 nmol/l per hour). Binge drinkers (larger quantities of alcohol less frequently) had significantly higher levels of cortisol (p=0.004). The effects were independent of possible confounders. Similar trends were apparent in women but effects were not significant. Alcohol consumption on the day of sampling was not associated with cortisol secretion.

CONCLUSION This study suggests that alcohol consumption is associated with activation of the HPA axis. There is a positive relationship between different indices of alcohol intake and daily release of cortisol. These results are not due acute alcohol consumption and suggest chronic changes in the HPA axis in heavy and binge drinking groups.

Abstract 1746
INTERNET USE TO FIND SEXUAL PARTNERS, SEXUAL RISK, AND STRATEGIES TO REDUCE RISK AMONG MEN WHO HAVE SEX WITH MEN
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It is becoming increasingly common for high-risk individuals to meet sexual partners online. In multiple studies with diverse populations of men who have sex with men (MSM) and heterosexual men and women, researchers have documented that persons who seek sexual partners online show a pattern of substantially increased sexual risk behaviors. Persons who meet partners via the Internet might benefit from taking steps to protect themselves when engaging in sexual activity with partners initially contacted online. Relationships between use of the Internet to find partners, planned protective behaviors, and sexual risk have not been thoroughly examined in MSM, a group at elevated risk for HIV and other STDs. A total of 342 participants attending a Gay Pride celebration in a western U.S. state completed an anonymous survey assessing demographic information, use of the Internet to meet sexual partners, steps taken to reduce risk with Internet partners, and sexual risk behaviors. Overall, 57% of men reported having had sex with a partner first met over the Internet. These men reported a mean of 11.5 (SD = 20.6) lifetime partners met online. Twenty percent reported traveling 100 miles or more to have sex with an Internet partner. Men who had met a partner online reported more total sexual partners over the previous 3 months, higher rates of having sex under the influence of alcohol, and more unprotected anal sex (ps <.05). Men reported a variety of strategies to protect themselves from HIV or other STDs with their Internet partners, including always using a condom with Internet partners (66%), always asking their Internet partners about their HIV status (47%), and always negotiating prior to meeting with Internet partners about the types of sexual activities that will occur (32%). Men who meet partners online are at higher behavioral risk for HIV. Interventions directed at this population are needed and may benefit from expanding or building on the strategies men are already using to protect themselves.

Abstract 1773
QUALITY OF LIFE AND EATING COMPULSION (SWEET/FAT AND CARBOHYDRATE COMPULSION) IN OBESE PATIENTS
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AIMS: The aim of this study was to analyse the differences in quality of life between patients who present with a compulsion for eating sweet/fat or carbohydrate rich foods and patients without this eating behaviour characteristic. METHODS: Participants: A cohort of 198 obese patients, 84.8% of which were females; aged between 15 and 65 (M=38.86; SD=11.47) was studied. Thirty-nine percent (n=77) reported an eating compulsion for sweet or fat rich foods and 23.1% (n=45) reported a carbohydrate eating compulsion. Instruments: The Portuguese version of the SF-36. Procedure: Participants answered to the questionnaires in the context of a personal interview, after their informed consent, and clinical data were collected from hospital records. RESULTS: Data analysis suggests that patients who report an eating compulsion for sweet/fat did not differ from patients without this eating behaviour concerning their quality of life, neither were there differences in body mass index. Nevertheless, patients who reported a carbohydrate eating compulsion had lower quality of life scores with respect to health transition, physical functioning, role-physical, social functioning, body pain and general health than obese patients who do not report a carbohydrate eating compulsion. Furthermore, patients with a carbohydrate eating compulsion had a higher mean body mass index than obese patients without this eating behaviour. CONCLUSION: Patients having an eating compulsion for sweet or fat food did not distinguish themselves from other obese patients concerning their quality of life or body mass index, but patients with carbohydrate compulsion do have lower quality of life scores and higher body mass index.

Abstract 1816
ENDOCRINE-IMMUNE DYSREGULATIONS IN A POPULATION-BASED SAMPLE OF CASES WITH CHRONIC FATIGUE SYNDROME, CASES WITH INSUFFICIENT FATIGUE, AND NON-FATIGUED CONTROLS
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The hypothalamic-pituitary-adrenal (HPA) axis and the immune system have been suggested to be involved in the manifestation of chronic fatigue syndrome (CFS). The aim of the current study was to examine HPA axis and immune basal function in a non-treatment seeking CFS cases, 35 cases with insufficient symptoms of fatigue (ISF), and 39 non-fatigued controls (NF)
identified from the general population in Wichita, Kansas. Salivary cortisol concentrations were measured after awakening, 8 a.m., 12 p.m., 4 p.m., and at bedtime. We additionally measured 24h urinary free cortisol (UFC) excretion as well as concentrations of serum cortisol, plasma ACTH, plasma IL-6, and TNF-alpha at 8 a.m. Results revealed that the CFS group demonstrated lower salivary cortisol concentrations in the morning and higher salivary cortisol concentrations in the evening compared to both ISF and NF groups. However, subjects with ISF had lower UFC concentrations, while CFS and ISF groups did not differ. The three groups did not differ regarding serum cortisol concentrations. Plasma ACTH concentrations were highest for ISF, whereas the CFS and NF groups did not differ. Mean plasma IL-6 concentrations were highest in CFS, whereas there were no differences for the other groups. There were no differences between the three groups for TNF-alpha. Attenuated decline of salivary cortisol concentrations across the day was correlated with specific CFS symptoms. In conclusion, these results suggest disturbed endocrine-immune function in CFS as well as ISF cases, identified from a population-based sample.

Abstract 1633

REDUCED REACTIVITY AND ENHANCED NEGATIVE FEEDBACK SENSITIVITY OF THE HYPOTHALAMUS PITUITARY ADRENAL AXIS IN PATIENTS WITH MASTOCYTIC SYNDROME AND SYMPTOMATIC FACIAL PAIN. Ursula Galli, Center for Oral Medicine, Dental and Maxillo-Facial, University of Zurich, Zurich, Switzerland, Switzerland, Jens Gaab, Clinical Psychology and Psychotherapy, University of Zurich, Zurich, Switzerland, Switzerland, Ulrike Ehlert, Clinical Psychology and Psychotherapy, Fidel Ruggia, Dominik A. Ettlin, Sandro Palla, Center for Oral Medicine, Dental and Maxillo-Facial, University of Zurich, Zurich, Switzerland, Switzerland

Dysregulations of the hypothalamic-pituitary-adrenal (HPA) axis, as a physiological substrate of stress, have been observed in patients with different stress-related disorders such as chronic fatigue syndrome, chronic whiplash disorder, fibromyalgia and posttraumatic stress disorder. In this study we investigated possible dysregulations of the HPA axis in patients with masticatory muscles pain. In 20 patients with myogenic facial pain and 20 healthy controls, awakening salivary cortisol concentrations were assessed before and after administration of 0.5 mg dexamethasone. The data asessment is finished and the endocrine data is currently being analyzed. Results will be presented at the meeting. The results will help to understand etiology of myogenic facial pain and clarify whether endocrine dysregulations are a common process also in chronic myogenic facial pain as in other chronic pain conditions and fatigue syndromes.

Abstract 1497

NEUROIMAGING STUDIES ON PAIN AND NEGATIVE AFFECT: A META-ANALYSIS
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Objective: By examining findings across fMRI studies, we sought to determine if common or segregated patterns of activations exist across various pain-inducing and emotional tasks. Hypothesized areas were amygdala, anterior insula, dorsal ACC and prefrontal cortex. Methods: Databases were systematically searched for fMRI studies using combinations of relevant task and method key words. Only studies with emotion or pain stimuli in the imaging task were eligible for inclusion. Initially a chi-squared analysis was conducted to prove the comparability of emotion and pain studies in every single out of 25 predefined brain region. We then chose a k-means cluster analysis to answer the question of localisation. The resulting coordinates were used as initial values for a second k-means cluster analysis and a following Kolmogorov-Smirnov (K-S) test to analyse the difference between distances from pain coordinates to one cluster centre and from emotion coordinates to the same centre (p < 0.05). Finally, tests of equivalence were performed. Results: In total, 553 references were selected as potentially relevant. After applying exclusion criteria, data from 35 pain studies yielding 615 peaks of activation and 45 emotion studies yielding 437 peaks of activation met all selection criteria and were extracted and tabulated. Using a 10 mm sphere, 24 cluster centres in 11 brain regions could be identified as equal, including the amygdala, thalamus, orbitofrontal and medial prefrontal cortex, ACC and PCC, insula and basal ganglia. Conclusion: This review provides a critical comparison of findings across individual studies and suggests that within specific CNS-regions like anterior insula, orbitofrontal cortex and dorsal ACC affective CNS circuits may have piggybacked onto physical pain systems.

Abstract 1403

PSYCHOPHYSIOLOGICAL MECHANISMS UNDERLYING SUCCESSFUL COGNITIVE-BEHAVIORAL THERAPY OF CHRONIC BACK PAIN
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Psychophysiological mechanisms underlying successful cognitive-behavioral therapy of chronic back pain. Julia A. Glombiewski, Jens Tersek & Winfried Rief Clinical Psychology and Psychotherapy, University of Marburg, Germany The aim of the study was to explore whether biofeedback therapy leads to lower muscle tension in chronic low back patients, and whether reduction of muscle tension predicts pain reduction. Ninety patients with back pain were randomly assigned to either a standard outpatient cognitive-behavioral treatment of 20 sessions, including relaxation, coping skills training, activity planning, and problem solving, or the same CBT program with additional EMG- biofeedback training. Measures of paraspinal muscle tension at six different recording sites were assessed during relaxation, in different body postures, as well as during mental stress tasks at the pretreatment and posttreatment. Additional assessments were done for pain intensity, self-efficacy, pain beliefs, pain-associated disability, and coping strategies. Muscular reactions during stressors showed specificity for the pain syndromes. At the end of the treatment the back pain of patients in both groups was markedly reduced (d = .81). No differences for pain intensity between the groups were found, although the biofeedback-oriented CBT group showed some benefits in terms of treatment acceptance. Patients receiving additional biofeedback training showed significantly lower paraspinal EMG values at L4 during baseline and during relaxation at the end of treatment. For both groups, reduction of muscle tension did not predict pain reduction. Changes in pain beliefs and coping strategies could predict pain reduction at post treatment. These results confirm that psychological improvements can occur independently of decreases of muscular activity during cognitive behavioral therapy. The assignment of EMG-biofeedback in treatment of chronic back pain will be critically discussed.

PAPER SESSIONS

Abstract 1653

BLUNTED HPA AXIS RESPONSIVENESS TO STRESS IN ATOPIC PATIENTS IS ASSOCIATED TO THE ACUITY AND SEVERENESS OF ALLERGIC INFLAMMATION
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Previously we could demonstrate attenuated HPA axis responsiveness to stress in patients with (chronic) atopic disease (atopic dermatitis, allergic asthma). The present study was designed to investigate whether altered HPA axis reactivity is a specific feature of chronic allergic inflammation or whether it can also be found during an acute allergic state. Patients with seasonal allergic rhinitis (SAR; n=20) and non-atopic control subjects (n=20) were investigated. In order to determine HPA axis responsiveness all subjects were exposed to the Trier Social Stress Test (TSST), a standardized laboratory stressor. SAR subjects were examined while suffering from acute symptoms of SAR (during pollen season) and during a non-active state of their disease. Non-allergic control subjects were examined at identical times during the year. To control for possible sequence and habituation effects a cross over design was used. In addition to the
endocrine responses to the TSST, pathological relevant immune parameters (eosinophils, IgE levels) were assessed. As expected, SAR patients showed significantly increased eosinophil number, IgE levels (all p < .01) and symptom severity (p<.001) when being studied during the pollen season. Basal HPA axis activity was neither different between SAR sufferers and controls nor between active and non-active state in SAR subjects. However, when confronted with the TSST, SAR patients showed significantly reduced cortisol responses during the active state of the allergic disease when compared with the non-active phase of SAR (p<.001). Moreover, in SAR patients there was a significant negative correlation between symptom severity and the cortisol response to the stressor (r=.55; p<.01). This data suggest altered HPA axis responsiveness in allergic conditions which however, may be linked to the severeness of the inflammatory state of the disease.

Abstract 1580
SOCIAL RELATIONSHIPS AND DIURNAL CORTISOL RHYTHM IN OLDER WOMEN

Social relationships are an integral part of psychological well-being and are also predictive of a number of dimensions of physical health. Research has examined associations between cortisol and aspects of social relationships such as social support and social status, but few studies have directly assessed how having positive, satisfying relations with others impacts HPA endocrine dysfunction. Additionally, the bulk of this research has evaluated cortisol response and recovery following acute stress in the laboratory. The present study addresses the association between positive relationships and the diurnal cortisol rhythm in daily life. Ninety community dwelling older women (range, 64 to 93 years old; M age = 76.3) answered a social relationships questionnaire and provided four days of morning, afternoon, and evening salivary cortisol samples. Nightly interviews during the saliva collection period assessed the number of stressors experienced each day. Multiple regression analyses indicated that better social relationships was associated with steeper average (over the 4 days) diurnal cortisol slope (Beta = -.297, p < .01) and higher morning cortisol level (Beta = .329, p < .01) when controlling for age, number of chronic physical conditions, and number of stressors reported during the assessment period. Results suggest that the eudaimonic well-being dimension of positive relations with others is associated with cortisol levels and has implications for treating health problems that are tied to endocrine dysfunction.

Abstract 1057
MEASURES OF RUMINATION DIFFERENTIALLY PREDICT CORTISOL RESPONSES TO A LABORATORY SPEECH TASK
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For some, a stressor's physiological and psychological influence ceases upon its removal; for others, the effects persist, through rumination, or mentally replaying the stressful experience. This repetitive, intrusive thought could amplify or maintain physiological responses (Brosschot, Gerin, & Thayer, 2006). Previous studies testing this hypothesis have produced mixed results, amplify or maintain physiological responses (Brosschot, Gerin, & Thayer, 2006). The current study investigated whether those who ruminate (assessed with trait and event-specific measures) have elevated cortisol responses to a speech task. It was hypothesized that both greater trait rumination and post-task rumination would predict elevated cortisol responses to the speech task. Twenty-eight participants performed a speech in front of an evaluative panel. Participants indicated the frequency of the thoughts they experienced during a 10 minute rest period following the speech as a measure of event-specific rumination. Trait rumination was assessed at baseline. Salivary cortisol was collected at 5 time points throughout the session. Trait and event-specific rumination were differentially associated with the cortisol response in the current study. Contrary to the hypothesis, trait rumination was associated with blunted cortisol responses to the speech task, p < .05. However, post-task rumination was associated with higher cortisol levels across the entire laboratory session, p < .05. Both prolonged and blunted cortisol responses may lead to negative health consequences (e.g., Heim, Ehlert & Hellhammer, 2000; McEwan, 1998), and both of these patterns were associated with rumination in this study. These responses highlight the fact that the relationship between physiological activation and rumination may be contingent upon how rumination is measured. Greater understanding of the psychological and health consequences of rumination is an important goal for future research, as it may have implications for multiple psychological and health problems.

Abstract 1522
MENTAL-STRESS INDUCED ENDOCRINE FUNCTION CHANGES: THE ROLE OF CATECHOLAMINES
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Background: Acute psychological stress has been shown to be a trigger of cardiovascular outcomes, e.g., myocardial infarction and ischemia. Endothelial function is considered to be a marker of cardiovascular health. Research has also predictive of a number of dimensions of physical health. exercise and physical fitness may buffer cardiovascular responses to mental-stress induced increases in norepinephrine release. Conclusions: This is the first study to assess endothelial function during a mental stress task. These results indicate that over activation of the sympathetic nervous during stress may be associated with endothelial function. However, more work is needed to confirm these findings.

Abstract 1063
ASSOCIATION OF PHYSICAL FITNESS AND PRO-INFLAMMATORY RESPONSE TO MENTAL STRESS
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An extended pro-inflammatory state following acute mental stress may be an indicator of cardiovascular risk. Previous research has focused on the notion that exercise and physical fitness may buffer cardiovascular responses to psychosocial stress, although effects on inflammatory stress responses have not been investigated before. We therefore examined the association between physical fitness, cardiac parasympathetic control, and inflammatory cytokine responses to mental stress. Participants were 186 men and women (mean age 52 years) drawn from the Whitehall II epidemiological cohort. Participants completed two mental stressors consisting of a 5-min Stroop task and a 5-min mirror tracing task. Blood samples were drawn during baseline and 45 min post task for the assessment of interleukin (IL)-6, IL-1 receptor antagonist (IL-1ra), and tumour necrosis factor-alpha (TNF). Heart rate variability (HRV) was measured during baseline, stress, and recovery. Physical fitness was assessed from a sub-maximal exercise test. IL-6, IL-1ra, and TNF were significantly increased at 45-min post stress. Multiple linear regression analysis, adjusted for age, body mass index, gender, smoking, grade of employment, and basal levels of inflammatory markers revealed that higher fitness was related to lower post-stress IL-6 (Beta coefficient = -.19, p < .02) and TNF responses (B = -.28, p < .001). Higher fitness was also related to a smaller reduction in HRV during stress (B = .29, p = .02). Physical fitness is associated with smaller inflammatory cytokine responses to acute mental stress, an effect that may be mediated through parasympathetic pathways.
Abstract 1353

REPRESSIVE STYLE, SHORT-TERM STRESS, AND NATURAL KILLER CYTOTOXICITY
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The purpose of this study is to investigate the effects of appraised stress and repressive style on Natural Killer Cell Cytotoxicity (NKCC). There is controversy about the physiological consequences of repressive style, i.e., whether people who characteristically repress or deny distress in difficult circumstances (‘repressors’) will show poorer physiological outcomes than those who are ‘sensitizers’ or ‘truly low anxious.’ Seventy-five unemployed and 75 matched employed healthy men and women ages 29-45 completed weekly stress logs for 4 months and had blood drawn monthly. On the weekly log, participants identified current stressors, indicated their duration, and rated their stressfulness. Short-term stressors were defined as those that persisted for less than 4 weeks; short-term appraised stress ratings for each week were summed. The Taylor Manifest Anxiety Scale and Marlowe-Crowne Social Desirability Scale were used to classify participants as repressors, truly low anxious, or sensitizers. Using short-term stress ratings of the previous week as a time-varying covariate and controlling for race, gender, and other scores on status, repeated measures analyses found a statistically significant interaction between short-term stress and NKCC for 2 of the 3 effector:target (E:T) ratios (p = .044 for NK25:1 and p = .014 for NK50:1) and a trend for NK100:1 (p = .061). For repressors, for all E:T ratios, there was a significant positive relationship: as short-term stress scores increased, NKCC increased (e.g., for NK50:1, estimate = 0.274, p = .026). There was no significant association for sensitizers and the truly low anxious. These findings suggest that a repressive style may be associated with a small increase in NKCC in the face of increased perceived short-term stress.

Abstract 1439

CAREGIVING ACTIVATES INFLAMMATORY AND ANTI-INFLAMMATORY SIGNALLING PATHWAYS
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Chronic stress is associated with adverse health outcomes across a wide range of medical conditions. Excessive inflammation may be an important mechanism through which chronic stress exerts its effects. However, little is known about the molecular signaling pathways through which stressors bring about excessive inflammation. The current study examined immune regulatory pathways among 18 familial caregivers of brain cancer patients and 17 healthy adults without caregiving responsibilities or major stressors (mean age=50 yrs, 66% female). Caregivers participated in the study an average of 9.5 weeks after the patients’ 1st surgery. Participants completed measures of perceived stress and symptoms of depression. To assess activation of the inflammatory response, production of IL-6 was measured in endotoxin-stimulated whole blood cultures. Furthermore, mRNA for NFKB, IKB, and the glucocorticoid receptors (GR) alpha and beta were measured to investigate signaling pathways using real-time PCR. Participants collected saliva 6 times daily over 3 days for cortisol assessment. Caregivers showed more psychological distress compared to controls, as indicated by higher scores on perceived stress and symptoms of depression (p<.05). Caregivers also showed evidence of activation of inflammatory pathways, manifest by a trend toward higher IL-6 production (p=.08) and significantly higher quantities of NFKB mRNA (p<.05). There was also evidence of activation of anti-inflammatory processes; care receivers showed higher GR alpha/beta ratios and increased quantities of IKB (p<.05). There was no significant group difference in diurnal cortisol secretion (p>.05). These results lead us to 3 main conclusions. (1) The presence of a chronic stressor activates inflammatory pathways. (2) We suspect that IKB and GR alpha/beta are part of a compensatory response to downregulate inflammation. (3) The compensatory response appears to be insufficient at present. Our findings highlight the molecular signaling pathways through which stressors act.

Abstract 1840

CHRONIC STRESS AND REGULATION OF THE INFLAMMATORY RESPONSE IN RHEUMATOID ARTHRITIS: IMPLICATIONS FOR FATIGUE
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This study examined whether chronic stress is associated with differential regulation of an inflammatory response and symptoms of fatigue in rheumatoid arthritis patients. The stimulated production of interleukin-6 (IL-6) and the ability of glucocorticoids to terminate this inflammatory response were analyzed in 56 RA patients (59 % female; M age = 55.2 years, SD = 13.1). Chronic stress was evaluated using 30 daily diaries, which reported on the stressfulness of interpersonal relations (1-4 scale). On the day of blood sampling, ratings of fatigue and pain (0-100 scales) were obtained. Blood was assayed to yield values for plasma IL-6 and C-reactive protein (CRP) levels. In addition, peripheral blood mononuclear cells were co-cultured with LPS (100 pg/ml) alone and with LPS and hydrocortisone (10-6, 10-7, 10-8 M) for 18-24 hours, and IL-6 from supernatants was determined by ELISA. Multilevel modeling showed that higher chronic stress predicted both higher levels of LPS-stimulated IL-6 (b=0.73, SE = 0.30, Z = 2.44, p = .02); and less inhibition of IL-6 release by hydrocortisone (b=0.47, SE = 0.19, Z=2.45, p = 0.02). These relations were not accounted for by demographic factors, body mass index, or use of steroid medication. Further analyses showed that LPS-stimulated IL-6, in turn, predicted elevated levels of fatigue, controlling for pain level (b=4.27, SE = 1.94, Z = 2.20, p = 0.04). Stress and fatigue both were unrelated to plasma IL-6 or CRP levels (ps > .05). Among rheumatoid arthritis patients, chronic stress is associated with a greater production of IL-6 in response to LPS and an impairment in the capacity to terminate this inflammatory cascade. Moreover, these findings add to a growing body of data which implicate proinflammatory cytokine activity in the fatigue.

Depressive Symptoms and Subsequent Mortality

Abstract 1309

ANXIETY AND PREMATURE DEATH IN WOMEN AT MIDLIFE: TEN-YEAR FOLLOW-UP OF 5073 HEALTHY RESPONDENTS
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Research on emotional distress and mortality in the general population has largely focused on depression in men and in elderly populations. However, little is known about the health effects of anxiety in women at midlife. Therefore, we prospectively examined the relation between anxiety and all-cause, cardiovascular and cancer death in women aged 46-54. At baseline, 5073 healthy Caucasian women (mean age= 50.4; SD= 2.1 years) completed a 3-item anxiety scale ("being anxious or worried", "feeling scared or panicky", "ruminating about things that went wrong"); Cronbach's alpha=.77). Demographic factors, unhealthy lifestyle and depressive symptoms were included as covariates. The primary outcome was all-cause mortality at 10-year follow-up. Anxiety was related to lower education, smoking, BMI=30 and inactivity. At follow-up, 114 (2.2%) women had died at the mean age of 56.4±3.1 years. Lung cancer (23%), cardiovascular disease (18%) and breast cancer (15%) were the major causes of death. Smoking, living alone, and lower education were related to mortality, but depression was not. Anxiety was associated with a 77% increase in mortality risk (HR=1.77, 95%CI 1.14-2.74, p=0.011), adjusting for these variables. Anxiety was also related to cardiovascular (HR=2.77, 95%CI 1.17-6.58, p=0.021) and lung cancer (HR=2.22, 95%CI 1.04-4.73, p=0.038) death but not breast cancer death. In conclusion, anxiety predicted premature mortality in middle-aged women, adjusting for standard risk factors and depressive symptoms. Research on emotional distress and mortality, and on cardiovascular and lung cancer death in particular, should not overlook the adverse health effects of anxiety in middle-aged women.
Recent Depressive Symptoms Predict Systemic Inflammatory Activity in Healthy Young Women
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Objective: Heightened systemic inflammatory activity has been found in patients with clinical depression. Low-grade systemic inflammation has been identified as a risk factor for cardiovascular and other diseases, which is consistent with increased cardiovascular morbidity in depression. However, it is unknown whether severity, cumulative burden, variability, or recency of depressive mood influences inflammatory activity.

Methods: In the present study, we longitudinally assessed depressive mood in n=54 healthy women (age 18.7 yrs ± 1.4 SD; BMI 21.6 kg/m² ± 2.3 SD). Weekly ratings using the short version of the CESD were obtained in 20 consecutive weeks before and after a blood draw. IL-6 and CRP were measured as indicators of systemic inflammation. Linear regression was used to test for associations of inflammatory activity and CESD scores of the previous or following weeks, controlling for age, body mass index, waist-to-hip ratio and overall depression.

Results: IL-6 concentrations were predicted by the maximum and the mean of the last two weeks’ CESD score (β=0.47 and 0.45; p<0.03 and 0.05, resp.) and by the last week’s CESD score (trend: β=0.48; p=0.098). IL-6 was not predicted by maximum or mean CESD scores of 3 to 20 weeks before measurement. To determine whether inflammation precedes depression, we tested the impact of IL-6 on subsequent mood. IL-6 did not predict CESD scores up to 20 weeks after measurement. CRP was not associated with depressive mood.

Conclusions: The present results lead us to two cautious conclusions: (1) depressive mood, but not longer-term mood disturbances, predict systemic inflammatory activity. (2) The fact that mood disturbances precede increases in inflammatory activity, but inflammatory mediator concentrations do not predict subsequent depressive mood, indicate that inflammation is rather the consequence than the cause of depressive symptoms, at least in mentally and physically healthy young women.

Synergistic Effects of Depressive Symptoms and Low Education on Mortality
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Although many studies have demonstrated the importance of psychosocial variables for health, most of this work has focused on demonstrations of the impact of particular variables to the exclusion of broader considerations of patterns in their combined effects and the moderating influences of the contexts in which they occur. However, some previous findings suggest the presence of important interactions. In this vein, the Gallo and Matthews reserve capacity hypothesis argues that effects of psychosocial risk factors may be enhanced in those with low SES.

Analyses were conducted on data from 4458 male Vietnam Era Veterans who underwent physical and psychological health evaluations in 1985-86. They were followed until Dec.31, 2000, when 250 deaths had occurred, 21% due to external causes. This sample is limited by the exclusion of women and nonveterans, but it has the strength of participants with a wide range of socioeconomic circumstances. Depressive symptoms were assessed with the Obvious Depression Scale (OBD) from the MMPI. Education was the SES indicator. All models used survival analysis techniques and were controlled for age, race, and baseline self-reported health.

Both depression scores and education predicted mortality as main effects (p<0.001). Their interaction was also significant (p=0.03). A difference in OBD scores equal to the interquartile range was associated with a HR of 1.64 (p=0.001) in those with 12 or fewer years of education compared to 1.22 (p=0.09) for those with more. There was no support for the hypotheses that the interaction was due to confounding with PTSD or with health care seeking for depression.

Multiple psychosocial risk factors tend to co-occur and are highly prevalent in those with lower SES. Furthermore, those risk factors may be more potent in that context as well. This may be due to social influences on health behaviors and use of preventive care.

Changes in Depressive Symptoms, Not Baseline Depression, Predicted Mortality in a Sample of Community-Dwelling Elderly People
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Purpose: Research on depression and mortality in community samples has yielded mixed results. Limitations of previous studies include mostly one time assessment of depression and short follow-ups. Very few studies examined the change in depression over time. In this study, we explored the association of changes of depressive symptoms and long-term mortality in a community sample of elderly people.

Methods: At study entry, 865 people (M age=80.7, 65.8% women) had comprehensive assessment, including the Center of Epidemiological Study-Depression Scale (CESD, 10-item version). They were then assessed annually up to 11 years. Mortality was ascertained by the Social Security Death Index up to 15 years. An Individual Growth Curve Analysis was conducted to model the change of depressive symptoms over time in each person. Both baseline CESD and linear change rate of CESD were used to predict mortality in multivariate Cox regression models. Five classes of covariates were controlled: demographic, health behavior, chronic disease, health status, and cognitive impairment. Results: Total mortality rate was 69.7%. Baseline CESD was not predictive of mortality after adjusting covariates. Linear change rates of CESD scores predicted mortality even after adjusting covariates, HR=1.08, p=0.006. The change rates were divided into three tertile groups: Stable, Stable, and Up in CESD over time. Compared to the Down group, the Up in CESD group had a 46.7% increase in mortality risk, p=0.003. The Stable group was not different from the Down group. In the Up group, CESD scores were increased by an average of 2.4 points annually. Conclusion: Although baseline CESD was not predictive of mortality, the increase in depressive symptoms over time was associated with higher mortality. This suggests that treatment of depression be initiated early to prevent the excess mortality.

Effects of Early Childhood Stress on Immune and Endocrine Functions
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Accumulating data suggest that early life stress can influence the biological stress response in later life. In the present study the impact of preterm delivery on endocrine and immune functioning in later childhood was investigated. Former preterm children, aged 8-14 years (n=16) and sex and age matched full-term controls (n=16) were studied. All children were exposed to a standard laboratory stress test (Trier Social Stress Test for Children@ (TSST). Saliva CORT was measured in ten minutes intervals while heart rates were monitored continuously. Further, morning CORT on three consecutive days was determined. To investigate cellular immune responsiveness, the cutaneous delayed-type-hypersensitivity (DTH) response to seven recall antigens (Multitest,Merieux) was obtained. Analyses of the CORT data indicated significantly increased CORT levels (F(8,232)=19.86; p<0.001) and heart rates (F(38,988)=10.46; p<0.001) in response to the TSST, which did not differ significantly between the two experimental groups (p=0.5). However, former preterm children showed significantly higher CORT levels after awakening when compared to the full-term born control group (F(3,102)=3.14; p<0.05). Morning CORT level were further significantly correlated to birth weight (r=−0.42; p<0.05) and gestational age (r=−0.47; p<0.05). Additionally, a significantly suppressed DTH response as indicated by reduced number of positive antigens (r=−2.64, p<0.05) and induration (r=−2.4; p<0.05) was found in former preterms. The present data suggest that preterm delivery may be associated with altered endocrine and immune functions in later life.
Abstract 1014

PSYCHOLOGICAL STRESS IN CHILDHOOD EXACERBATES ADULT MOUSE ASTHMA VIA HYPOTHALAMIC-PITUITARY-ADRENAL AXIS

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Despite accumulating evidence that psychological stress has a short-lasting detrimental effect on asthma, little is known about the way stress in childhood predisposes adult asthma. In this study, using a communication box, we investigated the long-lasting effect of early psychological and physical stress on adult asthma in mice. Male Balb/c mice were exposed to either psychological stress or physical stress by restraining them for 12 hours a day for 10 days. The stressed mice showed increased airway hyperresponsiveness and airway inflammation compared to the control group. These findings suggest that early psychological and physical stress can have long-lasting effects on adult asthma. Further research is needed to understand the mechanisms underlying these effects.
COMMUNITY OUTREACH HEART HEALTH AND RISK REDUCTION TRIAL (COHRT)
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COHRT was an RCT that was designed to reduce risk factor related to smoking, diet, and exercise for primary and secondary prevention of CHD. A 3 X 2 factorial design was utilized: 3 CHD risk groups (Low-Moderate 10 yr absolute risk of <20 and absence of diabetes, High absolute CHD Risk of >=20 or diabetes, as well as diagnosed CHD) X 2 Intervention groups (Information Control with personal CHD risk factor profiles and standardized self-help info vs. Motivational Interviewing (MI) and personal CHD risk profiles. MI was provided by 6 weekly 1.5 hour teleconferenced sessions to groups of 6-8 subjects. Psychometric and heart rate variability data are presented from baseline, post-treatment, and 6-month follow-up for 521 subjects.

Repeated measures ANOVAs controlled for age, sex, years of education, cardiac and psychotropic medications. Major findings indicated that High Risk subjects demonstrated decreased self-reported exercise (p=0.047) and lower “readiness” to increase exercise in comparison to Low Risk subjects, or subjects with CHD (p = 0.008). Both the Information Control and MI groups significantly reduced symptoms of depression (BDI) at post-intervention and 6-month follow-up (p = 0.007). Similarly, both groups increased HRV markers of vagal-heart rate modulation (HFnu) at post-treatment and 6-month follow-up (p = 0.02).

High CHD risk subjects demonstrate distinct barriers to heart healthy behavior change. Personally tailored CHD risk factor feedback combined with standardized self-help information for lifestyle change is as efficacious as more intensive counseling.

MULTICENTRE RANDOMIZED CONTROLLED TRIAL OF COGNITIVE BEHAVIOURAL STRESS MANAGEMENT (CBSM) TRAINING IN HIV INFECTED INDIVIDUALS UNDER HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART)
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Background:
Emotional distress is highly prevalent in HIV positive individuals and influences the progression of HIV. The aim of the current study was to evaluate the effect of CBSM on clinical HIV parameters, such as morbidity, CD4 cell count and viral load, and psychological well-being.

Methods:
In a randomized controlled multicentre study, we evaluated the effects of CBSM training in 104 HIV-infected women and men under highly active antiretroviral therapy (HAART) over the course of 15 months. Outcome measures were clinical markers (CD4 cell counts, HIV-1 RNA, morbidity and mortality) and psychological parameters (anxiety and depressive symptoms (HADS) and quality of life (MOS-HIV)).

Results: the CBSM did not influence mortality, morbidity nor CD4 and HIV RNA parameters at any time. However, significant and meaningful attenuation of emotional distress and increases of quality of life were observed. These changes were most notable in patients with high levels of pre-training distress.

The results show that the clinical course of HIV is not affected over the period of 15 months, however, beneficial effects on psychological parameters are observed, which could have effects in the long run.

MEANING-CENTERED PSYCHOTHERAPY IN ADVANCED CANCER PATIENTS: A RANDOMIZED CONTROLLED TRIAL OF AN INTERVENTION TO ENHANCE HOPE, MEANING AND SPIRITUAL WELL BEING NEAR THE END OF LIFE
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Method: Patients with advanced cancer (stage III or IV solid tumors) were recruited from the ambulatory care facilities of Memorial Sloan-Kettering Cancer Center between December of 2002 and December of 2004. Patients who participated were randomized to one of two 8-week group psychotherapy interventions: Meaning Centered Group Psychotherapy (MCGP) or Supportive Group Psychotherapy(SGP). Patients were administered a battery of self-report questionnaires at four time points: baseline, pre-treatment, post-treatment, and at two months follow-up. Measures administered included the FACIT Spiritual Well-Being Scale (SWBS), Schedule of Attitudes toward Hastened Death (SAHD), Beck Hopelessness Scale (BHS), Beck Depression Inventory, Hospital Anxiety and Depression Scale, and the Life Orientation Test. Results: 138 patients with advanced cancer were recruited for this pilot study (8 participants per group). Of 138 prospective participants, 55 were unable to begin treatment, primarily because of deteriorating illness, and a total of 83 individuals were randomized and began one of the 2 interventions (52 were randomized to MCGP and 31 to SGP). Of the 83 individuals who began treatment, 56 completed the 8 week intervention. Forty one of the 56 patients who completed treatment also provided follow-up data two months after the last group. All participants had stage III or IV cancers (solid tumors); 75% had stage IV cancer. The sample was 46% male (n=62) and 54% female (n=76), with an average age of 59 (range: 21 to 84); Caucasian (81%), with 10% Black, and 9% Hispanic. A preliminary analysis of the efficacy of this intervention revealed substantially stronger effects for spiritual well-being and several measures of end-of-life despair (desire for hastened death, anxiety, and hopelessness, when measured with a modified version of the BHS) (Table 1), while depression was somewhat less responsive. A comparison of the pre- and post-intervention data demonstrated significant improvement in spiritual well-being (SWBS scores) and desire for hastened death (SAHD scores) and improvement on the measure of hopelessness approached significance (p < .10; see Table 1). The treatment effects at the 2 month follow-up assessment were substantially greater, particularly for overall spiritual well-being and the SWBS Meaning subscale. Conversely, the results of our supportive psychotherapy intervention were less impressive with small and non-significant improvements for all of the measures studied.
Abstract 1272

ENHANCED PSYCHOLOGICAL MINDENNESS PREDICTS BETTER PSYCHOLOGICAL WELL-BEING: RESULTS FROM A MINDFULNESS-BASED STRESS REDUCTION INTERVENTION
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Psychological mindedness (PM), i.e. the motivation and ability to monitor and reflect upon one's psychological processes, has been claimed to be associated with both psychological and physical health. We examined whether (i) PM can be enhanced by a psychological intervention and (ii) this enhancement is associated with a decrease of psychological distress relevant for somatic health. Sixty heterogeneous patients (40 women and 20 men) with symptoms of distress were randomized into an 8-week psychological (mindfulness based stress-reduction) intervention or a waiting-list control condition. Before and after the intervention period, participants completed validated questionnaires on mood, perceived stress, fatigue, and PM. PM was measured by the new Balanced Index of Psychological Mindedness (Nyklíček & Denollet, 2006), which measures Motivation and Ability for PM. Compared to the control group the intervention group showed greater reduction in perceived stress (F (1, 52) = 5.29, p < .03), and fatigue (F (1, 52) = 14.20, p < .001), as well as greater improvement in positive affect (F (1, 52) = 9.46, p < .004). In addition, the intervention resulted in enhancement of PM-Ability (F (1, 51) = 11.83, p < .001), while for PM-Motivation a trend in the same direction appeared (F (1, 51) = 3.03, p < .09). Multivariate regression analyses showed that higher PM-Motivation at baseline was associated with larger reductions in perceived stress (b = .31, p < .02), while stronger increases of PM-ability were linked to larger reductions of perceived stress (b = .34, p < .02), fatigue (b = .51, p < .001), as well as larger increases of positive affect (b = .33, p < .02). The ability for psychological mindedness can be influenced by intervention. In addition, this ability seems to be associated with more favorable outcome of a mindfulness-based psychological intervention aimed at reducing psychological distress.

CVD: Psychiatric Correlates

Abstract 1801

ARE DEPRESSION AND HOPELESSNESS RELATED TO CAROTID ATHEROSCLEROSIS IN WOMEN?
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Depression and hopelessness are associated with increased CHD and mortality risk, but the effect of hopelessness appear to be stronger. Few studies have addressed the impact of depression and hopelessness earlier in the atherogenic process, particularly in women. This study examined whether depressive symptoms and hopelessness uniquely contribute to subclinical atherosclerosis in a sample of asymptomatic women. 576 women (37.2% Black, 62.8% White), ages 45-58, from the Chicago and Pittsburgh sites of the Study of Women's Health Across the Nation underwent non-invasive B-mode ultrasonography to assess average and maximal intimal-medial thickening (IMT) of the right and left carotid arteries. Depressive symptoms were measured with the CES-D Scale and hopelessness was assessed with 2 items measuring negative expectancies about the future and personal goals. Means (SD) were 7.3 (8.0) for the CES-D and 1.5 (1.00) for hopelessness; the correlation between these measures was modest (r = .28, p<.0001). Means (SD) were 0.67 (0.10) mm for average IMT and 0.87 (0.13) mm for maximal IMT. In separate linear regression models with CES-D or hopelessness scores modeled continuously and adjusted for age, race, site, BMI and SBP, increasing depressive symptoms were weakly related to average IMT (b=.008, p=.09) and significantly related to maximal IMT (b=.001, p<.05), whereas increasing hopelessness was significantly related to both outcomes (b=.006, p=.02 for average IMT; b=.007, p<.03 for maximal IMT). With CES-D and hopelessness scores in a single model, depressive symptoms no longer predicted IMT values (p>.4) but hopelessness remained significantly associated with average (b=.006, p=.03) and maximal IMT (b=.007, p<.05). Hopelessness may be more atherogenic than depression and is independently associated with greater subclinical atherosclerosis in middle-aged women. Supported by NIA (U01 AG012505, U01 AG012546), NHLBI (R01 HL065581, R01 HL065591) and the NIH Office of Research on Women's Health.

Abstract 1425

LIFETIME DEPRESSION AND POST-STROKE DEPRESSIVE SYMPTOMS AS PREDICTORS OF MORTALITY AT 3 MONTHS POST STROKE
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Most stroke outcome studies have limited the assessment of depression to depressive symptoms after the stroke. We hypothesized that both depressive symptoms and a lifetime history of depression are associated with mortality at 3 months after stroke. In 501 subjects with ischemic strokes, we assessed two baseline depression measures: i) the 10-item Center for Epidemiological Studies Depression Scale (CESD), and ii) history of depression documented in the chart or reported during baseline interview. A CESD>10 was considered current clinical depression. Stroke severity was measured by the NIH Stroke Scale (NIHSS). Logistic regression was used to determine the odds of death.

The mean (SD) age was 67 (14) years, 26% were black, and 50% were male. The mean NIHSS was 5.3 (4.6). At 3 months, 33 (6.6%) had died. At baseline, 184 (36.7%) scored positive for current depression, and 163 (32.5%) had a lifetime history of depression; 99 (20%) were positive for both current symptoms and a lifetime history of depression. The table shows the odds ratios for mortality at 3 months. Current symptoms, but not a lifetime history of depression, independently predicted mortality. The combination of current symptoms and lifetime history of depression significantly increased the risk for death within 3 months whereas history or symptoms alone did not. Future stroke mortality research should assess both current symptoms and lifetime history of depression.

<table>
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Abstract 1383

POSTTRAUMATIC STRESS SYMPTOMS AS PREDICTOR FOR MORTALITY AMONG PATIENTS WITH IMPLANTABLE CARIOVERTER-DEFIBRILLATORS (ICD). RESULTS FROM THE PROSPECTIVE LICAD STUDY.
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A life threatening cardiac event has traumagenic properties for many patients. Treatment with ICD may act as a constant reminder of the underlying disease condition and thus, ICD patients may be in particular prone to suffer from PTSD symptoms. No study to date has examined PTSD symptoms as a predictor of mortality in these patients.
A total of 147 survivors of a life-threatening cardiac event (125 men, 22 women) were drawn from the LICAD study treated at the German Heart Center Munich. All patients underwent a psychodiagnostic evaluation at baseline assessment. PTSD symptoms were measured by the Impact of Event Scale-R (IES-R) consisting of the three subscales intrusion, avoidance and hyperarousal. Mortality risk was assessed by Cox proportional hazards regression. During a mean follow-up time of 5.1 years, a number of 46 patients died.

The PTSD group defined as the upper third of the IES score with 65 patients consisted more frequently of females (p<0.001), they were younger (p=0.016), lower educated (p=0.011) and more often resuscitated (p=0.006). No associations with the primary diagnosis, election fraction or the number of shocks and demographic characteristics were observed.

The long-term mortality risk in patients with PTSD symptoms was significantly heightened. The relative risk (adjusted for age, sex and survey) for one unit of the continuous IES-R score was 1.025 (95%CI 1.006-1.045, p=0.008) and for the PTSD group versus the non-PTSD group was 2.76 (95%CI 1.42-5.38, p=0.003). After multivariate adjustment of cardiac and affective parameters the strength of the model further increased to 5.56 (95%CI 1.95-15.79, p=0.001).

PTSD symptoms exert malignant impact on the long-term mortality risk in cardiac event survivors treated with an ICD.

Abstract 1839
MODULATING THE EFFECTS OF STRESS ON PSYCHIATRIC SYMPTOMS AND DAILY FUNCTION IN CARDIAC PATIENTS.

Purpose. To evaluate if older patients (>59) surviving an acute coronary syndrome (ACS) had lower levels of psychiatric symptoms and higher levels of function than younger patients when treated with a phone-based counseling intervention.

Study Sample and Methods. Using a randomized trial design, we enrolled 100 ACS survivors with moderate to severe depressive illness or anxiety as indicated by Hospital and Anxiety Depression Scale (HADS) scores at 1-month post hospital discharge. Patients were randomized to treatment (T) or usual care (UC). T patients received six 30-minute phone calls addressing cardiac illness-related fears and concerns. Patient responses to the HADS, the Workplace Social Adjustment Scale (WSAS) and the Clinical Global Impressions (CGI) of health status were collected at 0, 2, 3, and 6 months by Interactive Voice Recognition technology. The PRIME-MD was used to diagnose DSM-IV major depression. We used mixed effects regression models to model outcome changes in older and younger patients.

Results. Mean age was 60. Regression models indicated that older T patients had a 24% improvement in depression symptoms (p=0.039), 39% in anxiety (p=0.006), a 45% improvement in home limitations. (p=0.037) and a 37% improvement in perception of global health (p=0.0014) compared to controls. Symptom improvement occurred at the same time points as improvements for home function and patients' impression of health. We did not detect any intervention impact in younger (<60) T patients.

Conclusions. This time-limited counseling intervention resulted in clinically significant improvements in symptoms, perception of improvement in health and function for patients at a critical moment in the course of their medical illness. Treatment of non-pharmacological factors may benefit patients already on multiple medications for their cardiac disease. Its convenience, ease of delivery, and effectiveness suggest that the counseling can help patients adjust to chronic illness.

Health Consequences of Early Life Adversities

Abstract 1276
MATERNAL FLU INFECTION DURING PREGNANCY AND INFANT BRAIN DEVELOPMENT
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Experimental research in rodents and retrospective studies of children indicate an increased risk for developmental disabilities and psychopathology following viral infections during pregnancy. A nonhuman primate model of influenza infection would be of great value for understanding the neural impact on the young infant. Pregnant rhesus monkeys were infected with an H3N2 strain of flu (A/Sydney/5/97) 1 month before term. Viral shedding and generation of flu-specific antibody responses confirmed the infection. After parturition, offspring were evaluated in three domains: 1) neurobehavior, 2) brain development, and 3) regulation of the pituitary-adrenal axis. Monkeys from control (n=7) and virally infected (n=12) pregnancies have now been assessed out of a future cohort of 100 infants. Flu-exposed infants differed on several measures of the Neonatal Assessment Scale, and the rate at which they become independent from the mother. At 1 year of age, high resolution images of the brain were obtained with Magnetic Resonance Imaging. Global brain volume was reduced in the flu-exposed infants with notable decreases in grey matter (p=0.03) and slight (1%) increases in ventricular volumes. Additional volumetric analyses focus on several sensitive regions of interest including the hippocampus. Hippocampal changes will be correlated with disturbances in the regulation of the pituitary-axes, using a standardized test panel that determines basal levels, diurnal rhythms, reaction to novelty, and sensitivity to dexamethasone. We also published a prenatal flu infection model in the primate, demonstrated inflammatory processes in the maternal compartment and placental transfer of flu-specific antibody to the fetus, and found several behavioral and neural alterations in the offspring. Additional results from the neuroimaging analyses will be presented at the meeting.

Abstract 1071
CHILD ABUSE AND ITS LONG TERM CONSEQUENCES.
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Childhood sexual abuse (CSA) and verbal abuse (VA), which are major risk factors for later psychopathology, are common in modern society. Recent reports have described long-term effects of CSA on brain structure. In addition, we recently reported that exposure to parental verbal abuse (PVA) was associated, in early adulthood, with marked elevations in symptoms of depression, anxiety, and dissociation (Teicher et al., 2006), with an impact resembling that of exposure to non-familial sexual abuse. Little is known specifically about the effects of CSA and VA on gray matter. An objective comprehensive assessment using voxel-based morphometry (VBM) and cortical surface-based analysis using the FreeSurfer (FS) program has yet to be reported.

To elucidate effects of CSA on gray matter volume (GMV), we conducted optimized VBM and cortical surface-based analysis of 23 medicated collegiate females with a history of repeated CSA and 14 psychiatrically healthy female controls with no history of exposure to traumatic events. We also recruited 22 medicated subjects with a history of repeated VA and 19 psychiatrically healthy controls with no history of exposure to traumatic events. We used a high-resolution T1-weighted MRI data set and subjects were imaged volumetrically at 1.5 T and 3 T.

We observed a significant reduction in GMV in the left visual cortex (L-V1) compared to controls. Symptom improvement occurred at the same time points as improvements for home function and patients' impression of health. We did not detect any intervention impact in younger (<60) T patients.

Conclusions. This time-limited counseling intervention resulted in clinically significant improvements in symptoms, perception of improvement in health and function for patients at a critical moment in the course of their medical illness. Treatment of non-pharmacological factors may benefit patients already on multiple medications for their cardiac disease. Its convenience, ease of delivery, and effectiveness suggest that the counseling can help patients adjust to chronic illness.
LONG TERM SICKNESS ABSENCE IN THE ABERDEEN CHILDREN OF THE NINETEEN FIFTIES COHORT: THE ROLE OF EARLY LIFE RISK FACTORS

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Long term sickness absence is a major public health problem. Work-related benefits cost in excess of £12 billion and the costs to industry are of a similar order. Both physical and psychosocial occupational risks for absence have been described, but based on self report measures. Objective assessments fail to show such strong associations. Individual perceptions of the environment may be the link between the two. Events in childhood are associated with the way an individual perceives themselves and the world but the influence of early life risk factors on subsequent long term sickness absence has not been described

Methods

The study used data from the Aberdeen Children of the Nineteen Fifties study. Data on school absence, paternal sickness absence and on a number of aspects of the child's temperament, using the Aberdeen-London Child Behaviour scale (Rutter B) completed by the teacher, were collected from over 12000 primary school children in 1964. Follow-up data, including current employment status, were available on over 7000 of these from 2001.

Results

5.5% of those followed up were "Permanently sick or disabled". Neither absence from school or higher levels of paternal sickness absence was associated with subsequent absence. Being "afraid of things or new situations" was associated with the outcome although this association was attenuated following adjustment for a number of confounding variables. Even after such adjustment "Often complains of aches and pains" (OR = 4.66 (1.99, 10.89)) and "Often appears miserable, unhappy, tearful or distressed" (OR = 4.23 (1.88, 9.52)) were strongly associated with being permanently sick or disabled in 2001.

Conclusions

Individual risk factors for long term sickness absence are identifiable even in primary school aged children. Models of sickness absence which focus solely on occupational risk factors are likely to be flawed and interventions derived from them of limited value. More research is needed on the ways in which individual personality / temperament moderates absence behaviour and interventions which utilise these findings need to be tested.

LONG-TERM HEALTH CORRELATES OF CHILDHOOD TRAUMA

Viola Vaccarino, Medicine, Emory University, Atlanta, GA, Jack Goldberg, Seattle ERIC/VET Registry, University of Washington, Seattle, WA, Carisa Maisano, Olga Novik, Nancy V. Murrah, Linda Jones, Rocky Buckingham, Emir Veledar, Medicine, Farhan Jawed, James D. Bremner, Psychiatry, Emory University, Atlanta, GA

Little is known about the long-term emotional and physical consequences of childhood trauma, and whether it poses greater long term health risks than other types of stressors. We examined 360 male twins (180 pairs) born between 1946 and 1956 from the Vietnam Era Twin Registry. All twins served in the military during the Vietnam era. Childhood traumatic experiences before age 18, were measured with the Early Trauma Inventory (ETI) and included physical, sexual, emotional abuse and general trauma. Adult general trauma, after age 18, was measured with the Lifetime Trauma Inventory; military trauma was assessed with the Combat Exposure Scale. Lifetime major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) were assessed with the Structured Clinical Interview for Psychiatric Disorders, and medical disorders through health history by a clinician. We examined the relationship between past trauma and mental and cardiac health outcomes using mixed-effects regression and GEE modeling. Twins in the highest ETI quartile were twice as likely to have MDD than other twins (p<.001). Among 68 pairs discordant for MDD, ETI scores were higher in MDD than non-MDD co-twins (p=0.02). Of the childhood traumas, emotional trauma was the most strongly associated with MDD (p<.01). Subjects with childhood trauma were also more likely to be exposed to trauma as adults (p<.001) and to develop PTSD (p=0.03). After adjusting for smoking, twins in the highest ETI quartile were more likely to have a previous diagnosis of coronary heart disease (RR=2.4, p=0.002), including previous myocardial infarction (RR=2.9, p=0.02), coronary revascularization (RR=2.9, p=0.004), and hospitalizations for coronary heart disease (RR=2.2, p=0.04). In contrast, no significant associations were found for adult general trauma and combat trauma with either MDD or coronary heart disease. In conclusion, childhood trauma, but not adult trauma, is strongly associated with depression and coronary heart disease in adulthood. Future research on stress and disease should focus on early life stress.

DEPRESSIVE SYMPTOMS AND SEXUAL RISK BEHAVIOR AMONG HIV+ PARTNERS IN SERODISCORDANT COUPLES

Mark V. Bradley, Robert R. Remien, Curtis Dolezal, Psychiatry, Columbia University, New York, NY

The effect of depression on sexual risk behaviors within mixed HIV status couples remains unclear. This study examined the baseline data for 197 HIV+ patients in serodiscordant relationships participating in a behavioral intervention trial. Both positive and negative partners were assessed using instruments to measure depressive symptoms (Beck Depression Inventory-II), sexual risk, and couple satisfaction. HIV+ partners with higher BDI-II scores were less likely to be part of couples reporting unprotected sex (OR=960, 95% CI=0.926-0.994), and HIV+ partners' higher BDI-II scores were associated with less unprotected intradyadic sex acts (B=1.102, SE=0.406, p=0.007). This decrease in intradyadic sexual risk behavior was mediated by an overall decrease in any sexual behavior within the couple. A BDI-II score greater than 20 (twice the approximate clinical depression threshold) for the HIV+ partner predicted a lower likelihood of unprotected intradyadic sex, although the association did not reach significance (OR=504, p=0.98, 95% CI=0.224-1.136). On the other hand, HIV+ subjects with a BDI-II score greater than 20 were more likely to have partners outside their relationship (OR=2.327, p=0.046, 95%CI=1.016-5.327). The addition of the dyadic satisfaction measure to the model did not account for the relationship between the HIV+ partner's BDI-II scores and sexual behavior. Thus we hypothesized that the relationship between higher BDI-II score and reduced intradyadic sexual risk. Based on this analysis of data from serodiscordant couples, HIV+ individuals with less depressive symptoms may be more likely to engage in high-risk sexual behavior with their partners than those with more depressive symptoms, but may be less likely to have sexual partners outside the relationship. These findings have implications for our understanding of the relationship between affective states and risk behavior, as well as clinical implications regarding depression treatment among HIV-positive individuals.

EMOTIONAL/COGNITIVE PROCESSING OF STRESSFUL LIFE EVENTS PREDICTS HIV DISEASE PROGRESSION OVER 4 YEARS.

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Life event stress has been related to poorer clinical outcomes in HIV/AIDS. Some studies have failed to find this relationship. Individual responses to life stress may provide a relevant context for examining these relationships and account for the heterogeneity in the results. This study hypothesized that emotional/cognitive processing of stressful events (assessed at baseline through a written essay) would predict change in HIV disease progression markers (CD4 and viral load (VL)) over 4 years. At baseline 174 participants (in the mid range of HIV disease) completed a psychological questionnaire, a 20-minute written essay describing their emotional/cognitive responses to a traumatic life event, and blood draw for CD4 and VL assays. Assessments were repeated every 6 months over 4 years. Slope of CD4 and VL was modeled using hierarchical linear modeling. Covariates included antiretroviral medication (time dependent), disease stage, age, gender, ethnicity, and education level. Emotional/cognitive processing was assessed by reliable clinician rating on 4 scales (cognitive appraisal, self-esteem enhancement, problem solving, and involvement) that emerged as a unitary factor. There was significant linear change in CD4 cells (t (168) = -2.80, p < .01) and VL (t (168) = 2.89, p < .01) over 4 years and significant individual variation

Update: Psychobiological Links in HIV Research

Abstract 1827

DEPRESSIVE SYMPTOMS AND SEXUAL RISK BEHAVIOR AMONG HIV+ PARTNERS IN SERODISCORDANT COUPLES

Mark V. Bradley, Robert R. Remien, Curtis Dolezal, Psychiatry, Columbia University, New York, NY

The effect of depression on sexual risk behaviors within mixed HIV status couples remains unclear. This study examined the baseline data for 197 HIV+ patients in serodiscordant relationships participating in a behavioral intervention trial. Both positive and negative partners were assessed using instruments to measure depressive symptoms (Beck Depression Inventory-II), sexual risk, and couple satisfaction. HIV+ partners with higher BDI-II scores were less likely to be part of couples reporting unprotected sex (OR=960, 95% CI=0.926-0.994), and HIV+ partners' higher BDI-II scores were associated with less unprotected intradyadic sex acts (B=1.102, SE=0.406, p=0.007). This decrease in intradyadic sexual risk behavior was mediated by an overall decrease in any sexual behavior within the couple. A BDI-II score greater than 20 (twice the approximate clinical depression threshold) for the HIV+ partner predicted a lower likelihood of unprotected intradyadic sex, although the association did not reach significance (OR=504, p=0.98, 95% CI=0.224-1.136). On the other hand, HIV+ subjects with a BDI-II score greater than 20 were more likely to have partners outside their relationship (OR=2.327, p=0.046, 95%CI=1.016-5.327). The addition of the dyadic satisfaction measure to the model did not account for the relationship between the HIV+ partner's BDI-II scores and sexual behavior. Thus we hypothesized that the relationship between higher BDI-II score and reduced intradyadic sexual risk. Based on this analysis of data from serodiscordant couples, HIV+ individuals with less depressive symptoms may be more likely to engage in high-risk sexual behavior with their partners than those with more depressive symptoms, but may be less likely to have sexual partners outside the relationship. These findings have implications for our understanding of the relationship between affective states and risk behavior, as well as clinical implications regarding depression treatment among HIV-positive individuals.
around the slope of CD4 (Chi Square (168) = 534, p <.001) and VL (Chi Square (168) = 277, p <.001). Emotional/cognitive processing of stressful life events predicted a significantly slower decline in CD4 cells over 4 years (t (168) = 2.16, p< .05) and a significantly slower increase in VL (t (168) = -2.83, p <.01). These results extend our previous findings which had related emotional/cognitive processing to disease progression over 2 years and underscore the immunological benefit of substantial processing of traumatic events for people living with HIV. Implications for clinical practice and research are also discussed.

Abstract 1680
PERCEIVED STRESS AND NOREpinephrine PREDICT THE EFFECTIVENESS OF THE RESPONSE TO PROTEASE INHIBITOR MEDICATION IN HIV
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In-vitro laboratory evidence has suggested that increasing levels of norepinephrine (NE) can accelerate HIV replication; however whether this laboratory bench finding extends to a clinical setting has not been tested. The purpose of this study was to determine if perceived stress as well as the stress hormones NE and cortisol would predict the response to starting a new protease inhibitor (PI) prospectively. Perceived stress, cortisol, and norepinephrine (measured over 15 hours), CD4 and viral load (VL) were measured in 55 people with HIV before starting a new PI and six months later (an average of 3 months after starting the new PI) in order to determine predictors of CD4 and VL response to the PI.

Results using hierarchical multiple regression indicated that perceived stress significantly predicted the effectiveness of the new PI in increasing CD4 (beta = -.38, t = 2.43, p = .002) and decreasing VL log (beta = .37, t = 3.16, p = .003) controlling for age, duration of new PI, baseline CD4/VL, sexually transmitted diseases (STDs) and gender/ethnic risk groups. Norepinephrine, but not cortisol predicted the VL response to PIs (beta = .38, t = 2.43, p = .0024) and in fact mediated the relationship between perceived stress and change in VL.

In conclusion, high perceived stress and high norepinephrine levels were prospectively associated with a poorer response to starting a new PI. Assessing stress and norepinephrine levels in patients starting on antiretroviral medications might be clinically useful.

Abstract 1569
POSITIVE AFFECT PREDICTS GREATER CD4 INCREASE IN PEOPLE NEWLY DIAGNOSED WITH HIV
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Studies in HIV+ and HIV- samples demonstrate that positive affect (PA) predicts significantly lower risk of mortality, independent of the effects of negative affect. The present study explored whether baseline PA predicted increases in CD4 over the course of 9 months in people newly diagnosed with HIV. The data come from the CHAI (Coping, HIV, and Affect Interview) study, an ongoing longitudinal study of people newly diagnosed with HIV in which participants are interviewed 7 times over the course of 18 months. Positive and negative affect (NA) were assessed with a modified 29-item version of the PANAS. CD4 was assessed at baseline and 9 months. Participants in the present analysis (N = 15) were diagnosed an average of 48 days prior to the interview (s.d. = 22). Most of the participants were male (86%) and White (66%). Seven of the 15 participants began antiretroviral therapy during the 9 month period. The average CD4 at baseline was 483 (s.d. = 283). Average change in CD4 from baseline to 9 months was +35 (range from -349 to +385). PA at baseline predicted an increase in CD4 from baseline to 9 months (r = .59, p = .02). Participants in the lowest 1/3 on baseline PA had a clinically significant drop in CD4 (+100) compared to the highest 1/3 in PA who had a clinically significant increase in CD4 (+100). Controlling for baseline NA, the correlation between PA and CD4 change was essentially the same (r = .58), but became nonsignificant (p = .12). Controlling for initiation of antiretroviral therapy, the correlation dropped to r = .49 (p = .06). Although the data are still preliminary given the small sample size, these findings suggest that PA is prospectively associated with improvements in CD4 independent of the effect of NA and use of antiretroviral therapy. Findings will be discussed in terms of mechanisms through which PA might impact on HIV disease progression including improved health behaviors, increased coping resources, and by buffering the effect of stress.

Work Stress and Health

Abstract 1350
LOSEING SLEEP OVER WORK IS INCREASINGLY ASSOCIATED WITH SICKNESS ABSENCE IN THE SWEDISH WORKING POPULATION
Hugo Westerland, Work Organisation and Health, National Institute of Psychosocial Medicine, Stockholm, Sweden, Kristina Alexanderson, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden, Torbjörn Åkerstedt, Stress & restitution, Töres Theorell, National Institute of Psychosocial Medicine, Stockholm, Sweden, Mika Kivimäki, Department of Epidemiology and Public Health, University College London, London, United Kingdom

Sickness absence has increased over the last decade in most Western countries, especially in Sweden. A large part of the increase is due to mental disorders. The purpose of the study was to investigate the development of sleeping problems over time in the general working population, and the association between work-related sleeping problems and sickness absence.

We used all respondents in the nationally representative Swedish Work Environment Surveys from 1993, 1995 and 1999 (n=10,335; 9,399 and 8,690 individuals respectively), and linked self-rated data on frequency of 'difficulties sleeping because of thoughts about work' with registry data on medically certified sickness-absence spells exceeding two weeks. We analysed the development of sleeping problems over time, whereas associations between sleeping problems and sickness absence were analysed cross-sectionally with binary logistic regressions adjusting for age, supervisory position, and geographical region. Analyses were performed separately for men and women.

Work-related sleeping problems increased significantly for both sexes (p<0.001), but the increase was most pronounced among women. In 1999, one in four women, and one in five men lost sleep over work at least once a week. There was a strong association between sleeping problems and risk of sickness absence exceeding two weeks. The odds ratio for sickness absence for those who reported sleeping problems every day, compared with those who answered 'not at all, seldom last 3 months' was between 3.22 (1.88-5.50) and 4.26 (2.56-7.19). The association increased over the years, but was virtually the same for men and women. The population attributable risk (PAR) increased from 1.6% in 1993 to 10.5% in 1999 among women, and from 3.7% to 7.9% among men.

The study indicates that sleeping problems are on the rise and may play an important role in the problem of increasing rates of longer sickness absences.

Abstract 1489
LOW SOCIAL CAPITAL AT WORK AS A TRIGGER OF INCIDENT INSOMNIA - A MULTILEVEL RESULTS FROM THE FINNISH 10-TOWN STUDY
Taula P. Oksanen, Finnish Institute of Occupational Health, Turku, Finland, Mika Kivimäki, Department of Epidemiology and Public Health, University College London Medical School, London, United Kingdom, Jussi Vahtera, Finnish Institute of Occupational Health, Turku, Finland

Psychosocial stress at work has been suggested to precipitate the onset of sleep disturbances but longitudinal evidence is still scarce. We studied whether low social capital as a contextual characteristic of the work unit was associated with incident sleep disturbances among employees in a cohort of 13611 identifiable local government employees who reported undisturbed sleep at baseline.

Measurements, based on survey questionnaires in 2000 and 2004, included sleep quality (the Jenkins Sleep Scale), demographics, trait anxiety, obesity, high alcohol intake, and doctor diagnosed diseases (cardiovascular,
Abstract 1615

WORK ENVIRONMENT IN 2003 IN RELATION TO BURNOUT 2006 ARE PREDICTIONS DIFFERENT FOR WORKING MEN AND WOMEN IN SWEDEN?

Töres G. Theorell, Hugo Westerlund, Gabriel Oxenstierna, Institute for Psychosocial Medicine (IPM), Stockholm, Sweden, Martin Hyde, Sheffield Hallam University, Sheffield, United Kingdom

SLOSH comprised 2265 men and 2571 women who participated in the Swedish work environment survey (AMU) 2003 and were followed up in 2006. Strong questions about psychological demands (four items) and decision authority (four items) as well as ongoing conflicts with workmates and superiors and support from workmates and superiors were utilized as predictors (one item for each of the conflict/support dimensions treated as four separate variables) of burnout with adjustment for age and sick leave during the preceding year (log n (number of days absent plus 1)). The Maslach Burnout subscale of emotional exhaustion (MBI-EE) in 2006 was utilized as the outcome variable in stepwise multiple regression. Psychological demands and decision authority were both highly significant predictors (in the expected direction) of high MBI-EE scores for both men and women (standardized beta 0.21 and -0.26 and 0.15 and -0.12 respectively). Sick leave during 2003 was also highly predictive of high burnout scores (standardized beta for men 0.06 and for women 0.10). With regard to conflicts and support: For men all four dimensions contributed significantly (standardized beta 0.08 for conflicts with superiors and 0.07 for conflicts with workmates and -0.07 for support from superiors and -0.06 for support from workmates). For women the only conflict and support dimension that added independently to predictions was support from workmates (standardized beta -0.10).

For both men and women the total variance accounted for by the full model was 14%. Psychological demands and decision authority accounted for most of the variance (11%) for both men and women. We will present data for different social classes and branches in the Swedish labour market.

Conclusion: Findings were almost identical for men and women with regard to psychological demands and decision authority they differed with regard to patterns of social support and conflicts.

Abstract 1494

DYSREGULATIONS OF THE HPA-AXIS AND INCREASED ALLOSTATIC LOAD IN JOB-RELATED CHRONIC STRESS: A LINK TO BURNOUT AND EXHAUSTION IN SCHOOL TEACHERS?

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The present study analyzed whether job-related chronic stress in terms of burnout (MBI), vital exhaustion (VE) and effort-reward-imbalance (ERI) at work is associated with psychoneuroendocrine dysregulations in school teachers (N=180; 23-63 yrs.; mean 45+/10). Besides the psychometric assessment, participants were requested to collect salivary cortisol profiles at two workdays, one leisure day, and after pre-medication with 0.25mg dexamethasone to assess HPA-axis activity as well as feedback sensitivity (cortisol awakening rise plus day profile N=122). Electronic monitoring devices were used to control for subjects’ compliance. Additionally, psychobiological parameters were analyzed according to the classical version of McEwen’s allostatic load model and an extended concept based on 17 parameters including anthropometric measures, blood pressure, percentage of body fat, WHR as well as endocrine, immunological and coagulation markers (blood samples).

Analysis of cortisol profiles revealed no association of HPA-axis activity with burnout, vital exhaustion or effort-reward-imbalance. However, in the dexamethasone-suppression-test, higher burnout (MBI-emotional exhaustion) and vital exhaustion scores (VE) as well as lower reward scores (ERI-R) were significantly related to stronger cortisol suppression pointing to higher feedback sensitivity (interaction sample by VE p=0.03, interaction sample by Reward p=0.05, main effect MBI EE p=0.05).

In respect to allostatic load (AL), women high on vital exhaustion (and marginally men) showed significantly higher AL scores (p=0.03). Also, the group with effort-reward-imbalance>1 (risk group) had higher AL scores compared to the low risk group (ERI<1) (p=0.01).

Though, all teachers have been in a good health status, chronic work stress appears to be associated with subtle psychoneuroendocrine dysregulations.

Abstract 1313

THE GLYCINE/ARGININE16 ADRENOCEPTOR POLYMORPHISM AND ITS ROLE IN DEVELOPING HYPERTENSION.

Alexander Thomas, Department of psychosomatics and Psychotherapy, Markus Wehland von Trebra, Institute of clinical pharmacology, Miriam Rudat, Cora S. Weber, Hans C. Deter, Department of psychosomatics and psychotherapy, Charité, Campus Benjamin Franklin, Berlin, Berlin, Berlin, Germany

The etiopathogenesis of primary hypertension is determined by genetic and environmental factors in a complex interaction. Mental stress is a risk factor for the development of primary hypertension that accounts for up to 10 percent of variance. Our group has previously shown a correlation between stress reactivity and salt sensitivity (defined as significant drop in mean arterial pressure &gt;3 mmHg during a low-salt diet). In the present study we extend our research by including geneties. We investigated the genetic variance of the beta-2 adrenocceptor in the genesis of hypertension, establishing a connection between endocrine stress system (epinephrine and norepinephrine) and effector organ (terminal vascular bed). Therefore young caucasian normotensive males (number = 141) were phenotyped for salt sensitivity (arterial blood pressure at baseline, after 7 days of a low salt diet and after 7 days of a high salt diet) and examined regarding the allelic allocation of the glycinerginine16-beta-2 adrenoceptor polymorphism using TaqMan SNP assays. Seventeen subjects were homozygous for the arginine allele, 58 subjects were homozygous for the glycine allele, and 66 subjects were heterozygous. This is in Hardy-Weinberg equilibrium and equals published data. In addition, we found a statistical trend for an association between salt sensitivity and the glycine allele (Chi-squared test, p = .052). Baseline systolic blood pressure (p = .357) and baseline diastolic blood pressure (p = .380) did not significantly differ between groups of different allelic status. Our data underline recent findings reporting that the presence of the glycine allele promotes the development of hypertension. The role of the beta-2 adrenoceptor in the vascular reaction at the terminal vascular bed after mental stress should be further explored.

Abstract 1315

GNAS1 POLYMORPHISM IS ASSOCIATED WITH PSYCHOSOCIAL FACTORS AND CARDIOVASCULAR REACTIVITY TO STRESS IN AFRICAN AMERICANS

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Recent evidence suggests that psychosocial stressors contribute to the development of hypertension and that the effects of chronic psychosocial stress are dependent upon susceptible genetic polymorphisms. Therefore, the focus of this study was a high-dimensional approach to test if a single nucleotide polymorphism in the alpha subunit of the Gs protein gene (GNAS1) was
associated with 1) psychosocial factors and 2) cardiovascular reactivity to psychological (anger recall) stress in a population of African Americans. We measured systolic (SBP), diastolic (DBP), and heart rate (HR) responses to anger recall (AR) in 178 normotensive African Americans (115 females and 63 males; 18-45 years old). Average SBP/DBP/HR was measured at baseline and during AR testing. The change in SBP/DBP/HR was calculated as average SBP/DBP/HR during the stressor minus the average baseline SBP/DBP/HR. Cardiovascular response to AR was categorized as non-responder or responder. Responder was defined as a SBP/DBP/HR change greater than the calculated median change in SBP/DBP/HR. The psychosocial measures included perceived racism (PRS), hostility (Cook-Medley), anxiety (STAI-X1), anger (Spelberger), John Henryism (JHAC), and self-esteem (ISEL). The frequency distribution of the GNAS1 polymorphism was 52:39:9% for the TT:TC:CC alleles in our African American population. Interestingly, the TT was significantly correlated with JHAC (p<0.012) while TC with significantly correlated with ISEL (p<0.042) and self-esteem (p=0.047). Correlation analysis of the GNAS1 polymorphism with cardiovascular reactivity revealed that the CC allele may be associated with non-responders in HR response to stress (p<0.071). These data add to the increasing evidence that the GNAS1 polymorphism is associated with hypertension at the T393C site and may also be affected by acute psychological stress and other psychosocial factors that influence the biological responses to environmental stressors.

Abstract 1853
ANGER AND AGGRESSION RELATED TRAITS ARE ASSOCIATED WITH POLYMORPHISMS OF THE SEROTONIN RECEPTOR 2C (HTR2C) GENE IN WOMEN.
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Aggression-related traits and serotoninergic activity correlate inversely and both are partly heritable. It is possible that genetic variation in the serotonergic system may partly account for individual differences in measures of hostility and aggression-related behavior. Here, we investigated the association between 2 promoter-region polymorphisms in the serotonin receptor 2C (HTR2C) gene and hostility and aggression related traits. 550 unrelated healthy women of European ancestry were used in the study. Two polymorphisms in the promoter region of the HTR2C gene (located on the X chromosome), -995(G/C) and -697(A/G), were tested for association with aggressive disposition (Buss-Perry Aggression Questionnaire [BPAQ]) and hostility (Cook Medley Hostility Scale [Ho]). We first used MANOVA models with all four BPAQ subscales and three Ho subscales; aggressive responding, cynical hostility and hostile attitudes as dependent measures, two polymorphisms individually as predictor variables and age and years of education as covariates. Significant omnibus F-ratios were followed up with univariate tests of association (ANOVA). In MANOVA models, hostility and aggression measures were associated with both polymorphisms (-995(G/C); F=2.41, P=0.003; -697(A/G); F=2.00, P=0.015). Univariate ANOVAs showed the Ho-Aggressive responding subscale to be associated with both polymorphisms (-995(G/C); F=3.91, P<0.021; -697(A/G); F=3.57, P<0.029). Ho-Aggressive responding scores were significantly lower in individuals carrying the -697 AA genotype (P=0.004) and marginally lower in individuals carrying the -995 GC genotype (P=0.056) compared to all other genotype carriers. The BPAQ-Physical Aggression subscale was associated with the -995(G/C) polymorphism only (F=3.57, P=0.029), with -995 AA genotype carriers reporting significantly higher physical aggression scores (P=0.022). These findings support the hypothesis that promoter polymorphisms in the HTR2C gene may predict hostility and aggression-related phenotypes.

Abstract 1407
SEROTONIN TRANSPORTER GENE POLYMORPHISM CAN EXPLAIN BRAIN AND PHYSIOLOGICAL REACTIVITY TO ACUTE STRESS.
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Genes involved in serotonin transporter (5HTT) have been supposed to contribute to hyper-reactivity in emotion-related brain regions such as the amygdala and to the biologic vulnerability for psychopathology such as depression and eating disorder. A short (S) variant, compared to a long (L) variant of the promoter region of the 5HTT gene has been identified to be related to such emotional hyper-reactivity. Thus, we tested whether the 5HTT gene-linked polymorphic region could represent sensitivity in brain and physiological responses to acute stress. Ten subjects carrying double copies of S alleles and 10 subjects carrying L alleles conducted a continuous mental arithmetic task with time pressure, and regional cerebral blood flow by PET, autonomic (heart rate, blood pressure), neuroendocrine (adrenaline, noradrenaline, ACTH), and immune (proportions of natural killer cells and helper T cells) parameters were measured during a baseline period and during a task period. All subjects showed increase of heart rate, blood pressure, adrenaline, ACTH, and proportion of natural killer cells, and decrease of proportion of helper T cells. More importantly, the subjects with the SS genotype significantly stronger reactivity in heart rate, ACTH, and helper T cells compared to the subjects with the SL genotype. The other biological parameters also indicated a consistent pattern of reactivity, that is, stronger reactivity in the SS subjects than in the SL subjects. Furthermore, more activation in the hypothalamus, medulla, and nuclei in thalamus were observed in the SS genotype compared to the SL genotype. The results suggest that individual differences in stress reactivity can be explained by genotypes of serotonin neural system, at least partly.

Sociodemographic Factors and Health in Middle and Older Aged Adults

Abstract 1010
SUBJECTIVE SES IS RELATED TO BODY COMPOSITION AND PHYSICAL ACTIVITY
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Variation in socioeconomic status (SES) is associated with the incidence of coronary heart disease and its risk factors. Significant relations between SES and both body composition and physical activity have been documented, with most studies focusing on measures of objective SES. Here, we examine whether subjective SES (perceived social standing) may be similarly associated with body composition and physical activity in a community sample of nonpatient volunteers. Subjects were 1044 participants from the University of Pittsburgh Adult Health and Behavior project (30-54 yrs, 51% female, 84% Caucasian/16% African-American). The MacArthur Scale of Subjective Social Status was the index of subjective SES, and objective SES was measured by years of education. Covariance (age, sex, race) accounted for 20.1% of the variation in waist circumference (WC) (R2=1.0%,F1,527=6.0,p<0.02), BMI (R2=1.3%,F1,527=7.3,p<0.007), and 4.0% in kilocalories of weekly physical activity (PA) (F1,527=13.5,p<0.001). WC, BMI, and PA all showed significant interactions of subjective SES and sex (p<0.04). In sex-specific analyses, subjective SES accounted for 2.1%, 2.0%, and 2.3%, respectively, of variation in WC, BMI, and PA in women (F1,528=12.1,p<0.001; F1,530=11.4,p<0.001; F1,528=12.7,p<0.001), with no significant effects in men. Significant omnibus F-ratios were 4.1%, 4.2%, and 4.0% in kilo calories of weekly physical activity (PA) (F1,527=13.5,p<0.001). WC, BMI, and PA all showed significant interactions of subjective SES and sex in women (p<0.04). In sex-specific analyses, subjective SES accounted for 2.1%, 2.0%, and 2.3%, respectively, of variation in WC, BMI, and PA in women (F1,528=12.1,p<0.001; F1,530=11.4,p<0.001; F1,528=12.7,p<0.001), with no significant effects in men. Subjective SES accounted for significant variation in WC (R2=1.0%,F1,527=6.0,p<0.02), BMI (R2=1.3%,F1,527=7.3,p<0.007), and PA (R2=1.8%,F1,527=9.6,p<0.002) in women after adjustment for years of education, which was itself a significant predictor (R2=2.7%,F1,528=15.9,p<0.001; R2=1.3%,F1,530=7.5,p<0.006; R2=0.8%,F1,528=4.1,p<0.043). Thus, over and above an objective measure of SES, subjective SES predicted WC, BMI, and PA in women in middle-aged women. Research supported by NIH RO1-40962.

Abstract 1340
HOSTILITY AND VISCERAL FAT IN AFRICAN-AMERICAN AND CAUCASIAN WOMEN
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Hostility has been associated with an increased risk of CHD in samples of Caucasian men and women. However, less is known about the impact of hostility on risk factors for CHD in African-American women. Visceral fat has been identified as an important pre-clinical risk factor for CHD. Visceral fat (particularly in subcutaneous), visceral fat is believed to be the most atherogenic, or toxic,
component. We examined the association between hostility and CT-assessed visceral and subcutaneous fat in a cohort of 178 African-American and 227 Caucasian women aged 42-60 from the Chicago site of the Study of Women's Health Across the Nation (SWAN). Because fat-patterning characteristics are known to differ by race, we also examined whether these associations were similar for women of both racial groups. Women had a mean hostility score of 3.9 (SD=3.1), and on average had 96.2 cm² (SD=54.3 cm²) of visceral and 393.1 cm² (SD=163.2 cm²) of subcutaneous fat. After adjusting for age, race, and DXA-assessed total body fat, higher levels of hostility were associated with a greater amount of visceral fat (Est=-1.8, p<.01). This association remained significant after adjustments for smoking, physical activity and menopausal status (p=.04). Hostility was not associated with subcutaneous fat (p=.55). Further, while there were significant black-white differences in levels of hostility (p<.01) total body fat (p=.01) and visceral fat (p=.01), the associations between hostility and measures of abdominal fat did not differ by race. Hostility may impact CHD risk in women via the accumulation of visceral fat. Despite significant black-white differences in fat patterning and overall CHD risk, the association between hostility and visceral fat appears to be similar for African-American and Caucasian women. This SWAN study was primarily supported by grants AG012505 & HL067128.

Abstract 1506
THE ASSOCIATION BETWEEN CAROTID INTIMA-MEDIA THICKNESS AND COGNITIVE FUNCTION: DOES SOCIOECONOMIC CONTEXT MATTER?
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Background: Common carotid artery intima media thickness (IMT) is a measure of generalized atherosclerosis and was shown to be associated with cognitive function. We examine two questions: is IMT more strongly associated with specific aspects of cognitive function and does socioeconomic position moderate this association? Methods: Data are drawn from the Phase 7 (2003-2004) of the Whitehall II study (N=3896). In cross-sectional analyses the association between IMT and six measures of cognition (short term verbal memory, inductive reasoning, vocabulary, semantic and phonemic fluency) and a measure of global cognitive function were examined in analyses adjusted for previous history of coronary heart disease, health behaviours and other vascular risk measures like blood pressure, cholesterol and body mass index. Results: Results show that the association between IMT and cognition was the association between IMT and six measures of cognition (short term verbal memory, inductive reasoning, vocabulary, semantic and phonemic fluency) of the association between IMT and cognition and associations with the other cognitive measures. Further analyses restricted to individuals with low socioeconomic position. Short term verbal memory (p=0.04) and the measure of global cognitive status (p=0.75) were not associated with IMT. The covariates examined (p=0.04) remained statistically significant after adjustment for all covariates. Conclusions: Socioeconomic context is an important modifier of the association between IMT and cognition, providing support for the cognitive reserve theory. Verbal memory is not one of the cognitive domains associated with atherosclerosis.

Work Stress and CVD
Abstract 1189
JOB STRAIN AND INCIDENT ISCHEMIC DISEASE IN YOUNGER AND OLDER EMPLOYEES: THE WOLF STOCKHOLM STUDY
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Purpose of study. Although several studies support job strain as a risk factor for cardiovascular disease, notable exceptions with null findings also exist and little is known about the reasons for these inconsistencies. This prospective cohort study examined whether assessment of job strain at older age attenuates findings towards the null. Subject sample and statement of methods. 3160 male employees aged 19–70 without pre-existing or current ischemic disease participated in extensive baseline screening between 1993 and 1995. There was complete follow-up through linkages to national registries until the end of 2003, during which time 93 cases of incident ischemic disease were recorded. Summary of results. In age group 19–55, participants with job strain had a 1.73 (95% confidence interval: 1.04, 2.90) times higher age-adjusted risk of incident ischemic disease than those free of strain. Further adjustment for conventional cardiovascular risk factors did not attenuate this association, but the effect dropped by 70% to non-significant after inclusion of employees older than 55 in the cohort (hazard ratio 1.22, 95% confidence interval: 0.75, 1.96). These findings and a review of previous studies are consistent with the possibility that inclusion of older employees in the cohort masks the effect of job strain on cardiovascular disease.

Abstract 1349
COVERT COPING WITH UNFAIR TREATMENT AT WORK IS ASSOCIATED WITH INCREASED RISK OF INCIDENT MYOCARDIAL INFARCTION AND CARDIAC DEATH AMONG MEN
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Covert coping with unfair treatment at work--when the subject does not show the 'aggressor' that he/she considers him/herself unfairly treated--has been shown to be correlated with cardiovascular risk factors cross-sectionally and sickness absence prospectively. The present study is a prospective follow-up of WOLF Stockholm--an epidemiological study of work environment and cardiovascular disease (CVD). We linked self-rated data on coping from the baseline screening (1992-1995) with registry data on cause-specific hospital admission and death, available up to the end of 2003. We excluded all subjects who had been treated in hospital for any cardiovascular disease prior to baseline. Covert coping was measured with four questions: 'letting things pass without saying anything' and 'go away' when the subject feels unjustly treated by, or becomes involved in a conflict with, a boss or colleagues regarding covertly assessed incident MI or cardiac death. The strongest association was seen for the question about going away from unfair treatment by/conflict with colleagues. With 'never' as the reference category, the hazard ratio for those who responded 'seldom' was 3.1 (95% CI 1.3-7.6), and for those who responded 'sometimes or often' 3.3 (1.4-8.2). The study indicates that covert coping is strongly related to increased risk of hard end-point cardiovascular disease.

Abstract 1638
AN INTERACTIVE EFFECT OF NEUREGULIN-1 AND TYPE A BEHAVIOR ON A RELATIONSHIP BETWEEN WORK STRESS AND ATHEROSCLEROSIS
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We studied an interactive effect of neuregulin-1 and Type A behavior on a relationship between job strain (defined as the joint effect of job demands and job control) and carotid intima media thickness (IMT) in the sample of 611 men and 624 women (mean age 34.6 years) derived from the population based sample of Cardiovascular Risk in Young Finns study. In addition to adulthood Type behavior, job strain and IMT, the following childhood risk variables were used: parental socioeconomic situation, work stress, and life satisfaction. First, there was an association between job strain and IMT in men, while Type A behavior was unrelated both to job strain and IMT. There was also a weak but significant correlation between childhood parental SES and work stress.
Third, Type A behavior was related to IMT in men with high job strain and SNP8NRG221533 (T to C) job strain was associated with an increase of IMT. Second, neuregulin-1 was related to Type A behavior, PROTEIN (HSP) 60

Various psychosocial factors have been linked with an increased risk of cardiovascular disease. However, the pathological pathways underlying these associations remain unclear. Heat shock protein (Hsp60) is an evolutionarily highly conserved normally intracellular protein that is expressed during cell stress, and has immunomodulatory and inflammatory properties. It is present in the plasma of a proportion of healthy adults, and is implicated in the pathogenesis of atherosclerosis. We investigated whether plasma Hsp60 is associated with a range of psychosocial factors, namely job demands, emotional social support, psychological distress and income levels in a subset of the Whitehall II cohort. Five hundred and forty-one men and 319 women (mean age 60.2 years) were tested. Job demands were assessed with a standard questionnaire, psychological distress with the General Health Questionnaire, while the Close Person’s Questionnaire provided a measure of emotional social support. We found that psychological distress and job demands were both associated with very high levels of plasma Hsp60 (> 1000ng/ml). The odds ratios adjusted for gender, body mass index and smoking were 2.05 (p = .024) and 1.80 (p = .032), respectively. Low emotional support (p = .007) and low income (p = .006) were associated with an increased likelihood of having detectable Hsp60 in the circulation, but not with very high levels. In conclusion, plasma Hsp60 is associated with psychosocial risk factors for coronary artery disease in a large population sample and could be part of the mechanism relating these factors to the pathogenesis of atherosclerosis.

Psycho-Oncology: Beliefs, Emotions and Support

Abstract 1825

WOMEN’S BELIEFS AND ATTITUDES ABOUT CERVICAL CANCER SCREENING
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Romania has the highest morbidity and mortality from cervical cancer in Europe. The aim of this study is to determine women’s attitudes and beliefs about cervical cancer screening. We constructed a nationally representative sample of women aged 20-65 (N=1053). The selection of the variables included in the questionnaire was guided by Health Belief Model and the Theory of Reasoned Action. We conducted logistic regression analysis to identify the best predictors of intention and screening behavior. A t-test comparison of the mean scores of those who have had screening and those who have never had the test shows that the two subgroups of women are different from the perspective of perception of Pap smear benefits and costs, normative beliefs, and beliefs of self-efficacy and control over attending a cervical screening test in the following 3 months (all p<0.000). The best predictors of screening intention and behavior were normative beliefs, self-efficacy in relation to the behavior, and perception of low psychological costs of the smear and high benefits. The analysis suggests that women are falling between the cracks created by a complex interaction among cultural, socioeconomic factors, health care system and personal perceptions and beliefs. The findings highlight the need for complex prevention strategies, which map the link between individual and social factors.

Abstract 1225

AN EVALUATION OF THE ABSOLUTE AND RELATIVE STABILITY OF ALEXITHYMIA IN WOMEN WITH BREAST CANCER
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Objectives: In the controversy for alexithymia as a state or a trait dimension, the present study extended this question by investigating a disease with high threatening outcomes (breast cancer), by looking at changes in depression and anxiety, and by examining stability for total and factor alexithymia scores. Subject sample and methods: 122 women in treatment for a first breast cancer were assessed for alexithymia (TAS-20), depression and anxiety (HADS) the day before surgery (T1), and six months later (T2). Results: Alexithymia scores changed from baseline to follow-up (lack of absolute stability). Strong evidence of relative stability was also demonstrated, as alexithymia scores at baseline correlated significantly with alexithymia scores at follow-up and were also a significant predictor of follow-up alexithymia scores, after partiailling the effects of depression and anxiety severity. Changes in alexithymia were explained only to a small extent by changes in depression and anxiety from T1 to T2. Results at the factor level revealed that “difficulty identifying feelings” follow-up and change score accounted for the highest variations in depression and anxiety, and “externally-oriented thinking” for the lowest ones. Conclusions: The finding of relative stability of alexithymia supports the view that this construct is a stable personality trait rather a state-dependent phenomenon, even in a context of high threat for physical and psychological integrity.

Abstract 1339

PRELIMINARY EVIDENCE FOR UNIQUE EFFECTS OF RELATIONSHIP SUPPORT AND EMOTIONAL PROCESSING ON MORTALITY IN WOMEN WITH BREAST CANCER
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This prospective, longitudinal study examined relationship support and emotional processing as predictors of breast cancer progression. Emotion processing, characterized by acceptance of emotions and acknowledgement of distress, was conceptualized as a healthy response to stressful circumstances. Confiding in a spouse (CONF) was assessed by interviewing 90 women at 14 months after diagnosis of Stage I/II breast cancer. Dependable, non-household supports (SUPP), Acceptance of Emotion (AE) and Total Mood Disturbance(TMDS) were assessed by questionnaire. The Nottingham Prognostic Index (NPI) quantified disease severity. Standardized psychosocial variables were used to predict time from study entry to death in a Cox Proportional Hazards Regression model, with NPI included in univariate but not multivariate models. The technique of multiple imputation was employed. The set of all analysis variables were used to create 20 multiply imputed datasets with the default MCMC algorithm in SAS 9.1.3. Statistical estimates and p-values for linear and proportional hazards regression models were then generated through the SAS MIANALYZE module.

Twenty-one subjects developed recurrent disease and 16 died during the eight year follow-up. AE and TMDS were negatively correlated: r=-.49, p<.01 but neither correlated with NPI. NPI predicted increased mortality: RR= 1.6[1.0-2.4], p=.05. Relationship support (SUPPCONF = standardized CONF + SUPP scores), was a strong predictor of decreased mortality: RR=3.0[1.3, 6.9], p=.005. A suppressor effect was detected such that acceptance of emotion(AE) predicted decreased mortality when distress(TMDS) was included in the analysis: RR=.46[.24, .86], p=.01 but not when AE was the analyzed alone: RR=.65[.38,1.09], p=.07. In multi-variable analysis, SUPPCONF predicted decreased mortality: RR=0.55[.30, .99], p<.05, as did AE: RR=-0.48 [-.25, .91], p=.02; with a trend towards decreased mortality associated with TMDS: RR=-0.40 [-.14, .12], p=.10.
Abstract 1679

PRE-SURGICAL STRESS MANAGEMENT FOR MEN WITH EARLY STAGE PROSTATE CANCER UNDERGOING RADICAL PROSTATECTOMY

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Purpose: To conduct a randomized controlled trial to examine the efficacy of a two-session pre-surgical stress management intervention for men with early stage prostate cancer scheduled for radical prostatectomy. Methods: 158 men were randomized to one of three groups: stress management (SM); supportive attention (SA); or usual care (UC). Men in the SM group met with a psychologist twice prior to surgery to discuss their fears/concerns about the surgery and were taught diaphragmatic breathing, guided imagery, an imaginary exposure to the day of surgery, and exposure to cognitive therapy and adaptive coping skills. Men in the SA group met with a psychologist twice prior to surgery to discuss their fears/concerns about the surgery and then a semi-structured medical interview was conducted. The UC group did not meet with a psychologist. Men completed measures of mood disturbance (POMS-18), intrusive thoughts/avoidance behaviors (IES), and pain (MPQ) at baseline (2-4 weeks pre-surgery), 2-7 days pre-surgery, morning of surgery, and 6 weeks post. Results: Men were primarily Caucasian (78%), married (85%) and highly educated (80% college or higher). Medical/demographic characteristics, except ethnicity (UC group had more minority men), were similar between groups. Mixed model analyses, controlling for ethnicity and the respective baseline measure, indicated a significant decrease in mood disturbance over the study period for men in all groups (p<.01). There was also a significant group main effect (p<.02). Mean POMS scores, adjusted for baseline levels and averaged over the 3 follow-up time points, were 8.2 (SM), 9.5 (SA), and 11.2 (UC). Post-hoc analyses revealed significantly lower POMS scores for the SM vs. UC group. IES levels decreased significantly over time (p<.01), with no group differences in IES or MPQ levels. Conclusions: Results suggest that a brief pre-surgical stress management intervention is beneficial in terms of reducing mood disturbances before and after prostate cancer surgery and that the effect is not simply due to extra attention from medical staff.

Risk Factors in Cardiovascular Disease

Abstract 1069

RR INTERVAL VARIABILITY IS INVERSELY RELATED TO SERUM IL-6 AND CRP LEVELS IN YOUNG ADULTS: THE CARDIA STUDY

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Recent studies indicate that immune responses are controlled by the vagus nerve. Stimulation of this "cholinergic anti-inflammatory pathway" confers significant protection against cytokine release and tissue damage in animal models of sepsis, atherosclerosis, subarachnoid hemorrhage, and experimental arthritis. Accordingly, we reasoned that decreased levels of vagus nerve activity might contribute to the progression of inflammation in atherosclerosis and tested the hypothesis that RR interval variability (RRV), as an index of cardiac parasympathetic modulation, is inversely related to levels of IL-6 and CRP. We tested the hypothesis that RR interval variability (RRV), as an index of cardiac parasympathetic modulation, is inversely related to IL-6 and CRP were derived from 10 min seated ECG recordings. IL-6 and CRP levels were inversely related to IL-6 (b = -0.08 and -0.17 for HF and LF power, p < .001 respectively) and CRP (b = -0.14 and -0.27 for HF and LF power, p < .001 respectively) levels. In the multivariate model including gender, race, age, smoking, physical activity, SBP, BMI and disease, the inverse relationship between RRV and inflammatory markers, although slightly attenuated, remained significant.

Causality cannot be established in a cross-sectional study but these data in young, generally healthy adults are consistent with the hypothesis that cholinergic anti-inflammatory pathway activity inhibits cytokine release.

Abstract 1219

STRESS-INDUCED ANGER AND TRAIT ANGER ARE RELATED TO QT VARIABILITY INDEX AND HEART RATE VARIABILITY IN ICD PATIENTS

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QT variability index (QTVI), a marker of cardiac repolarization lability, is a risk marker for ventricular tachycardia and fibrillation, and decreased heart rate variability (HRV) predicts mortality and arrhythmic complications in post-myocardial infarction patients. Anger is an emotional trigger of life-threatening arrhythmias in vulnerable patients. We studied 57 patients with coronary artery disease and implanted cardiac defibrillators (ICD) and 28 healthy controls using 2 mental stress tasks (anger recall and mental arithmetic)-QTVI was assessed from digitized ECGs using the Berger method (QT variability corrected for mean QT interval (QTVN) divided by HR-corrected HR total power). State anger was assessed using Likert ratings during anger recall, trait anger/hostility by the Spielberger Anger Expression Scale (SAES) and Cook-Medley scale, and usual anger via the Profile of Mood States (POMS). During rest and stress, ICD patients had significantly lower HRV and higher QTVI than controls (p<.001). ICD patients with high POMS anger had significantly higher QTVI (p<.05) and QTVN (p<.05) during both stress tests. SAES, Cook-Medley, and POMS usual anger correlated with stress-induced increases in QTVI (r=.41-.48, p<.01) and QTVN (r=.36-.45, p<.05), but not changes in HRV (r=.01-.16, p=NS). In ICD patients and controls, anger was not correlated with QTVI or HRV at rest. In controls, anger was not associated with QTVI or HRV during stress or from rest to stress. ICD patients with greater induced-anger during anger recall had higher QTVI (p<.001) and lower Low Frequency (LF) HRV (p<.001) than high-anger Controls and higher QTVI (p<.001) and lower LF (p<.10) than ICD patients with low anger. There were no group or anger differences for anger-induced high frequency HRV. In vulnerable patients, mental stress-induced state anger results in higher QTVI and lower LF HRV. Trait anger/hostility predisposes ICD patients, but not Controls, to increases in repolarization lability during mental stress without altering HRV. Loss of repolarization reserve may explain why anger is a potent trigger of arrhythmias in vulnerable subjects.

Abstract 1204

STABLE INDIVIDUAL DIFFERENCES IN HEALTH STATUS AMONG PATIENTS WITH PERIPHERAL ARTERIAL DISEASE: A PROSPECTIVE FOLLOW-UP STUDY ON THE ADVERSE EFFECT OF TYPE-D PERSONALITY

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Objective: Peripheral arterial disease (PAD) patients often experience a poor health status, but subgroup differences associated with this patient-based outcome are not fully understood. Therefore, we examined the impact of PAD severity, invasive treatment, and type-D (‘distressed’) personality on patients’ health status at one-year follow-up.

Methods: At baseline, 203 consecutive patients with newly diagnosed PAD completed the DS14 and the RAND-36 questionnaires to assess type-D personality and health status. PAD severity included treadmill walking distance and ankle-brachial pressure indexes; data concerning invasive treatment were derived from the patients’ medical files. The main outcome was health status (RAND-36) at one year after initial diagnosis.

Results: Health status improved between baseline and one-year follow-up, and PAD severity also correlated with stress-induced increases in QTVI (r=.41-.48, p<.01) and at one-year follow-up (p-values<.05). PAD severity also
predicted health status at follow-up. After adjusting for PAD severity, invasive treatment, age and sex, type-D personality remained as an independent predictor of all health status domains, except for Physical functioning. Accordingly, type-D personality independently predicted increased risk for both poor General health (OR=3.70;95%CI=1.69-8.08, p<.001) and poor Mental health (OR=6.01;95%CI=2.44-14.79, p<.0001) at one year following diagnosis of PAD.

Conclusions: Despite an overall improvement, type-D patients remained more impaired in one-year health status than non-type-D patients, indicating the stable adverse effect of type-D over time. Individual differences, including personality, should be accounted for when evaluating health status in PAD.

Abstract 1709
REGULAR EXERCISE IS ASSOCIATED WITH A FAVORABLE CARDIOVASCULAR RISK PROFILE BUT DOES NOT INFLUENCE STRESS-REACTIVITY
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We tested the association between exercise behavior and cardiovascular stress reactivity in the largest sample to date, and used the co-twin control method to test whether the effects of exercise are causal. Data was available from 1056 subjects; 160 adolescent twin pairs (mean age: 16.7 ± 2.0) with both their parents (mean age 46.8± 6.2) and 208 middle-aged twin pairs (mean age: 44.2 ± 6.7). Subjects were classified as exercisers if they engaged in 60 minutes of weekly exercise activities with a minimum intensity of 4 Metabolic Equivalents (METs). 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. Exercisers had significantly lower resting and stress levels of HR (adolescent: -6.2 bpm; middle-aged -2.9 bpm), SBP (adolescent: -1.3 mmHg; middle-aged -3.7 mmHg) and DBP (adolescent: -2.1 mmHg; middle-aged -2.2 mmHg), and higher levels of RSA (adolescent: +3.6 msec; middle-aged +4.1 msec). Truncal adiposity was, however, no effect of exercise on the reactivity to stress for any of the variables. To determine whether the lower absolute values of SBP, DBP, and HR and the higher values of RSA were due to a causal effect of exercise we examined the within-pair contrasts for these variables in same sex twins pairs discordant for exercise behavior. The exercising twins in MZ twin pairs discordant for exercise behavior had a significantly lower HR than the non-exercising twins in adolescent and middle-aged twins. Similar results obtained in adolescent and middle-aged DZ twin pairs. For SBP, DBP, and RSA no differences were found between the exercising and non-exercising member of a twin pair. We conclude that the lower HR in exercisers reflects a causal effect of exercise, whereas the lowered DBP, SBP and RSA levels may reflect pleiotropic genes that independently influence cardiovascular risk profile and exercise behavior.

Associations of Anxiety and Depression with Physical Health, Health Behaviors and Intimate Relationships

Abstract 1192
ABDOMINAL OBESITY AND THE INCIDENCE OF DEPRESSION IN AN OLDER POPULATION
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Recent studies suggest that abdominal obesity, in particular visceral obesity, predicts cardiovascular disease (CVD) and diabetes, independent of overall obesity. Since depression in the elderly may share some of the pathophysiological processes with these diseases, abdominal obesity might also be an independent predictor of subsequent depression. We investigated the relationship between abdominal obesity and incident depression using data from 2387 participants (aged 70-79 years, 51.1% women) in the Health ABC study without depression at baseline. Total and central adiposity measures included body mass index (BMI), % total body fat (measured by dual energy x-ray absorptiometry), waist circumference, sagittal diameter, and abdominal visceral and subcutaneous fat area (measured by computerized axial tomography). Incident depression was defined as a CES-D 10-item score ≥10 or new antidepressant drug use during any follow-up visit. Persistent depression was defined as depression at 2 consecutive follow-up visits. During a mean follow-up of 4.3 (SD=1.1) years, 558 persons (23%) became depressed (180 were persistently so). After adjustment for covariates and overall obesity measures, sagittal diameter (HR per SD increase=1.31, 95%CI=1.10-1.56, p=0.02) and abdominal visceral fat (HR per SD increase=1.15, 95%CI=1.02-1.28, p=0.02) predicted incidence of depression. Persistent depression was predicted by BMI (HR per SD increase=1.21, 95%CI=1.03-1.42, p=0.02), % body fat (HR per SD increase=1.33, 95%CI=1.04-1.69, p=0.02) and abdominal visceral fat (HR per SD increase=1.23, 95%CI=1.02-1.48, p=0.03). No significant sex, race or baseline typical MDD (by abdominal obesity interactions were found. Results were similar when depression was based on CES-D score alone. These results suggest that abdominal visceral obesity, besides and independent of overall obesity, is a risk factor of incident depression.

Abstract 1613
GLUCOSE CLAMP SHOWS ALTERED GLUCOSE ALLOCATION IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER
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Purpose of study: Patients with major depressive disorders (MDD) show alterations in the oral glucose tolerance test and at increased risk for non-insulin-dependent diabetes mellitus and cardiovascular disorders. Typical depressive disorders characterized by weight loss and hyposomnia are accompanied by a hyperresponsiveness of the LHPA-system and hypocortisolism. In MDD with atypical features - mainly weight gain and hypersomnia- a decreased activity and responsiveness of the LHPA-system was observed. However, it is still not well known to what extend these alterations influence glucose homeostasis and the allocation of metabolic energy. The glucose clamp, a method known as the gold standard in the assessment of allocation, has not yet been used in depressed patients. Subject sample and statement of methods: Nineteen patients with typical and 7 patients with atypical major depression (13 women, 13 men) underwent a hyper-/hypoglycemic stepwise glucose clamp. Fourteen healthy women and 16 healthy men served as the comparison group. Insulin was infused at a rate of 1.5 mU kg KG-1 min-1. A 20% dextrose solution was simultaneously infused at a variable rate to control plasma glucose concentrations. Arterialized blood was drawn at 5-min intervals to measure the plasma glucose concentration. Summary of results: The glucose disposal rate was decreased in patients with typical MDD (mean 2.86 ± 0.71 ml/h/kg) and atypical MDD (mean 2.47 ± 0.63 ml/h/kg) compared to the comparison group (mean 3.53 ± 0.87 ml/h/kg). Repeated measures ANOVA showed significant effects of time (F= 1.44, p= 0.24) and group (F= 1.45, p= 0.03). We conclude that patients with MDD have impaired glucose homeostasis assessed by glucose clamp. Similar alterations in glucose metabolism were observed in MDD with typical and atypical features.

Abstract 1844
ANXIETY AND DEPRESSION IN ADOLESCENTS WITH ASTHMA WHO SMOKEd
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Despite known risks of smoking, youth with asthma continue to smoke but factors associated with smoking are not well understood. This paper describes the prevalence of, and factors associated with smoking and susceptibility to smoke among youth (11-17 years) with asthma. Data come from a large epidemiological study of mental health diagnoses in adolescents with asthma. Telephone interview with 781 youth (60.6% of eligible) from a large Health Plan assessed demographics, smoking and DSM-IV mental disorders.
Interviews with parents included the Child Behavior Check list. The majority of adolescents (83.7%) were non-susceptible never smokers but the remaining 16.3% were susceptible to future smoking (5.2% were current smokers, 11% were classified as susceptible non-smokers). Compared with non-smokers, smokers were older (OR=2.90, 95% CI 1.98, 4.26), more likely to have >1 family members who smoked (OR=6.59, 95% CI 2.37, 18.31), more likely to be female (OR=2.40, 95% CI, 1.01, 5.72), had higher scores on parent rated externalizing behaviors (OR=1.10, 95% CI 1.05, 1.14), and were more likely to meet DSM-IV criteria for an anxiety/depressive disorder (OR=2.58, 95% CI 1.06, 6.28). Compared with non-smokers, youth susceptible to future smoking were older (OR=1.18, 95% CI 1.04, 1.34), more likely to have >1 family members who smoked (OR=1.92, 95% CI, 1.17, 3.14), and had higher scores on parent rated externalizing behaviors (OR=1.04, 95% CI 1.01, 1.07).

Results indicate a significant association between smoking and mental disorders: 37.8% of smokers, 19.8% of youth susceptible to smoking and 14.5% of non-susceptible non-smokers met DSM-IV criteria for an anxiety or depressive disorder (p<.001). Effective interventions are needed that target youth with comorbid asthma and anxiety and depression, externalizing behaviors, and exposure to family members who smoke in order to prevent youth from smoking and to improve asthma control.

Abstract 1687

DOES CHANGE IN RECIPROCITY PREDICT DEPRESSIVE SYMPTOMS IN MEN AND WOMEN? A 5-YEAR PROSPECTIVE STUDY

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There is no evidence available on the potential moderating role of gender in the association between the change in reciprocity in intimate relationships and future depressive symptoms. Data from a 5-year prospective cohort study (the HeSSup Study, Finland) (N=19,203) were analysed. Most of the participants reported having a reciprocal support balance with persons close to them in both study phases; the reciprocity mean (Range: 1-2) at Time 1 for men was 1.45 (SD=0.24); for women, 1.46 (SD=0.21). For the women, the prevalence of severe or moderate depressive symptoms was 4.6% at Time 1 and 4.8% at Time 2 (The 21-Item Beck Depression Inventory). The corresponding figures for the men were 3.9 and 3.9 respectively. After adjustment for demographic characteristics, hostility, and baseline depressive symptoms, a shift of balance towards support-giving was a significant risk factor for future depressive symptoms among men. In contrast, women whose reciprocity balance had moved towards support-receiving had a higher risk of future depressive symptoms than other women. This gender difference was confirmed by the test of the interaction between gender and change in reciprocity (p=0.006). These findings were also replicated in a sub-cohort of the initially non-depressed and equivalently treated participants. We conclude that in men, adverse effects on mental health are more likely when their role in intimate relationships shifts towards one that provides support, while in women, the detrimental impacts are seen when their role in intimate relationships shifts towards support-receiving.

Neuroscience & Affect Science

Abstract 1344

EMOTION REGULATION THROUGH CHANGES TO FACIAL EXPRESSION


We tested whether facial expressions of emotion are integral parts of the experience of emotions and how that might translate into regulating emotion. Psychosomatic connections, such as those between emotional experience and facial expression, have been central to emotion theories since the time of Darwin. However, little research has investigated how these connections can be leveraged in regulating emotion. If emotional facial expressions are integral to emotional experience, interference with their expression should limit that experience. To test this hypothesis while ruling out lay theories about the connection between expression and emotion, 92 members of the Columbia University community wore dummy electrodes on the face and were instructed that we were monitoring brain-wave activity. One group of participants (Ps) was asked not to move the muscles at the locations of the electrodes, as it would ruin the brain-wave data. They were compared to controls who were not instructed to restrict movement, and to Ps who engaged in an alternative distracting task. Emotion questions were buried amongst a series of questions about memory and attention. Debriefing interviews revealed that these methods were effective in masking the relevance of the study to emotion and facial expression. Self-report was recorded, along with HR. A hidden camera was used to ensure that instructions were followed. Limitation of expression did decrease self-report of negative emotion (p<.05) but not positive emotion. Distraction was not able to account for this decrease in emotion. Furthermore, HR was decreased by facial expression restriction, but increased by distraction (p<.05). For the Restricted Movement, Control and Distraction groups, respectively, mean self-report scores of negative emotion were 1.1, 2.2 and 2.1, (scale 0-4); and of HR were 69.4, 76.3, and 78.9 BPM. These results suggest that there exist at least some emotional experiences for which facial expressions form an integral part.

Abstract 1747

EXPLICIT, IMPLICIT, AND AMBIGUOUS RACISM: TRIGGERS AND AFFECTIVE RESPONSES

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Interpersonal racism may serve as a stressor increasing risk for hypertension (HTN). Episodes of interpersonal racism vary in the degree to which racial bias is made explicit during the exchange. Differences in the degree of perceived explicitness may be associated with variations in affective response.

Understanding the triggers of and affective responses to these interactions is necessary to develop effective prevention interventions. The 302 participants (including 146 Blacks, 103 Latino(a)s, 27 Whites, 8 Asians, 3 Native Americans; 83 Men) were asked to describe 4 episodes of maltreatment they had experienced that varied in the degree to which they were perceived to involve: explicit racism (i.e., racial/ethnic bias overtly stated), implicit racism (i.e., racial/ethnic bias implied, but not specifically stated), ambiguous racism (i.e., racial/ethnic bias was a possible source of motivation), and non-racist related maltreatment. The dependent measure included affective response (i.e., anger, sadness, fear), with each dimension assessed with a 3-item scale. Most participants (249/302) reported having been exposed to at least one type of racism, and 183 individuals reported having been exposed to all three types of racism (i.e., explicit, implicit, and ambiguous). Chi-square analyses indicated explicit incidents were more likely than ambiguous ones to occur in public (p < .02); whereas implicit incidents were more likely to occur at work (p = .05). Proc Mixed analyses including all four types of situations as the independent variable revealed no differences among situations in the degree of fear evoked by the maltreatment; however, participants felt angrier in response to all three types of racist situations than the non-racist episode of maltreatment F(3,631) = 6.69, p < .002. They felt sadder in response to explicit racism than other types of racism F(3,628) = 3.56, p < .02. These data provide insights into the ways in which racist interactions may engender social isolation and add to the overall stress burden.

Abstract 1794

FEAR OF PAIN INCREASES NEURAL ACTIVATION IN FRONTAL CORTEX AND AMYGDALA DURING PAIN ANTICIPATION

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Anticipation of pain readily prompts defensive activation in body and brain. Prior psychophysiological research suggests that individual differences in fear of pain modulate physiological reactivity during pain anticipation. Neuroimaging studies have shown that anticipatory processes are mediated by ventromedial prefrontal cortex, insula, and amygdala. In a current event-related functional magnetic resonance imaging was used to explore how individual
differences in fear of pain modulate cortical activation during an instructed fear paradigm. 35 female participants significantly differing in self-reported pain anxiety (p < .001) viewed simple cues that signaled the potential of electric shock (threat) or no shock (safe). The two groups reported similar levels of depression and trait anxiety. Skin conductance and pulse plethysmography were collected simultaneously. Group analyses examined the overlap and divergence of neural activity between the fearful and non-fearful groups. All contrast maps were threshold at p < .05 and corrected for multiple comparisons using Monte Carlo simulations. Across all participants, threat of shock elicited greater signal change in the amygdala, inferior frontal gyrus, dorsal and subgenual anterior cingulate cortex, and anterior insula. Skin conductance changes were also greater under threat of shock compared to the safe condition (p <.05). High fear participants showed a greater extent of activation in the inferior frontal gyrus, anterior insula and amygdala. These effects are consistent with group differences in self-reported anxiety. Altogether these findings are consistent with prior work identifying the neural structures mediating anticipatory anxiety, and show that increased trait fearfulness exaggerates activity within the prefrontal cortex and amygdala, leading to increased physiological reactions and negative affect during expectation of a painful event.

Abstract 1532

SUBGENUAL CINGULATE ACTIVATION DURING RESPONSE INHIBITION IS RELATED TO LEVEL OF DEPRESSION

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An impaired ability to inhibit negative thoughts is associated with major depressive disorder (MDD), an important illness in psychosomatic medicine. Neuroimaging studies have shown that individuals with MDD show altered brain activation in a network of structures that includes the subgenual anterior cingulate cortex (sgACC). However, sgACC function during response inhibition has not been fully characterized in subjects with MDD. Therefore, the current study aimed to determine whether sgACC activation during response inhibition is altered in individuals with MDD. To that end, 11 unmedicated subjects with MDD and 11 healthy comparison subjects without a lifetime history of MDD performed an inhibition task, which has been shown previously to differentially activate the sgACC, during fMRI. Three main findings were observed. First, task-related sgACC activation was significantly greater in the MDD relative to the control group. Error rates between the groups were not significantly different, suggesting that the imaging findings were not a result of behavioral differences between the groups. Second, within the MDD group, sgACC activation correlated positively with scores on the BDI-2. Third, a functional connectivity analysis revealed that MDD individuals relative to control subjects showed stronger connections between the sgACC and the amygdala, anterior and posterior insula and pons. These results suggest that in order to perform at a similar level as controls, individuals with MDD require greater activation of sgACC, and that this activation is correlated with the severity of depression. Moreover, it appears that the degree of sgACC activation is related to its connection with limbic areas important for affective control. Our findings suggest that limbic systems may ‘overtake’ inhibitory control in MDD such that affectively significant stimuli cannot be cognitively inhibited; therefore contributing to the severity of depression. Future studies should examine whether this cognitive neural-systems approach may be used as a biomarker to stage illness severity, treatment success and risk of recurrence.