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Meeting Abstracts

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MECHANISMS OF ELEVATED INFLAMMATION IN POSTTRAUMATIC STRESS DISORDER: DATA FROM THE MIND YOUR HEART STUDY

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Patients with chronic pain disorders such as fibromyalgia typically have less emotional awareness than do healthy controls, but whether emotional awareness predicts variation in pain and functioning within a sample of patients is unclear. Also, self-reported vs. performance-based measures of emotional awareness need to be compared because they may predict pain and functioning differently. In this study, 200 patients with fibromyalgia (age M=48.0, 92% female, 76.7% Caucasian, 20% African American) completed the self-report Toronto Alexithymia Scale -20 (LEAS) and the performance-based Toronto Alexithymia Scale -20 (LEAS). The LEAS responses were coded for “self” and “other” levels of emotional sophistication and integration. Patients also reported their pain severity (Brief Pain Inventory) and physical functioning (SF-12 Physical Functioning and Role Physical scales).

Analyses were controlled for education. The LEAS-self (but not LEAS-Other) was significantly correlated with lower pain severity (β = -0.20, p < 0.005), and better physical functioning (β = 0.15, p = 0.03). Multiple regressions subsequently controlled for measures of depression (CES-D) and anxiety (GAD-7), and the LEAS-self continued to predicted both less pain (β = -0.19, p < 0.007) and better physical functioning (β = -0.13, p < 0.05). Surprisingly, the TAS-20 was not associated with either pain severity (r = 0.03) or physical functioning (r = 0.10) or self-consciousness (r = 0.05), or anxiety (r = 0.06) controlling for anxiety and depression. These findings suggest that the LEAS is more sensitive to variation in pain or functioning within a population than is the more widely-used TAS-20. The performance-based LEAS appears to capture subtle individual differences, whereas the self-report TAS-20 may be too broad or global to detect these individual differences. The fact that the LEAS-self score was more predictive than the LEAS-other score raises the possibility that awareness and ability to communicate about one’s own emotions differs from awareness of other’s feelings, and this difference should be studied further. Performance-based measures of emotional awareness and expression may be needed to bypass the limitations of self-reports.

EMOTIONAL AWARENESS AND HEALTH STATUS IN PATIENTS WITH FIBROMYALGIA

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Trauma exposure and posttraumatic stress disorder (PTSD) have been linked with elevated inflammation in a number of studies. In turn, inflammation is involved in the development of multiple chronic diseases, including the development of pain and autoimmune disorders. However, it is not clear if elevated inflammation is a feature of both remitted and current PTSD, and the mechanisms responsible for elevated inflammation in PTSD remain poorly understood. Adverse health behaviors associated with PTSD may contribute to elevated inflammation. Our sample included 704 Veterans Affairs patients (53% current PTSD; 16% remitted PTSD) who participated in the Mind Your Heart Study (mean age = 59±11; 94% male). The Clinician Administered PTSD Scale was used for diagnosing PTSD, while high sensitivity C-reactive protein (hsCRP), white blood cell (WBC) count and fibrinogen were used as indices of inflammation. Factors related to health behaviors, including body mass index (BMI), smoking, sleep quality, alcohol use and physical activity were assessed. We used analysis of covariance models with planned contrasts to examine differences in inflammation among groups differing in PTSD status. Mediation models with bias-corrected bootstrapping were used to examine if adverse health behaviors mediate the relationship between PTSD and inflammation. All models were adjusted for age, sex, race, kidney function and socioeconomic status. There were significant differences among groups in hsCRP (F = 4.97, p < 0.01) and WBC (F = 3.58, p = 0.03). Follow-up planned comparisons indicated that individuals with current PTSD had significantly elevated hsCRP and WBC compared to patients with no history of PTSD (p < 0.01). In contrast, those with remitted PTSD had levels of hsCRP and WBC that were not significantly different from those with no current PTSD. In our mediation analysis, BMI (Estimate = −0.06, 95% CI [−0.09, −0.02]) and physical activity (Estimate = −0.03, 95% CI [−0.05, −0.01]) were significant mediators of group differences in hsCRP, and BMI (Estimate = −0.01, 95% CI [−0.01, −0.003]) and sleep (Estimate = −0.008, 95% CI [−0.02, −0.007]) were significant mediators of group differences in WBC. These findings extend research showing elevated inflammation in PTSD suggest that next steps in the development of effective preventive interventions should focus on targeting these behaviors which may have the potential to reduce inflammation and enhance health in individuals with current PTSD.

SENSITIZATION OF INFLAMMATORY RESPONSES TO REPEATED ACUTE PSYCHOSOCIAL STRESS IN OVERWEIGHT INDIVIDUALS

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Rates of chronic diseases are high among overweight individuals. Approximately two thirds of Americans are overweight or obese. Obesity is correlated with morbidity and shorter lifespan, as stress is in response. It has been shown that overweight individuals show less efficient cortisol habituation in response to repeated stress, and as cortisol regulates inflammation it is possible that overweight individuals also have aberrant peripheral inflammatory response. Increased inflammatory responses to a range of health-related stressors increases risk of both remitted and current PTSD, and the mechanisms responsible for elevated inflammation among groups differing in PTSD status. Mediation models with bias-corrected bootstrapping were used to examine if adverse health behaviors mediate the relationship between PTSD and inflammation. All models were adjusted for age, sex, race, kidney function and socioeconomic status. There were significant differences among groups in hsCRP (F = 4.97, p < 0.01) and WBC (F = 3.58, p = 0.03). Follow-up planned comparisons indicated that individuals with current PTSD had significantly elevated hsCRP and WBC compared to patients with no history of PTSD (p < 0.01). In contrast, those with remitted PTSD had levels of hsCRP and WBC that were not significantly different from those with no current PTSD. In our mediation analysis, BMI (Estimate = −0.06, 95% CI [−0.09, −0.02]) and physical activity (Estimate = −0.03, 95% CI [−0.05, −0.01]) were significant mediators of group differences in hsCRP, and BMI (Estimate = −0.01, 95% CI [−0.01, −0.003]) and sleep (Estimate = −0.008, 95% CI [−0.02, −0.007]) were significant mediators of group differences in WBC. These findings extend research showing elevated inflammation in PTSD suggest that next steps in the development of effective preventive interventions should focus on targeting these behaviors which may have the potential to reduce inflammation and enhance health in individuals with current PTSD.

OMEGA-3 FATTY ACID SUPPLEMENTATION IN MIDDLE-AGED ADULTS REDUCES CARDIOMETABOLIC RISK IN MEN BUT NOT WOMEN

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Background: Greater consumption of omega-3 fatty acids has been associated with lower cardiovascular disease risk. Randomized controlled trials indicate direct, albeit small, beneficial effects of omega-3 fatty acids on plasma triglycerides and blood pressure, yet few studies have examined the impact of omega-3 fatty acid consumption on insulin resistance and the clustered risk factors comprising the metabolic syndrome.

Methods: We conducted a double-blind, placebo-controlled, parallel group clinical trial. Subjects were 30-54 year-old adults free of atherosclerotic disease and diabetes whose intake of EPA and DHA totaled <300 mg/day. Each was randomly assigned to daily fish oil supplements (2g/day containing 1000 mg EPA and 400mg DHA) or matching soybean oil placebo for 18 weeks. Aggressive CMR at baseline and post-intervention was calculated as the standardized sum of standardized distributions of blood pressure, BMI, and fasting serum triglycerides, glucose, and HDL (reverse scored). Missing data due to dropouts (n=17) and outliers (1-6 per variable) were replaced by multivariate imputation. Outcome analyses were conducted with linear regressions of all randomized subjects based on intention-to-treat. Results: Participants were 272 healthy adult (57% (154 out of 272) women; 17% (47 out of 272) minority; mean age 42) Pittsburgh-area residents. At baseline, demographics, health parameters, physical activity and EPA and DHA consumption did not differ significantly between treatment groups. No overall treatment effect was found, whereas gender moderated the effects of treatment on CMR risk (gender, p<.001 and gender*treatment interaction term p<.01). In gender-specific analyses, supplementation lowered CMR risk relative to placebo in men (p=.036, effect size=0.29, standard error (SE) = 0.282) but not women (p=.168, effect size 0.261, SE = 0.524). Median difference was not significant between treatment groups. No overall treatment effect was found, whereas gender moderated the effects of treatment on CMR risk (gender, p<.001 and gender*treatment interaction term p<.01). In gender-specific analyses, supplementation lowered CMR risk relative to placebo in men (p=.036, effect size=0.29, standard error (SE) = 0.282) but not women (p=.168, effect size 0.261, SE = 0.524). Median difference was not significant between treatment groups. No overall treatment effect was found, whereas gender moderated the effects of treatment on CMR risk (gender, p<.001 and gender*treatment interaction term p<.01).
5) Abstract 1535

ASSESSMENT OF PERCEIVED EXACERBATION TRIGGERS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Chronic Obstructive Respiratory Disease (COPD) is a progressive respiratory disease characterized by chronic airflow limitation and is one of the leading causes of mortality worldwide. Identification and prevention of disease exacerbations in this population is of increasing importance. The present study sought to develop a reliable and valid measure of perceived triggers of exacerbations in patients with COPD, the COPD Exacerbation Trigger Inventory (CETI). Additionally, the relation between the CETI and other clinically relevant factors in COPD was examined. Participants (n=192) were recruited through clinical sites and online to complete a set of questionnaires, including the CETI, demographic information, disease specific information including medications and comorbidities, the COPD Assessment Test (CAT)(Jones et al., 2009), a trigger self-report, and in a subset of participants the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983).

Exploratory fixed factor analyses resulted with the identification of a 5-factor structure that was stable across subgroups of patients with COPD only and those with comorbidities. Five subscales (6-7 items each) demonstrated excellent internal consistency (Cronbach’s alpha = .90-.94). A hierarchical regression analysis indicated that scores on the CETI trigger scales accounted for a significant amount of variance in CAT scores, in addition to variance accounted for by demographic and comorbidities, R²= .431, F(14, 145)= 7.85, p<.001. Participants who reported a greater number of psychological triggers tended to have more exacerbations (p=.093) and were more likely to seek medical attention (p<.05). Overall, results indicate that the CETI is a reliable and valid measure of perceived exacerbation triggers in COPD patients and may be clinically useful in the care of these patients.

6) Abstract 1382

TAI CHI CHIH AND REGULATION OF SYMPTOPHAGAL BALANCE IN OLDER ADULTS: A RANDOMIZED CONTROLLED TRIAL

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Background: T’ai chi chih (TCC) is a movement based meditation that offers a number of health functioning and psychological benefits, but little is known about the role of this mind-body therapy on physiological pathways such as the autonomic nervous immune system and sympathovagal balance. Methods: This randomized controlled trial (Scalanci et al., 2020) empiric efficacy trial assigned 104 older adults with both chronic and primary insomnia into TCC, cognitive behavior therapy (CBT), or sleep seminar educational control (SS) for two hour session weekly over 4 months. Electrocardiographic recording were obtained 20 minutes after waking in a sleep laboratory, at pre- and post-intervention for spectral analysis of heart rate variability. Analyses of variance and post hoc tests were conducted. Results: At post-intervention, TCC showed a lower ratio of low frequency to high frequency power (LF/HF) relative to the CBT or SS groups (p<.05), which was due to an increase in high frequency power (HF) or estimated vagal activity (p<.01). The mean interbeat heart interval was significantly longer for TCC post intervention relative to the CBT and SS groups (linear contrast, a p<.01). Conclusion: This study demonstrates that TCC practice is associated with an increase in vagal activity, and a reduction in estimated sympathetic tone in older adults with insomnia. Given that insomnia is associated with increased sympathetic outflow along increases in cardiovascular mortality, these findings have implications for reducing the risk of adverse cardiovascular outcomes in older adults with insomnia.

7) Abstract 1434

DECLINING EMOTIONAL SUPPORT FROM PARTNERS PREDICTS PRO-INFLAMMATORY AND PRO-METASTATIC LEUKOCYTE GENE EXPRESSION IN WOMEN ONE YEAR AFTER SURGERY FOR BREAST CANCER

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8) Abstract 1138

PSYCHOLOGICAL AND CLINICAL PREDICTORS OF CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING AFTER THE FIRST CYCLE OF ADJUVANT CHEMOTHERAPY IN BREAST CANCER PATIENTS

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Objective: Chemotherapy-induced nausea and vomiting (CINV) has a significant impact on quality of life of cancer patients and is associated with the tolerability of treatment. There are patient-related risk factors such as younger age, female gender, poorer performance status, alcohol and smoking. It is well known that cancer patients experience both psychoemotional and physical symptoms, which are expected to interact. We focused on the psychological and social factors involved in the occurrence of CINV. Methods: We enrolled 74 female chemotherapy-naive breast cancer patients who recovered from surgery. The baseline questionnaire was completed before the first cycle of chemotherapy and the follow-up was done 1 month after. The outcome variable was nausea or vomiting ≥ 4 in M. D. Anderson Symptom Inventory (MDASI) after the first cycle of chemotherapy. Predictive factors were assessed before chemotherapy using questionnaires, which included the Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI), Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), Hospital Anxiety and Depression Scale (HADS), Impact of Events Scale - Revised (IES-R), M. D. Anderson Symptom Inventory (MASI). The symptom change through the first cycle of chemotherapy was investigated with paired-t-test and predictive factors for CINV with logistic regression analysis. Results: CINV after the first cycle of chemotherapy occurred in 21.6% of patients, compared to 4.1% prevalence of CINV with logistic regression analysis. Results: CINV after the first cycle of chemotherapy. Conclusion: Quality of sleep, sleepiness and distress before adjuvant chemotherapy were predictive factors of CINV after the first cycle of chemotherapy in early breast cancer patients.

9) Abstract 1201

PSYCHOLOGICAL RESILIENCE AS A PREDICTOR OF PAIN AND STRESS IN SYMPTOMATIC KNEE OSTEOARTHRITIS

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factors predict pain and stress in knee OA has been relatively understudied. Methods: A total of 280 participants with symptomatic knee OA (121 Caucasian Americans, 159 African Americans), ages 45-85, completed a battery of psychometric questionnaires assessing resilience including optimism (LOT-R), social support (MSPSS), and positive affect (PANAS), as well as measures of pain intensity/disability (GCPS) and perceived stress (PSS). Hierarchical multiple regression analyses were used to assess the ability of these resilience measures to predict levels of clinical pain, disability, and stress. Results: After controlling for the effects of age, race, and sex, the model accounted for significant variance in clinical pain intensity (R² = .026), pain disability (R² = .031), and stress (R² = .277). However, in the final model only optimism accounted for all pain intensity (β = .122, p < .05), disability (β = .190, p < .01), and stress (β = .308, p < .001). In secondary analyses, optimism was examined as a potential moderator of the stress-pain relationship. When optimism was low, there was a significant positive relationship between stress and pain disability; however, these effects were only observed in Caucasian Americans (β = 1.43, 95% CI [0.389, 2.464], t = 2.72, p < .01). All other moderation analyses were non-significant. Conclusion: These findings support a protective role for dispositional optimism in relation to pain and stress in knee OA, and suggest that optimism may have a stronger effect on the stress-pain disability relationship in Caucasian Americans, relative to African Americans. Future research is warranted to identify the mechanisms underlying these results, as well as to study the development of pain management interventions designed to enhance optimism.

10) Abstract 1429

OVERALL SATISFACTION WITH SOCIAL SUPPORT BUFFERS THE CARDIOVASCULAR STRESS OF NEGATIVE TRANSACTIONS WITH SUPPORT PROVIDERS

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Research has consistently demonstrated that perceived social support (PSS), an appraisal of the overall health of one’s support network, buffers against cardiovascular stress. Evidence indicates that the quality of acutely received social support (social support, social support) moderates cardiovascular responses, depending on whether a transaction was positive or negative. Yet, few studies have examined how PSS and RSS may interact. We tested the hypothesis that high PSS attenuates the positive association between negative RSS and higher ambulatory blood pressure (ABP). Participants were 165 adults (age: 32 ± 3, 73% Female, 64% White, 35% Black and 12% other race/ethnicity) who originally participated in the Project Heart studies while in high school. PSS was assessed in the laboratory with the Multidimensional Scale of Perceived Social Support. Participants completed 2 days of ABP monitoring and ecological momentary assessment to assess RSS, which was measured with questions reporting positive and negative transactions with social support figures. ABP was recorded at 30-min intervals during daily activities. Hypotheses were tested using a general linear model approach to regression in which ABP was predicted by PSS, RSS, and their interaction, after controlling for gender, age, and body size. Results for diastolic ABP indicated a significant main effect for RSS, F(1, 159) = 4.20, p < .05; Negative -RSS, F(1, 159) = 6.74, p < .01; and their interaction, F(1, 159) = 6.53, p < .01; as well as for all covariates. Analyses of simple slopes revealed that the relationship between N-RSS and DBP was attenuated by higher levels of RSS. The effect of N-RSS at low levels of RSS was b = 1.86 (SE = .72), p < .01; while at high levels of RSS the effect was reduced to b = 1.29 (SE = .50), p < .01. The same pattern of associations was evident for systolic BP and mean arterial pressure. Results suggest that whereas negative transactions with social support figures may increase cardiovascular stress, the perception of having a strong social support network attenuates stress responses during these exchanges.

11) Abstract 1734

HOW EFFECTIVE ARE EMOTION REGULATION STRATEGIES IN PATIENTS WITH MULTIPLE SOMATOFORM SYMPTOMS? AN EXPERIMENTAL STUDY

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Studies demonstrate that CBT is effective in treating patients with multiple somatoform symptoms (MSS), but the interventions consistently did not exceed medium effect sizes. Since many MSS patients seem to lack emotional awareness, the integration of emotion regulation strategies could enhance the effects of common psychological interventions. The specific efficacies of different emotion regulation strategies have not been assessed so far. 48 patients with MSS and 48 matched healthy controls participated in the experiment. We assessed a major physical complaint in the patient group or a recent physical illness in the control group with an interview and recorded it as an audiotope. This was used as a stimulus to induce the symptoms (every participant applied four strategies (acceptance, reappraisal, emotional self support, distraction story) to cope with their complaints. The strategies were presented in a pseudo random order to prevent for an effect of order. The primary outcomes were assessed by visual analogue scales (symptom intensity and subjective impairment) before and after the appliance of the strategies. Additionally emotion regulation abilities (ERQ, DERS), general psychopathology (BDI, BSI, PHQ-15) and somatization (SOMS-7) were assessed with questionnaires. The results show that we were able to induce the complaints in patients and in healthy controls and that three of the strategies showed to be successful in short-term reduction of the complaints: the acceptance as well as the reappraisal strategy showed to be the most effective, the distraction story showed a small but significant reduction, the emotional self support showed no significant effect over the time. Overall the patients experienced during all strategies more distress than healthy controls. Great emotion regulation abilities are associated with better efficiency of the acceptance strategy. The results indicate that the emotion regulation strategy acceptance seems to be as useful as the reappraisal strategy.

12) Abstract 1377

STRESS OVERLOAD AND ITS EFFECTS ON SALIVARY CORTISOL DURING THE TRIER SOCIAL STRESS TEST: RESULTS FROM THE HEALTHY MOMS, HEALTHY BABIES PROJECT

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Stress overload, the process by which environmental demands exceed one’s personal resources to cope with those demands, has been shown to produce poor health outcomes; yet, few studies have examined the biological mechanisms by which stress overload may affect at-risk populations. The purpose of the current study was to examine whether stress overload (as measured by the Stress Overload Scale) was associated with the production of the stress hormone cortisol during a laboratory stressor. Our sample consisted of 40 women (mean age=26±5 years; 70% annual income < $25K; 45% Latina, 30% African-American) who were identified to be at low risk (n=20) or high risk (n=20) for depression during pregnancy (based on DSM-IV criteria; mean weeks pregnant=17±5 weeks). Women were also identified to be at either low (n=17), middle (n=9), or high (n=4) stress overload. Salivary cortisol samples were collected before and after participating in a laboratory stressor that consisted of a public speaking and mental arithmetic task (Trier Social Stress Test) to assess cortisol reactivity, recovery, and total cortisol output (area under the curve). As expected, pairwise t-test analyses revealed that the laboratory stressor successfully produced a significant cortisol reactive response [t(2, 38) = -2.99, p < .01], followed by a significant decline in cortisol after the stressor [t(2, 37) = 5.15, p < .001]. Furthermore, women in the high depression risk group were found to have higher stress overload for women in the low depression risk group [t(2, 38) = 2.08, p < .05]. ANCOVA analyses showed that women with high stress overload had lower total cortisol output (suggesting a blunted cortisol response for this group) than women with low stress overload, controlling for gestational age [F(2, 38) = 8.76, p = .001]. This blunted cortisol response among women with high stress overload was found to be more pronounced if they were in the high depression risk group [F(2, 38) = 7.73, p < .01]. This stronger stress overload for women in the high depression risk group is an important construct in identifying the biological mechanisms that underlie stress-related disorders.

13) Abstract 1471

YOGA AND SELF-REPORTED COGNITIVE PROBLEMS: A RANDOMIZED CONTROLLED TRIAL FOR BREAST CANCER SURVIVORS.

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Cancer survivors often report cognitive complaints, such as difficulty focusing or remembering information, following cancer and its treatment. Higher levels of self-reported cognitive problems are associated with poorer quality of life and lower neuropsychological test performance among cancer survivors. However, researchers have not tested whether behavioral interventions can reduce post-treatment cognitive complaints. We performed secondary analyses from a randomized controlled trial for post-treatment breast cancer survivors (N=200) to examine whether a 12-week, twice-weekly 90-minute yoga intervention could reduce self-reported cognitive problems compared to a wait-list control group. Linear mixed models tested whether the intervention (yoga vs. no intervention) predicted cognitive symptoms as measured by the Breast Cancer Prevention Trial Cognitive Problems Scale ( Crawford ) over the course of the 3-month trial and 3-month follow-up period. Age, education, time since treatment, cancer stage, chemotherapy, and hormone therapy were included as covariates; intervention cohort and subject were included as random effects. On average, cognitive complaints decreased over the course of the trial in both groups. The effect was stronger among yoga participants than among control participants, suggesting that yoga participants reported greater decreases in cognitive complaints compared to the control group. The results remained similar, albeit slightly weaker, when controlling for other psychological variables that can contribute to cognitive dysfunction, including physical fatigue, depressive symptoms, and sleep quality. In support of our prior work, yoga participants who practiced yoga more frequently experienced greater benefit from the intervention in terms of self-reported cognitive function than those who practiced less frequently. These data suggest that behavioral interventions such as yoga may be useful in improving self-reported cognitive function in breast cancer survivors.
14) Abstract 1518
ANXIETY DISORDERS AND ACCELERATED CELLULAR AGING
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Background: Anxiety disorders increase the onset risk of several aging-related somatic conditions. This might be the consequence of an underlying process of accelerated cellular aging, as indexed by shortened length of telomeres. This study examines the association between anxiety disorders status as well as specific psychiatric characteristics (e.g. severity and symptom duration) and leukocyte telomere length (TL).

Methods: Data are from 1283 current anxiety disorder patients, 459 remitted anxiety patients and 582 controls, participating in the Netherlands Study of Depression and Anxiety. TL was assessed as the telomere sequence copy number (T) compared to a single-copy gene copy number (S) using qPCR. This resulted in a T/S ratio and was converted to base pairs (bp). DSM-IV based anxiety diagnoses and clinical characteristics were determined by structured psychiatric interviews and self-report questionnaires.

Results: Current anxiety disorder patients (bp=5431) had significantly shorter TL compared to controls (bp=5506; p=0.01) and remitted patients (bp=5499; p=0.03) in analyses fully adjusted for sociodemographics, health and lifestyle. Type of anxiety disorder further differentiated across disorders (see Figure 1). Remitted patients did not differ from controls on average (p=0.84); however, the time since remission was positively related with TL. Furthermore, anxiety severity scores were associated with TL in the whole study sample, in line with a dose-response association.

Conclusions: This large-scale observational study found evidence for a process of accelerated cellular aging among patients with a current anxiety disorder compared to controls. Such an impact was not observed among remitted persons, suggesting that accelerated cellular aging might in part be reversible.

15) Abstract 1813
ALLOSTATIC LOAD DURING PREGNANCY IS ASSOCIATED WITH GESTATIONAL AGE AT BIRTH
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Gestational age at birth (GA) is a critical pregnancy outcome that shows associations with health and educational achievement, even among infants technically born at term. Measures of physiological systems responsive to psychosocial stress collected over pregnancy, such as cortisol and immune markers, have been linked to GA, with higher levels predicting earlier birth age. Allostatic load (AL) is an established index marking cumulative biological 'wear and tear' on the body due to chronic physical and psychosocial challenge. Despite significant data demonstrating associations of this index with health outcomes across the life span, little is known about AL and pregnancy. This study examined the relationship of AL with GA in Healthy nulliparous and multiparous pregnant women (n=39, mean age=29.3 years, SD age = 3.7 years). AL was calculated using systolic, diastolic, and mean arterial pressure; heart rate; corticotropin-releasing hormone; interleukin 6, and leptin were collected during the latter 2 time points and then averaged. AL was lower with GA and the correlation was stronger with maternal age (r=-.37, p = .016). This association was stronger with number of years of education (an index of socioeconomic status) (r=-.28, p = .03) when maternal age was controlled. Taken together, these results suggest that AL is an important marker for GA and that AL shows similar relationships to sociodemographic and health variables in pregnant as in nonpregnant samples.

16) Abstract 1078
RISE TO THE CHALLENGE: EFFECTS OF A RANDOMIZED CONTROLLED TRIAL OF CARDIOVASCULAR RESPONSES TO SOCIAL EVALUATIVE THREAT IN OBSESE ADULTS
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Perceptions of situational demands and personal coping resources shape mental states of “challenge” vs. “threat” and are associated with cardiovascular reactivity profiles to standardized social stressors. Challenge states are associated with increases in cardiac output (CO) and lower total peripheral resistance (TPR) whereas threat states tend to elicit the reverse pattern. We evaluated the effects of a mindfulness-based intervention on challenge states as measured by self-reported emotions and cardiovascular reactivity. We conducted a randomized controlled trial comparing a 5.5 month standard diet and exercise weight loss program (16 sessions, plus all-day session) to an enhanced program incorporating mindfulness-based eating and stress management components in obese adults (BMI ≥ 30). Participants completed the Trier Social Stress Task at baseline and post-intervention (near session 15). Participants [mean age = 43.9 (SD = 12.7); 80% female] in the active control (n=67) and mindfulness groups (n=70) rated positive emotions reflecting challenge states (hopeful, eager, excited, confident) before evaluating speech and math tasks. 48 control and 54 mindfulness participants had valid cardiovascular reactivity data at both timepoints. Challenge emotions decreased by only 0.08 in the mindfulness group but by 0.49 in the control group, a difference of 0.40 (95% CI 0.14, 0.83, p=0.006). CO reactivity during the first minute of the speech task increased by 0.60 L/min in the mindfulness group and decreased by 0.97 in the control group, a difference of 1.60 (95% CI 1.05, 2.13, p<0.001). TPR reactivity decreased by 49.5 dyne·sec·m⁻⁵ in the mindfulness group and increased by 104.9 in the control group, a difference of -154.5 (95% CI -305.5, -31.5, p=0.045). Results remained significant after controlling for weight change (p < 0.05). Mindfulness training appeared to lead to the maintenance of positive psychological and cardiovascular stress responses over time compared to the control group, which showed decreased challenge perceptions and increased threat-related cardiovascular reactivity. Mindfulness may increase the ability to maintain a positive outlook when faced with repeated stress and decrease the development of chronic stress processes.

17) Abstract 1792
BETTER COGNITIVE ABILITIES PREDICT STRONGER HABITUATION OF CORTISOL RESPONSES TO REPEATED ACUTE STRESS
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Rationale: Non-habituation of hypothalamic-pituitary-adrenal (HPA) axis responses during repeated stress exposure is viewed as a maladaptive stress response pattern, and thought to be associated with negative long-term health outcomes. Knowledge of factors related with stronger habituation might open up avenues for prevention strategies, and cognitive abilities have been found related with lower responses to daily stressors. We set out here to expand this line of research, by examining the protective role of cognitive abilities for cortisol response and habituation to acute stress. Methods: We used a sample of 46 adults (52.2% male; mean age=31.83 years, SD age = 16.52), recruited from Brandeis University and the local community (Waltham, MA). Participants were exposed to the Trier Social Stress Test (TSST) on consecutive days. Cortisol was measured from saliva at time points -1, +1, 10, 30, 60, and 120 minutes after TSST exposure. Cognitive abilities were measured using an episodic verbal memory task. Episodic memory scores were computed as the average of immediate and delayed free recalls of 15 words. Results: Stress exposure induced significant increases in cortisol on both days (time effect: F=57.49; p < 0.01), with significantly lower responses to the second TSST (day effect: F=3.92; p= 0.05). Higher cognitive abilities were significantly associated with lower cortisol response during the second stress exposure (β = -0.37, p = 0.016). This association was observed while adjusting for age, sex, education, physical exercise, control beliefs, primary stress appraisal, as well as the level of cortisol response during the first stress exposure. Discussion: Our findings suggest that better cognitive abilities were related with stronger habituation of cortisol responses to repeated acute stress. These results confirm that cognitive abilities can play a protective role by being associated with more adaptive stress response patterns in younger and older adults. Future work will focus on understanding the mechanisms of the association between cognitive abilities and habituation of cortisol response.
Early life is widely acknowledged as one of the most critical periods for the influence of environment on adult behavior, mental and physical health. Observational studies report that mental health problems are more common in individuals with lower social position, and that stress during development may increase the risk of these effects. Among young children, low socioeconomic status (SES) and severe adversity during childhood are associated with increased risk of behavioral, psychological, and physical problems. This study examines the role of dispositional optimism, defined as the general expectation of favorable outcomes in the future, and cognitive/affective depressive symptomatology, in relationship to systemic inflammation in asymptomatic Stage B heart failure patients. Depressive symptoms were measured using the Beck Depression Inventory (BDI-II) and the level of dispositional optimism was assessed using the Revised Life Orientation Test (LOT-R). The sample consisted of 162 patients (95% male) with a mean age of 66.5 years (SD = 10.1), a mean body mass index (BMI) of 30.0 kg/m2 (SD=4.8), and adjusted mean level of brain-type natriuretic peptide (BNP) of 3.81 (SD=1.1). Using a series of linear regression equations, levels of log-transformed inflammatory markers were predicted, controlling for age, BMI, and smoking status. Higher levels of cognitive depressive symptoms were correlated with higher levels of interleukin-6 (IL-6) (p = .035, β = .157, ΔR² = .024) and C-reactive protein (CRP) (p=.029, β = .169, ΔR² = .028). No associations were observed between somatic depressive symptoms and inflammatory markers. On the other hand, a significant difference was observed between level of optimism and level of interleukin-6 (IL-6) (p = .027, β = -.164, ΔR² = .026), such that higher levels of dispositional optimism predicted lower levels of IL-6. These findings support the link between depression and inflammation, but also bring to light the potential for novel interventions that focus on cultivating and reinforcing higher levels of dispositional optimism in this at-risk population.

21) Abstract 1289

AUTONOMIC IMBALANCE AS A PREDICTOR OF METABOLIC RISKS: A COMPARISON OF EXPOSURES AND OUTCOMES

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Background: Effective prevention of metabolic risks depends in part on the identification of early predictors of metabolic disorders. We examined in a community sample the independent contribution of two measures of autonomic imbalance, resting heart rate (RHR) and heart rate variability (HRV) on five metabolic outcomes: 1) hyperglycemia; 2) high blood pressure; 3) high triglycerides; 4) low HDL, and 5) high body mass index (BMI) over 12 years. We also examined whether these two measures predicted incident cardiovascular disease, incident diabetes, and early mortality over 26 years. Methods and Results: We identified Offspring cohort participants from the Framingham Heart Study at visit 3 (1983-87, baseline for this study) who met the following criteria: a) age 18 or older and b) had data on RHR, HRV, and five measures of metabolic risk (blood pressure, fasting glucose, triglycerides, HDL, and body mass index) at three follow-up visits over 12 years. We conducted a backward elimination variable selection procedure on a logistic regression model, using baseline RHR, HRV, age, gender, and cigarette smoking as predictors to produce a specific metabolic outcome within 12 years. For each logistic regression examining the effect of autonomic imbalance on one of the five metabolic factors, we selected from the 1882 that baseline subgroup that did not have the specific metabolic outcome of interest. We followed a similar procedure to examine the effect of RHR and HRV on incident CVD, incident diabetes, and death from any cause occurring during the same period. For each logistic regression, the effect of autonomic imbalance on the five metabolic factors varied. In brief, the results of the logistic regressions indicated that the odds ratios for the association of RHR and HRV with metabolic outcomes were significantly higher compared to the odds ratios of the metabolic factors. The results of the logistic regressions indicated that the odds ratios for the association of RHR and HRV with metabolic outcomes were significantly higher compared to the odds ratios of the metabolic factors. The results of the logistic regressions indicated that the odds ratios for the association of RHR and HRV with metabolic outcomes were significantly higher compared to the odds ratios of the metabolic factors.
Nutrition Examination Survey (NHANES), a weighted sample of the U.S. population. Participants were 20 years of age or older and either foreign-born Hispanics (n=952) or U.S.-born non-Hispanic Whites (n=2,391). Primary predictor variables included: 1) Hispanic ethnicity; and 2) a validated Acculturation Index (comprised of language spoken at home, interview language, and proportion of life lived in the U.S.). The mediator variables for both models were log10 transformed CRP and depressive symptoms (assessed using Patient Health Questionnaire [PHQ-9]). Linear regressions were utilized to examine the associations of these predictor and mediator variables with self-reported health. Results: After controlling for CRP (standardized beta (β) = -0.24, p < .001) and depressive symptoms (β = -0.33, p < .001) in a multivariate model, Hispanic ethnicity was significantly associated with lower self-reported health status as compared to non-Hispanic Whites (β = -0.25, p < .001). These three variables explained 18% of the model variance in self-reported health. Among Hispanics, lower acculturation was associated with lower self-reported health status (β = 0.24, p < .001) after controlling for CRP (β = -0.15, p < .001) and depressive symptoms (β = -0.24, p < .001). These variables explained 15% of the variance in self-reported health. Conclusion: Despite literature that has reported favorable health outcomes among less acculturated Hispanics (e.g. Immigrant Health Advantage), Hispanics in NHANES report poorer self-reported health as compared to non-Hispanic Whites, even after accounting for CRP and depressive symptoms. Among foreign-born Hispanics, poorer self-reported health appears to be most pronounced among those with lower acculturation as compared to Hispanics with higher levels of acculturation. Further research is needed to elucidate the biological and behavioral pathways that may account for poorer self-reported health among Hispanics.

23) Abstract 1044 THE INTERACTION BETWEEN INFLAMMATORY GENOTYPE AND COMPLICATED GRIEF DISORDER IS ASSOCIATED WITH ELEVATED CIRCULATING LEVELS OF IL-6 Linley M. Knowles, MDa, Clinical Psychology, University of Arizona, Tucson, Arizona, Christian R. Schultz-Florey, MD, Hannover Medical School, Hannover, Lower Saxony, Germany, Michael R. Irwin, MD, Cousins Center for Psychoneuroimmunology; Semel Institute for Neuroscience and Human Behavior, University of California, Los Angeles, Los Angeles, CA, Mary-Frances O'Conner, PhD, Psychology, University of Arizona, Tucson, AZ.

Spousal bereavement is associated with increased morbidity and mortality in the surviving spouse. Although most widow(er)s are resilient, a minority experience a chronic debilitating condition called Complicated Grief (Shear et al, 2011), showing increased mortality rates (Pígrerson et al, 1997). However, the mechanism linking Complicated Grief disorder and adverse health outcomes has not been clarified. Genetic variability may interact with Complicated Grief disorder in the expression of inflammatory markers. The present study compared Complicated Grief (CG), Non-Complicated Grief (NCG), and Non-bereaved (NB) married/partnered older adults to examine whether a single nucleotide polymorphism (SNP) in the human IL-6 promoter (rs1800795 G/C) might influence vulnerability for increased inflammation following the death of their spouse (on average two years prior). Previous research has shown this relationship for Bereaved/Non-bereaved groups, but has not looked at the Complicated Grief disorder. The study sample included 64 older adults (NB=28, NCG=23, CG=13). The IL-6 -174 SNP was determined for each participant from peripheral blood mononcytes. High sensitivity ELISA for circulating levels of IL-6 showed a dose-dependent increase across the three groups (NB: 1.9 ± 0.9 pg/ml; NCG: 2.3 ± 1.7 pg/ml; and CG: 3.7 ± 2.7 pg/ml). In a regression controlling for age and BMI, group (β = 0.61) and group x genotype (β = -0.44) were both predictive of circulating IL-6 (F[5,58] = 3.58, p = 0.007). Whereas all C allele carriers had similar levels of circulating IL-6, levels of circulating IL-6 were twice as high in Complicated Grief G homozygotes compared to Non-Complicated Grief and Non-bereaved G homozygotes (Figure 1). Thus, the present study found elevated levels of IL-6 in the Complicated Grief group, explained by the interaction between IL-6 -174 SNP and Complicated Grief disorder such that Complicated Grief G homozygotes showed a two-fold increase in IL-6 compared to Complicated Grief C allele carriers. The results suggest a possible mechanism for increased morbidity and mortality in widow(er)s suffering from Complicated Grief and with future replication, might indicate clinical follow up for this group.

24) Abstract 1654 STRESS INDUCED AUTONOMIC AND ENDOCRINE REACTIVITY OF CHILDREN WITH FREQUENT ABDOMINAL PAIN Marco D. Galevitsch, PhD, Department of Psychology, University of Tübingen, Tübingen, BW, Germany, Katja Pfaff-Rossow, MD, Pediatric Gastroenterology and Pern=osomat Medicine and Psychiatry, University Hospital Tübingen, Tübingen, BW, Germany, Angelika A. Schlarb, PhD, Faculté des Lettres, des Sciences Humaines, des Arts et des Sciences de l’Education, Université du Luxembourg, Luxembourg, L, Luxembourg.

Background: Frequent abdominal pain (AP) is a prevalent health issue in childhood. It has been shown to be associated with psychological problems, elevated stress and with deficits in stress coping. Psychophysiological aspects of stress reactivity have been studied rarely. Objective of this study was to test whether children with frequent AP compared with healthy controls exhibit altered reactions of the autonomic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis during a stress task. Methods: A total of 18 children (26 girls, 22 boys) between 7.5 and 12.8 years took part in the study. Twenty-four children with frequent AP, classified according to Rome III criteria (18 with functional abdominal pain and 6 with irritable bowel syndrome), and 24 healthy controls (matched for age and gender) underwent a stress inducing procedure which contained a 5-min free speech and a 5-min mental arithmetical task according to the Trier Social Stress Test for Children. Both groups were compared regarding heart rate, heart rate variability (HRV) and saliva cortisol concentration. Results: The experimental procedure induced a comparable elevation of mean heart rates in both groups and revealed no differences in parasympathetic autonomic flexibility. However, a differential reaction regarding the sympathovagal interaction during a shift towards sympathetic dominance was found in children with AP during the stress provoking task. With respect to HPA axis activation, an attenuated cortisol reactivity in AP children during the entire experimental session was observed. Post hoc analyses revealed that these group differences applied only for the subgroup of boys. Conclusions: This study provides preliminary evidence that childhood AP might be associated with autonomic disturbance regarding the sympathovagal interaction during stress. Beyond that, frequent childhood AP seems to be related to a down-regulated reactivity of the HPA axis. Altered stress reactivity can suspected to be an underlying biological mechanism to link psychological variables to the somatic complaints.


In the past two decades, researchers have become keenly interested in the association between adverse childhood experiences (e.g., abuse and neglect, household dysfunction) and mental and physical health in adolescence and adulthood. A key limitation in the current literature is a focus on single health outcomes (e.g., ACEs linked to increased likelihood of smoking). Examination of multiple health outcomes, as well as their co-morbidity, will provide a more comprehensive picture of the association between ACEs and health outcomes in childhood/adolescence. In this study, we examine the association between number of ACEs and likelihood of co-morbid physical, mental, and learning disabilities in a child/adolescent sample. Data from the 2011-12 National Survey for Child Health (NSCH), a nationally representative parent-report survey of child health, were used. A total of 95,677 random-digit-dial interviews were conducted across all 50 states and the District of Columbia. Predictor variables included number of ACEs experienced (hard to get by on income, parent divorce, parent in jail, exposure to domestic and neighborhood violence, exposure to drug abuse, poor maternal mental health). Outcome variables included co-morbidity of physical (e.g., asthma, brain injury), mental/behavioral (e.g., depression, ADHD), and developmental/learning disabilities (e.g., speech disorder, learning disability). Between 11% and 24% of parents reported their child to have at least one physical, mental, or learning disorder; between 3% and 5% of parents reported their child to have 1 or more disorder from 2 categories and 4% of parents reported their child to have 1 or more disorder from all three categories. Most (60-65%) children experienced 1-3 ACEs, the remaining experienced 3-4 or more ACEs. Compared to children with no disorders, children with 1 or more disorder (physical, mental, or learning) experienced more ACEs (all p<.001). Overall, there was a graded relationship between higher number of ACEs and higher likelihood of having one or more disorder (ORs range 1.25-6.56). Compared to children who experienced no ACEs, children who experienced 3 or more ACEs were 1.89 times more likely to have both a physical disorder and a learning/behavioral disorder, 5.09 times more likely to have both a physical disorder and a mental/behavioral disorder, and 6.56 times more likely to have at least one disorder in all three categories.

Findings from this study support models of toxic stress and ACEs which link experiences of adversity to poorer mental and physical health outcomes. Additionally, this study extends current literature by linking ACEs to co-morbid health outcomes, adding credence to the suggested pervasive effects of ACEs. These findings suggest that ACE intervention services should be designed to holistically target physical, mental, and learning disorders.
26) Abstract 1438
**BIOFEEDBACK TRAINING IN PATIENTS WITH MULTIPLE SCLEROSIS**
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Patients with multiple sclerosis (MS) have chronic symptoms, including unremittent fatigue, spasticity, bowel and bladder dysfunction, pain syndromes, cognitive impairment, mood disorders and gait disturbances. Underlying pathophysiology of this disease is complex, but includes dysfunction of the autonomic nervous system (ANS) and activation of inflammatory cascades. In a small pilot study, we tested the hypothesis that biofeedback-mediated stress management (BFSM) training in patients with MS would result in physical and mental health improvements. In the initial evaluation, patients were randomized to BFSM or usual care (UC). Patients in the BFSM group returned for eight weekly sessions of training, including finger biofeedback training. They were also asked to practice the techniques at home daily and to rate their stress levels before and after practice. Patients in the UC group continued as they normally would, with no additional sessions. After ten weeks, all patients returned for a final evaluation, which duplicated the initial evaluation. Data from the pilot study show that patients with chronic MS are able to learn to self-regulate and that that they enjoy the training. HRV improved in the BFSM group, as was quality of life. Anxiety and depression were decreased. We further subdivided the BFSM group into those who were more successful with BFSM and those who were less successful. Patients who demonstrated better skill at self-regulation had greater improvement in everyday. These data suggest that BFSM may be a viable adjunctive therapy for patients with MS. A large scale trial is warranted, to confirm these observations.

27) Abstract 1619
**THE EFFECTS OF A PRENATAL COGNITIVE BEHAVIOR STRESS MANAGEMENT INTERVENTION ON MOTHERS PERCEIVED STRESS REACTIVITY LEVELS.**
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Prior studies have found an association between higher levels of stress reactivity (individual differences in response to stressors) and stress-related disorders, yet few studies have examined the effects of a cognitive behavior stress management intervention on reducing one’s stress reactivity levels. The purpose of this study was to determine whether participation in an 8-week cognitive behavior stress management intervention was associated with decrements in stress reactivity in women during pregnancy. Our sample was comprised of 100 English and Spanish-speaking, low income women (71% Latina; mean age= 27 ±6 years) with no major medical pregnancy. Our sample was comprised of 100 English and Spanish-speaking, low income women (71% Latina; mean age= 27 ±6 years) with no major medical problems. Women were randomized into either a CBSM intervention group (n = 55) or an attention-control group (n = 45); received print-based prenatal health information). Those groups were stratified based on women's anxiety levels at baseline (ANOVA; high anxiety vs. low anxiety). Women completed assessments of stress reactivity before and after the 8-week CBSM intervention. Repeated Measures ANOVA analyses showed that women receiving the CBSM intervention had a significant decrease in prolonged stress reactivity (i.e., difficulty relaxing after a high workload) [F (2, 89) = 3.12, p < .05]. These results suggest that prenatal CBSM interventions may help reduce productions in stress reactivity levels during pregnancy, particularly among women with high anxiety levels.

28) Abstract 1336
**SPIRITUALITY AND DEPRESSION DURING THE FIRST YEAR POST-DIAGNOSIS IN OVARIAN CANCER PATIENTS**
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Objective: Though prior research has demonstrated an inverse relationship between spirituality and depression in other cancer populations, the role spirituality plays in the lives of ovarian cancer patients has been minimally described. This study examined changes in spirituality and depression over time in ovarian cancer patients during the first year post-diagnosis.

Methods: Participants (N=165) completed questionnaires assessing spirituality (FACT-Sp and depression (CES-D) prior to surgery, and at 6 months and 1 year following treatment for ovarian cancer. We used longitudinal mixed effects models to determine how spiritual beliefs and depression changed over time, and if spirituality subscales (including meaning/peace and faith/religiosity) were associated with changes in depression.

Results: Self-reported spirituality dropped significantly from pre-surgery (M=35.89±8.29) to 6 months (M=32.80±11.24, p<.003) and rose again by one year to M=37.38±12.12 (p<.003). A similar pattern was evident for each of the FACT-Sp subscales. Mean levels of depression dropped significantly over the first year post-diagnosis (BL M=15.41±9.27; 6m M=11.04±8.50; 12m M=10.92±9.67, p<.001). Increases in overall spirituality were associated with improvement in depression (p<.001) controlling for disease stage, age, relationship status, overall social support and religious attendance. Secondary analyses revealed that increases in the meaning/peace subscale over the course of the year were associated with decreases in depression over time (p<.001), while increases in religiosity were associated with increases in depression over time (p<.029).

Conclusions: Ovarian cancer patients reported fluctuations in levels of spirituality over time, and improvements in depressive symptoms were paralleled by increases in reported spirituality. However, different facets of spirituality appear to have more complex associations with depression. Specifically, increased meaning/peace was related to improved depression, whereas increased religiosity was associated with worsening depression. These findings suggest a potential role for spiritually based perspectives in understanding changes in depression over time in ovarian cancer.

29) Abstract 1342
**AFFECTIVE AND SOCIAL PSYCHOLOGICAL CONSEQUENCES OF HIGHLIGHTED INFLAMMATION**
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Prior work has documented an association between inflammation and depression. In an attempt to elucidate the affective and social psychological mechanisms that may link these two constructs, a prior study from our lab found that experimentally increasing inflammation in healthy subjects led to increases in feelings of social disconnection and depressed mood. However, the study had a small sample size and limited measures of changes in affect and social experience. Thus, in order to further understand the affective and social psychological changes that accompany heightened inflammation, we conducted the present study, in which participants (n=108) were randomized into receiving endotoxin, an inflammatory challenge, or placebo. As expected from prior research, levels of proinflammatory cytokines (IL-6, IL-10, TNF-α) significantly increased over time for the endotoxin (vs. placebo) group and peaked at 2 hours post-injection (T2). Compared to the placebo group, those in the endotoxin group reported higher feelings of depressed and anxious mood, feeling of social disconnection, and motivations to social withdraw from baseline to T2. Additionally, those in the endotoxin group, compared to the placebo group, reported greater increases in feelings of loneliness from baseline to T2 and showed larger declines in performance on a social cognition task (Mind in the Eyes; MITE). Within the endotoxin group, women reported greater increases in physical symptoms, depressed mood, and feelings of social disconnection, as well as significantly greater decreases in feelings of loneliness from baseline to T2, compared to men; there were no gender differences in measures of anxious mood, social withdrawal motivations, and the MITE task. These results suggest that heightened inflammation can lead to a host of affective and social psychological changes, many of which are especially pronounced for women; these findings may ultimately be important in understanding the psychological processes linking inflammation and depression, as well as how gender moderates these effects.

30) Abstract 1560
**EATING PATTERN DIFFERENCES IN AFRICAN AMERICANS AND CAUCASIANS IN FREE-LIVING MEALS MEASURED WITH THE BITE COUNTER**
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Background: The obesity epidemic and its associated morbidities (e.g., type 2 diabetes, coronary heart disease, and hypertension) disproportionately affect African Americans (AAs). (Smith and Nelson, 2003). Most research on eating behaviors in AAs has focused on food choice (e.g., James, 2009). However, food choice fails to differentiate BMI groups within AAs, and it has been suggested other factors such as portion size should be investigated (Stanziano & Butler-Ajahde, 2011). Methods: 17 Caucasians (43 ± 13 years old, 33 ± 5 BMI, 8 female) were matched for age, BMI and gender with 17 African-Americans (49 ± 15 years old, 37
Conclusions: The findings suggest a role of low vitamin D levels for heightened off-task thinking is common, resource demanding and linked to negative affective symptoms. This device can be used in free-living humans to study eating patterns. Specifics such as bite size may represent unique opportunities for intervention.

31) Abstract 1568
EXPLORING DAY-TO-DAY DYNAMICS OF DAILY STRESSOR APPRAISALS, PHYSICAL SYMPTOMS AND THE CORTISOL AWAKENING RESPONSE
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Objective: Stress is associated with the secretion of cortisol throughout the day, but less is known about the dynamic effects of stress on the cortisol awakening response (CAR). More widely, knowledge of the causal factors and functions of the CAR are also not fully understood. This study explored: (1) the effects of daily stressors on the next day CAR and; (2) the effects of the CAR on same day physical and affective outcomes.
Methods: This study employed an interval contingent daily diary design. Sixty-four participants completed a daily diary, reported on the occurrence of daily stressors and stress appraisals (i.e., primary and secondary appraisals), physical symptoms, and positive and negative affect on three consecutive work days. Cortisol was measured at 0, 15, 30, and 45 minutes after awakening over 3 work days in order to provide measures of the CAR on each study day.
Results: Using hierarchical linear modelling, the appraisal ratio was found to negatively predict the CAR, such that on days when stressors were appraised as more stressful (i.e., where perceived demands exceeded perceived resources), the CAR increased less the following morning. Furthermore, the CAR significantly predicted same-day physical symptoms that such a lower CAR was associated with more physical symptoms.
Discussion: To our knowledge, this is the first study to assess the effects of appraisals on daily stressors on the next-day CAR. The results provide evidence for a pathway through which daily stressors may influence physical wellbeing, and highlight the importance of appraisals for future stress-based cortisol research.

32) Abstract 1250
VITAMIN D AND CENTRAL HYPERSENSITIVITY IN PATIENTS WITH CHRONIC PAIN
Roland von Känel, MD, Veronika Müller, MD, Niklaus Egloff, MD, Psychosomatic Medicine, University of Bern, Bern, Bern, Switzerland
Background: Low vitamin D has been implicated in various chronic pain conditions with, however, inconclusive findings. Vitamin D might play an important role in mechanisms being involved in central processing of evoked pain stimuli but less so for spontaneous clinical pain. The primary aim of this study was to examine the relation between low serum levels of 25-hydroxyvitamin D3 (25-OH D) and mechanical pain sensitivity.
Methods: We studied 50 patients (mean age 48 years, 53% women) with chronic pain. A standardized pain provocation test was applied and pain intensity was rated on a numerical analogue scale (0-10). The widespread pain index and symptom severity score (incl. fatigue, waking unrefreshed, cognitive symptoms) following the 2010 American College of Rheumatology preliminary diagnostic criteria for fibromyalgia were also assessed. Serum 25-OH D levels were measured with a chemiluminescence immunoassay.
Results: Vitamin deficiency (25-OH D <25 nmol/l) was present in 26% of chronic pain patients; another 66% had insufficient vitamin D (25-OH D 25-75 nmol/l). After adjustment for demographic and clinical variables, there was a mean:SEM increase in pain intensity of 0.61 ± 0.01 for each 25-nmol/l decrease in 25-OH D (p=0.01). Lower 25-OH D levels were also related to greater symptom severity (p=0.008), but not to the widespread pain index (p=0.83) and fibromyalgia (p=0.54).
Conclusions: The findings suggest a role of low vitamin D levels for heightened central sensitivity, particularly augmented pain processing upon mechanical stimulation in chronic pain patients. Vitamin D seems comparably less important for self-reports of spontaneous pain.

33) Abstract 1814
THE IMPACT OF AFFECTIVE SYMPTOMS ON BRAIN NETWORKS
When Thinking About the Past and Future
Sarah Garfinkel, PhD, Psychiatry, Brighton and Sussex Medical School, Hove, State, United Kingdom, Simon L. Evans, PhD, Hugo D. Critchley, MD PhD, Psychiatry, Brighton and Sussex Medical School, Falmer, East Sussex, United Kingdom
Off-task thinking is common, resource demanding and linked to negative perseverative worry and rumination. Interregional connectivity with brain networks during these states may provide insight into neurological and psychiatric disorders. We undertook an fMRI study to characterise discrete brain networks associated with the content of self-initiated off-task thinking. Findings were also related to affective symptomatology. In 2-minute directed resting state blocks, participants were prompted to direct their thoughts towards negative or positive contents from the past or future, and to focus on the present. An independent component analysis (using GIFT toolbox for MATLAB) differentiated networked implicated in each condition, applying the presentcondition as baseline. During past positive thought, activity correlated across a network that included precentral and lateral parietal cortex. Past negative events engaged a left-lateralized fronto-parietal network. Future events were less distinct from present, although negative events engaged a medial prefrontal-centred network. In regression analyses, both affective depression and anxiety accounted for variance within networks that incorporated MTG, brainstem, thalamus and temporal poles. Anxiety symptoms selectively influenced the connectivity across a network incorporating bilateral insula and brainstem (an anterior cluster encompassing the insula and brainstem, thalamus and temporal poles). Anxiety symptoms selectively predicted the engagement of this network when past or future thoughts were directed towards negative events. Thus commonalities were observed in network engagement during mind-wandering as a function of valence, temporal focus and affective symptomatology. Our results point to content-dependent differentiation of off-task thinking, wherein anxious and depressive symptoms shape activation of specific networks. These observations suggest mechanisms through which flexible off-task thinking may become maladaptive and develop toward negative perseverative cognitions that further contribute to the pathogenesis of affective symptoms.

34) Abstract 1344
PHYSICAL ACTIVITY AND TELEPHONE MILE LENGTH IN BREAST CANCER SURVIVORS
Sheila N. Garland, PhD, Family Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, Brad Johnson, MD/PhD, Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PA, Christina Palmer, MD, Family and Community Medicine, University of California San Francisco, San Francisco, CA, Rebecca Speck, PhD, Clinical Epidemiology and Biostatistics, Michelle Donelson, BSc, Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, PHA, Sharon X. Xie, PhD, Clinical Epidemiology and Biostatistics, Angela DeMichele, MD, MSCE, Medicine, University of Pennsylvania, Philadelphia, PA, Jun J. Mao, MD, MSCE, Family Medicine and Community Health, University of Pennsylvania, Philadelphia, PA
Purpose: Telomere length (TL) is a biomarker of accumulated cellular damage and human aging. Evidence in stress and stress-related TL in participants with a host of psychosocial and lifestyle factors, including physical activity. Despite emerging evidence that physical activity may have a positive impact on TL and the growing interest in survivorship programs that encourage breast cancer survivors to be more active, this is the first study to evaluate the relationship between physical activity and telomere length in breast cancer survivors.
Methods: A cross-sectional sample of 392 postmenopausal women with stage I-II breast cancer at an outpatient breast oncology clinic of a large university hospital completed questionnaires and provided a blood sample. TL was determined using mean terminal restriction fragment lengths and isolated from peripheral blood mononuclear cells. Physical activity was dichotomized into two groups (none versus moderate/vigorous) using the International Physical Activity Questionnaire. Multivariate linear and logistic regression analyses were performed to identify factors associated with TL and physical activity.
Results: The mean age of the women was 62 years. The majority of the women were White (84%), however, of the non-white category, the majority of the women were Black/African (14%) followed by Asian (2%), Hispanic/Latino (1%) and Other (1%). Most of the women were married or partnered (62%) and had either a college (43%) or graduate education (36%). Among participants, 17% did not participate in any physical activity. As expected TL progressively shortened with age, with significant differences observed when women older than 65 were compared to women less than 55 years of age (β = -0.33; 95% CI, -0.52 to -0.13; p < .001). In multivariate model (adjusting for age), compared to those who participated in moderate to vigorous physical activity, women who did not exercise had significantly shorter TL (Adj β = -0.22; 95% CI, -0.41 to -0.03; p = .03). Non-white race in isolation and depressive symptoms were associated with lack of physical activity (p=0.05 for all). Discussion: Lack of physical activity is associated with shortened TL, warranting prospective investigation of the potential role of physical activity on cellular aging in breast cancer survivors. Targeted interventions to promote healthy lifestyles, engage vulnerable subgroups, and diminish risk of premature age-related disease and death are a necessary next step.

35) Abstract 1157
SOCIOECONOMIC ASSOCIATIONS WITH DEPRESSIVE SYMPTOMS: UNIQUE CONTRIBUTIONS OF MULTIPLE SES INDICATORS
Swathi Gajjral, B.S., Marla G. Alceto, Stephen B. Manuck, Ph.D., Peter J. Gianaros, Ph.D., Kirk I. Erickson, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA
Socioeconomic (SES) factors may relate to the development of depression (Lorant et al., 2003). Such factors could include difficulties in maintaining standards of living, unfavorable aspects of residing in disadvantaged neighborhoods, as well as subjective perceptions of relative social standing in relation to others. Although...
some studies have examined multi-level SES associations with depressive symptoms, there is conflicting evidence regarding the consistency and nature of these associations (Paczkowski & Galea, 2010). Here, we examined the unique associations of several SES factors with depressive symptoms, including individual- and community-level factors. Participants were 1295 middle-aged (30.54 ± 5.5%; female, 17% African American) volunteers who were part of the University of Pittsburgh Adult Health and Behavior Project. An index of individual-level SES was calculated for each participant by averaging the z-score of years of education attained and family income, adjusted for number of household occupants. Another individual-level variable examined was perceived SES, as assessed by the MacArthur Scale of Subjective Social Status. An index of community-level SES was calculated for each participant by log transforming and then averaging the z-scores of six tract-level variables from the 2000 US Census: 1) median household income; 2) median housing value; 3) households receiving public financial assistance; 4) households with incomes beneath the federal poverty line; 5) working-age adults who were unemployed; 6) adults over age 25 without a high-school diploma or equivalent degree. Depressive symptoms were assessed using log-transformed self-report ratings on the Center for Epidemiology Scale of Depression (CES-D).

Using hierarchical linear regression models controlling for age, sex, and race, we found that the individual-level composite variable of income and education, perceived social standing, and community SES each had a unique association with depressive symptoms (composite SES: β = 0.13, p<0.01; community SES: β = 0.09, p<0.03; perceived standing: β = 0.12, p<0.01), whereby lower values on these SES indicators were associated with higher levels of depressive symptoms while accounting for other SES indicators. These results agree with animal work suggesting moderately inter-correlated, rs > 0.12, ps < 0.01. There was a modest degree of diversity (mean beta=0.012±0.039 std). Random effects analysis identified a predominantly positive relationship between a voxel’s fractional anisotropy (FA), a measure of the integrity of myelin cells that support white matter fiber tracts in the brain (Liu et al. 2012). Recent neuroimaging work has shown that people with larger and more diverse social networks have larger brain volumes and greater functional connectivity in emotional salience processing networks (Biskart et al. Nat Neuro 2011, J Neurosci 2012). In parallel, animal work has shown that social isolation may decrease the integrity of myelin cells that support white matter fiber tracts in the brain (Liu et al. Nat Neuro 2012). We explored whether a similar relationship might be evident in humans. In a sample of neurologically healthy middle-aged adults (N=155, 78 males, mean age = 40.7 years), we measured white matter integrity using diffusion tensor imaging and evaluated social network size (mean beta=0.012±0.039 std) and diversity (ß of social roles) using the Social Network Index (Cohen et al. JAMA 1997). After controlling for age, sex, education and waist circumference we found a predominantly positive relationship between a voxel’s fractional anisotropy (FA), a general measure of white matter microstructural integrity, and social network diversity (ß=0.006, p<0.05). This pattern is consistent with variation in myelin integrity (Klawitter et al. Neurimage 2011). FA within this cluster of voxels was negatively correlated across individuals with circulating levels of the inflammatory cytokine IL-6 (mean=6.1 ± 1.85 SD). Physical neglect was positively correlated with cortisol reactivity to TSST II (r= -0.419; p<0.001). Using pre-established cut-off scores for each subscale, a repeated measures ANOVA identified a significant difference in IL-6 reactivity among groups (F=3.21; p<0.037) with significant differences between the SCP and CAU group as compared to the CAU group as compared to the SCP group (r=0.419; p<0.001). The April 2014 (volume 76, number 3) on-line issue of Psychosomatic Medicine contains the 2014 meeting abstracts. The on-line journal is Psychosomatic Medicine’s journal of record for indexing purposes. To cite a meeting abstract in one’s vita, use Volume Number, 3 and the page number in which your abstract appears. Note each page number appears with the letter A in front of the page number.

How to Cite your Abstract

The April 2014 (volume 76, number 3) on-line issue of Psychosomatic Medicine contains the 2014 meeting abstracts. The on-line journal is Psychosomatic Medicine’s journal of record for indexing purposes. To cite a meeting abstract in one’s vita, use Volume Number, 3 and the page number in which your abstract appears. Note each page number appears with the letter A in front of the page number.

37) Abstract 1317

SOCIAL NETWORK DIVERSITY PREDICTS WHITE MATTER MICROSTRUCTURAL INTEGRITY IN HUMANS.

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Recent neuroimaging work has shown that people with larger and more diverse social networks have larger brain volumes and greater functional connectivity in emotional salience processing networks (Biskart et al. Nat Neuro 2011, J Neurosci 2012). In parallel, animal work has shown that social isolation may decrease the integrity of myelin cells that support white matter fiber tracts in the brain (Liu et al. Nat Neuro 2012). We explored whether a similar relationship might be evident in humans. In a sample of neurologically healthy middle-aged adults (N=155, 78 males, mean age = 40.7 years), we measured white matter integrity using diffusion tensor imaging and evaluated social network size (mean beta=0.012±0.039 std) and diversity (ß of social roles) using the Social Network Index (Cohen et al. JAMA 1997). After controlling for age, sex, education and waist circumference we found a predominantly positive relationship between a voxel’s fractional anisotropy (FA), a general measure of white matter microstructural integrity, and social network diversity (ß=0.006, p<0.05). This pattern is consistent with variation in myelin integrity (Klawitter et al. Neurimage 2011). FA within this cluster of voxels was negatively correlated across individuals with circulating levels of the inflammatory cytokine IL-6 (mean=6.1 ± 1.85 SD). Physical neglect was positively correlated with cortisol reactivity to TSST II (r= -0.419; p<0.001). Using pre-established cut-off scores for each subscale, a repeated measures ANOVA identified a significant difference in IL-6 reactivity among groups (F=3.21; p<0.037) with significant differences between the SCP and CAU group as compared to the CAU group as compared to the SCP group (r=0.419; p<0.001).
TRANSLATING FINAL RESULTS OF 5-YEAR LONGITUDINAL STUDY

Lydia Temoshok, PhD, Psychology, University of Maryland, Catonsville, MD, Gail Ironson, Ph.D., MD, Psychology, University of Miami, Coral Gables, FL, MD, Michael R. Ruff, PhD, Physiology, Georgetown University, Rockville, MD, FL, Gail Ironson, MD, PhD, Psychology, University of Miami, Coral Gables, Lydia Temoshok, PhD, Psychology, University of Maryland, Catonsville, MD, Candace B. Pert, internationally renowned neuroscientist and pioneer in the fields known variously as Psychosomatic Medicine, Biopsychosocial or Behavioral Medicine, Psychoneuroimmunology, Neuropsychology, and Mind-Body Medicine, died on September 12, 2013, unexpectedly, and much too soon at age 67. Dr. Pert began her extraordinary career with the identification of the opiate receptor in 1972, when she was a graduate student. But that was just the beginning of how her transformative thinking opened up vast vistas of research on understanding the biochemical information network of peptides and their receptors which link mind and body, and indeed, connect all bodily systems. Her 1996 book, “Molecules of Emotion” described her research on this dynamic information network, establishing the biomolecular basis for understanding the mechanisms underlying the influence of emotions on health and disease. Her second book, published in 2006, “Everything You Need to Know to Feel Good(ish)” expanded her insights into the realm of spirituality and healing: consciousness, coherence, forgiveness, and synchronicity. Perhaps Dr. Pert’s greatest legacy, however, will be her ongoing research which was aimed at translating her theories and research on peptides, receptors and the immune system into experimental drugs to slow or halt the progression of HIV. This symposium includes presentations by two of Dr. Pert’s colleagues whose research in persons living with HIV was directly inspired by and/or grounded in Dr. Pert’s HIV-related research on the “molecules of emotion” and their implications for understanding processes underlying mind-body regulation and effects on health. The presentation by Dr. Ruff, who was her husband and research partner for the past few decades, represents what Dr. Pert was currently working to bring into fruition: experimental drugs aimed at significantly slowing the progression of HIV.

Individual Abstract Number: 1857
CHEMOKINE RECEPTOR ANTAGONISTS TO SUPPORT BIOPSYCHOSOCIAL INTERVENTIONS AIMED AT LIMITING HIV DISEASE PROGRESSION.
Michael R. Ruff, PhD, Physiology, Georgetown University, Rockville, MD

Biopsychosocial HIV researchers have found significant relationships between certain emotional coping and response patterns and lower production of HIV-specific beta chemokines, which are ligands for the CCR5 HIV coreceptor and associated with potent HIV inhibitory activity. It is likely that endogenous or virally derived ligands for beta chemokine receptors (e.g., gp120) may influence this biopsychosocial milieu. In HIV infection, the CCR5- tropic isolates establish initial infection and predominate for most of the disease course. Closely related to CCR5, sharing 83% in sequence homology, the CCR2 receptor, CCR4 is also been described as an HIV receptor. Thus, in considering HIV specific biopsychosocial effects that may affect progression, we have targeted these three principal HIV receptors. We conducted studies to explore the ability of an HIV gp120-derived peptide to antagonize CCR5, CCR2, and CCR8. We hypothesized that biopsychosocial activation as well as recent exposure to HIV from the treatment-resistant viral reservoirs is an important factor in disease progression. We previously reported on the CCR5-blocking effects of Dall-1 peptide T-amide (DAPTA) in clinical studies with over 230 HIV patients. The non-aggregating form of DAPTA is called RAP-101. Further studies using chemotaxis of primary human monocytes against the chemokines CCL1, CCL2, and CCL4 showed that an orally active analog of DAPTA called RAP103 blocks all three chemokine receptors. This compound has a unique and novel mechanism by blocking several innate immune pathways at once, and is active at concentrations thousands of times lower than other chemokine receptor blockers which have entered clinical trials. We will present new data from multiple in vitro and small animal studies which show that a viral derived peptide (RAP-103) is an antagonist of multiple chemokine receptors. Preliminary results show that RAP-103 blocks HIV infection in cell cultures as well as monocytes/macrophage activation which is implicated in HIV infection. Thus, these drugs are potential HIV therapeutics to control HIV progression.

Individual Abstract Number: 1616
TRANSLATING FINAL RESULTS OF 5-YEAR LONGITUDINAL STUDY OF BIOPSYPHOSOCIAL MEDIATORS OF HIV PROGRESSION INTO VIABLE INTERVENTIONS BASED ON PLAUSIBLE BIOLOGICAL MECHANISMS
Lydia Temoshok, PhD, Psychology, University of Maryland, Catonsville, MD

Biopsychosocial HIV researchers have described individual difference factors which may explain why some people infected with HIV progress more rapidly, while others do not (e.g., “elite controllers”). Our lab has focused on persistent emotional/coping patterns and physiological response proclivities, and their relationships to biological mediators of HIV progression which have been largely neglected by HIV biopsychosocial researchers: (1) proinflammatory cytokines which play a key role in immune activation and HIV replication, and (2) beta-chemokines which bind to the HIV co-receptor CCR5, thus inhibiting HIV entry into CD4+ cells. Previously, we reported baseline, 24-month, and 36-month results of a study which began with 200 HIV-infected participants (49% men, 51% African American) in an inner-city primary care clinic. We will present final 5-year results, showing the pattern of biopsychosocial relationships longitudinally. The most consistent findings across all time points is that a chronic pattern of physiological dysregulation (greater heart rate reactivity and poorer HR recovery) is (1) synergistic with emotional/coping dysregulation, and (2) predicts persistent and significant suppression of anti-HIV-beta-chemokine production, which is, in turn, related to faster HIV progression. Secondly, dysregulated coping patterns predicted more production of the inflammatory cytokine IL-6 for the majority of the antigens tested. Our next challenge is to translate these findings into the design of potent biopsychosocial interventions which are able to ameliorate maladaptive coping/physiological response patterns as well as dysregulated proinflammatory and chemokine-mediated inflammation. The theoretical advantages of these biopsychosocial interventions to promote appropriate immune regulation (and significantly slow or reverse HIV progression) include: no toxicities or side effects, no possibility for developing resistance, and the likelihood of sustained effects if these are effectively incorporated as lifestyle changes.

Individual Abstract Number: 1853
SPIRITUALITY AND HEALTH: WHAT’S OLD, NEW AND NEEDED
Gail Ironson, MD, Phd, Psychology, University of Miami, Coral Gables, FL

In recent years, there has been a burgeoning of interest in research linking aspects of spirituality and religiousness to health. This presentation reviews the literature including a discussion of which aspects of religiousness and spirituality have been measured, how the different measures predict health and mortality, and prediction of health outcomes and mortality in initially healthy people in contrast with studies of people with medical illness (cancer, cardiovascular disease, and HIV; the latter being a particular interest of Candace Pert). An examination of the impact of controlling for confounding variables (such as social support and health behaviors) on the reduction of effect sizes of the spirituality-health relationship will also be presented. Potential biochemical mediators and future directions are discussed, including the Landmark study on Spirituality and Health, a recently funded nationwide study. Finally, the latest findings from our lab on (1) oxytocin, benefit finding and spirituality, and (2) spiritual coping, disease progression and mortality will be presented. (1) In a diverse sample of 79 people with HIV, those who underwent a Spiritual Transformation had twice the oxytocin levels of those who did not undergo a Spiritual transformation (Mann Whitney U = 307, p<.021). In addition oxytocin levels were significantly correlated with higher spirituality (r=.27, p<.02) and higher benefit finding (r=.32, p<.01). (2) In a longitudinal study of 401 people with HIV, we found that spiritual coping predicted slower disease progression (better control of viral load and high CD4 counts) over 4 years.

Thursday, March 13 from 8:00 to 9:00 am
Symposium 1573
What’s the Vagus Got To Do With It?: Prospective Studies of Heart Rate Variability
Martica H. Hall, PhD, Psychiatry, The University of Pittsburgh, Pittsburgh, PA, Pennsylvania, Matthew R. Cribbet, PhD, Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, BW, Marc N. Jurczok, Diploma, Mannheim Institute of Public Health, Social and Preventive Medicine, Mannheim Medical Faculty, Heidelberg University, Mannheim, Germany, Georgia, Gaston Kapuku, MD/PhD, Pediatrics and Medicine (Cardiology), Georgia Regents University, Augusta, Matthew J. Thayer, PhD, Psychology, The Ohio State University, Columbus, OH

Vagus nerve function as indexed by heart rate variability (HRV) has been implicated in morbidity and mortality from a host of conditions. Cross-sectional studies have reported associations of HRV with a range of behavioral and physiological processes. To date however relatively few studies have examined the prospective association of HRV with these processes over periods of years. In the present symposium three speakers report on the prospective association of HRV with behavioral, inflammatory, and cardiovascular health outcomes. The first presentation reports that low HRV predicts poor sleep quality over a period of four years. The second presentation reports that HRV predicts high sensitivity CRP levels four years in the future. The third presentation reports a study in which HRV predicts end-diastolic heart function over a period of six years. The discussant will integrate and comment on these findings. The present studies suggest the low levels of HRV precede evidence of poor sleep quality, elevated levels of inflammation, and cardiac structure changes. These findings have important implications for understanding the role of the vagus in health and disease. Importantly these studies may suggest novel new targets for interventions.

Individual Abstract Number: 1680
HIGH-FREQUENCY HEART RATE VARIABILITY PROSPECTIVELY PREDICTS SLEEP PROBLEMS IN A HEALTHY WORKING GERMAN COHORT
Matthew R. Cribbet, PhD, Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio, Marc N. Jurczok, MSSc, Social and Preventive Medicine, Mannheim Institute of Public Health, Mannheim, Baden-Wurttemberg.
IMBALANCE PREDICTS HEART MALFUNCTION
Gaston Kapuku, MD/PhD, Pediatrics and Medicine (Cardiology), Georgia Regents University, Augusta, Georgia, Vernon Barnes, PhD, Pediatrics, Harry Davis, MS, Biostatistics, Hongyan Xu, PhD, Statistics, GRU, Augusta, GA, Julian Thayer, PhD, Psychology, Ohio State, Columbus, Ohio

Objective. To evaluate the influence of biobehavioral stress and autonomic nervous system preclinical markers of heart malfunction in a cohort of multietnic young adults. We sought to determine whether heart rate variability (HRV) may explain biobehavioral stress induced changes in left ventricular filling and relaxation (i.e., diastolic function) which is a strong predictor of heart failure with preserved systolic function. We hypothesized that reduced HRV will longitudinally predict decrease in left ventricular diastolic function. Methods: 46 normotensive individuals aged 23 ±3 at the first visit were prospectively seen 6 years later. HRV indices were collected at the first visit at rest and in response to a videogame challenge. At the second visit left ventricular filling and relaxation indices were measured from mitral inflow. Results: Visit 1 and 2 blood pressures were 114±8/63±8 and 116±1±69/9 mmHg while visit 1 and 2 heart rates were 64±10 and 65±10 beats/minutes (all p’s not significant). At rest the HRV of African Americans was greater than that of European Americans. There was a trend of a greater stress induced decrease in HRV in African American. Lower resting and stress levels of LF/HF were related to higher A-11.

Thursday, March 13 from 8:00 to 9:00 am
Paper Session: SES

Abstract 1127
CHILDHOOD FAMILY ENVIRONMENT, SELF-CONTROL, AND ABDOMINAL ADIPOSET AS EXPLANATORY FACTORS FOR THE ASSOCIATION BETWEEN SOCIOECONOMIC ADVERSITY AND SYSTEMIC INFLAMMATORY
Camellia E. Hostinar, PhD, Institute for Policy Research, Khuram M. Ross, MA, Edith Chen, PhD, Gregory E. Miller, PhD, Psychology, Northwestern University, Evanston, IL

The socioeconomic gradient in health outcomes across the lifespan is well-recognized. For instance, individuals experiencing low socioeconomic status (SES) either early in life or during adulthood have 2-3 times higher risk of cardiovascular disease (CVD). Systemic inflammation has been recognized as a critical mechanism in the emergence of CVD. Extant research has begun to identify a few factors that are associated with both low SES and elevated inflammation, which may plausibly mediate their association: unsupportive childhood family relations, self-control deficits, and adiposity. However, thus far these three factors have been mostly studied in isolation. We aimed to examine them simultaneously and test their explanatory contribution in linking inflammation to both early-life and current low SES. Methods: Participants were 360 Canadian adults (55% female; 73.3% Caucasian, 13.7% Asian, 13% other) between the ages of 15 and 55 (M=36.5, SD=10.8). They were equally divided between low and high current SES. Participants provided self-report measures of childhood family relations (Risky Families Questionnaire, Childhood Trauma Questionnaire, Measure of Parental Style –Mother and Father). Both self-report and behavioral paradigms were used to assess self-control (Brief Self-Control Scale, Delay Discounting task, and total candy consumed during visit). Data on abdominal adiposity (waist, BMI, circumference) and low-grade inflammation (serum C-reactive protein and Interleukin-6) were also collected. Structural Equation Models were used to test competing models about the roles that family risk, self-control, and abdominal adiposity play in linking life-course SES to adult inflammation, controlling for age, gender, and race/ethnicity. Results: We estimated a series of nested models and compared their fit using chi-square difference tests. These analyses revealed that early-life and current SES related to low-grade inflammation through similar pathways. Low early-life SES was related to greater childhood family risk, and in turn lower self-control, higher abdominal adiposity, and higher inflammation (significant indirect path: β=.02, SE=.01, p=.04). Low current SES was also associated with diminished self-control, which was linked to higher abdominal adiposity and inflammation (indirect path: β=.05, SE=.03, p=.047). Both indirect paths remained significant when controlling for smoking, alcohol use, and physical exercise. Discussion: The findings suggest several promising pathways that can be studied longitudinally to understand the emergence of socioeconomic disparities in health.
PERCEIVED STRESS, GENDER AND OCCUPATIONAL STATUS INTERACT TO INCREASE THE RISK OF FUTURE HIGH BLOOD PRESSURE: THE IPC COHORT STUDY

Cedric Lemogne, MD, PhD, C-L Psychiatry, European Georges Pompidou Hospital, Paris, N/A, France, Emmanuel Wiernik, MSc, U1018, Inserm, Villejuif, N/A, France, Frédérique Thomas, PhD, Research, IPC Center, Paris, N/A, France, Frédéric Limosin, MD, PhD, Psychiatry, Université Paris Descartes, Issy-les-Moulineaux, N/A, France, Silia M. Consoli, MD, PhD, Psychiatry, Université Paris Descartes, Paris, N/A, France

Contrary to lay beliefs, current perceived stress is not consistently associated with the incidence of high blood pressure (BP) in prospective studies, possibly because of moderating factors. The present prospective study examined this association and explored potential moderating effects of gender or occupational status.

The 4-item perceived stress scale was filled at baseline by 19,776 normotensive adults (13,652 men, mean age±standard deviation: 46.8±9.3 years), without history of cardiovascular and renal disease and not on either psychotropic or antihypertensive drugs. After a mean follow-up of 5.8±2.1 years, 3,774 participants (19.1%) had high BP, defined as having a systolic BP>140 mmHg or a diastolic BP >90 mmHg or using antihypertensive drugs. There was a significant interaction between baseline perceived stress and gender (p=0.02) in relation to high BP at follow-up. After adjustment for potential confounders, baseline perceived stress was associated with high BP at follow-up in women (OR [IC]: 1.20 [1.03-1.38]; p=0.016). In addition, the interaction between perceived stress and occupational status was significant among women (p=0.02). Baseline perceived stress was positively associated with high BP at follow-up among women of medium or low occupational status, with OR suggesting a linear increase of the risk (p=0.005). Figure 1 below displays the association between baseline perceived stress and high BP at follow-up across occupational categories in women. Odds ratios (OR) are given per 5-point increment of the 4-item perceived stress scale score (ie, the difference between the 25th and the 75th percentile).

Perceived stress may be considered as a risk factor for hypertension in women of lower occupational status. Research addressing the relationships between stress and high BP should systematically look for possible interactions with gender and occupational status.

A-12

LOW SOCIAL STATUS ASSOCIATES WITH ALTERED HPA ACTIVITY

Karissa G. Miller, BA, Thomas W. Kamarck, PhD, Barbara M. Anderson, PhD, Stephen R. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania

Lack of control and threats to social standing, whether evoked by acute or chronic stressors or reflected in symptoms of depression, are salient correlates of hypothalamic-pituitary-adrenal (HPA) activity. These conditions are also part of lower social status (subordination), which has long been associated with HPA activity in non-human primates. In humans, interpersonal dominance and socioeconomic indicators are often used interchangeably to describe social status, but have distinctly different referents. Here, we examined the relationship of these two status constructs to three indices of HPA functioning in 488 employed, healthy volunteers aged 20-54 yrs; M=43; 53% F; 83% White). Measurements of salivary cortisol were taken on five occasions during the day and averaged over three days. A trait measure of dominance was calculated from items of the NEO Personality Inventory-Revised, and socioeconomic status (SES) was indexed as a composite of annual income and occupational grade. The cortisol awakening response (CAR) was calculated as percent change in cortisol from awakening to 30 min after awakening; slope of the diurnal decline in cortisol was derived from measurements taken at awakening and at +4 hr, +9 hr and bedtime; and cortisol area-under-the-curve (AUC) was calculated from the same four measurements for 24-hr integration.

Trait dominance and SES were entered separately as predictors of each HPA index in hierarchical linear regressions adjusted for age, sex, and race. Both low trait dominance and low SES associated with a larger CAR (β=-.13, p<.02 and β=-.17, p=.007) and flatter diurnal slope (β=-.11, p=.03 and β=-.16, p=.002), but were unrelated to AUC. Trait dominance and SES were only weakly correlated (r=.08, p=.09), and findings persisted when the two predictors were entered together in regression models. These results show two largely independent conceptualizations of social status in humans related to metrics of cortisol activity. We suggest that trait dominance and SES may possess a common attribute that, although expressed in different realms (interpersonal behavior, social stratification), associates similarly with HPA function.

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DOES SOCIOECONOMIC STATUS AFFECT DAILY SOCIO-EMOTIONAL EXPERIENCES TO IMPACT ADOLESCENT HEALTH?

Jessica J. Chiang, MA, Psychology, Andrew J. Fuligni, PhD, Psychiatry/Psychology, UCLA, Los Angeles, CA

Low socioeconomic status (SES) predicts poor health. Psychosocial stress and affect are believed to mediate this link. However, few studies have directly examined these pathways. Studies that have examined these pathways have focused on negative affect (NA) and used adult samples, despite that positive affect (PA) is related to SES and health and that development of chronic diseases (e.g., atherosclerosis) begins early in life. Furthermore, past studies have relied on retrospective reports of stress and affect; consequently, little is known about whether SES affects daily experiences to impact health. Thus, the current study examined whether daily measures of interpersonal stress, PA, and NA mediate the relation between SES and inflammation, a risk factor for cardiovascular disease and other chronic diseases, among adolescents. A sample of 306 adolescents (Mage=16.41 years, SD=75.67 years) from Latino (42.9%), Asian (22.9%), European (28.8%) and other (6.2%) background, completed daily checklists that assessed experience of interpersonal stressors (e.g., argued with a parent, insulted at school) and the extent to which they felt PA (e.g., cheerful, excited, happy) and NA (e.g., sad, discouraged, anxious) for 15 days. Whole blood spots were also collected for assessment of C-reactive protein (CRP), a marker of inflammation. Parental reports of highest level of education completed were used as an indicator of SES. Hierarchical regression analyses controlling for age, gender, ethnicity, body mass index, and major life events assessed the relationships among SES, interpersonal stress, PA, NA, and CRP. Higher SES was associated with higher levels of interpersonal stress (β=.16, p=.01) and PA (β=.13, p=.04), and with lower levels of CRP (β=.12, p=.03). SES was not related to NA (β=.09, p=.13), PA, but not interpersonal stress and NA, in turn, was related to CRP (β=.16, p=.01). The association between SES and CRP was reduced when controlling for PA (β=.10, p=.06) while PA remained a significant predictor of CRP (β=.15, p=.01), suggesting that PA partially explained the SES-CRP relationship. Consistently, bootstrapping (n=5,000) revealed that PA was a partial mediator when adjusting for the covariates (indirect effect= -.017, 95% CI [-.044, -.004]). Results indicate that among adolescents, low PA in daily life partially explains why those with lower SES have higher levels of inflammation. Understanding the socio-emotional mediators linking SES to inflammation may provide promising points of intervention that could ultimately protect against the development of poor health.

Thursday, March 13 from 8:00 to 9:00 am
Paper Session: PTSD

METABOLIC RISK FACTORS, SLEEP, AND POSTTRAUMATIC STRESS DISORDER IN YOUNG, UNMEDITATED, MEDICALLY-HEALTHY ADULTS

Lisa S. Talbot, PhD, Mental Health Service, San Francisco VA Medical Center, San Francisco, CA, Madhu N. Rao, MD, Beth E. Cohen, MD, MAS, Department of Medicine, Anne Richards, MD, MPH, Sabra S. Inslicht, PhD, Aoife O’Donovan, PhD, Shira Maguen, PhD, Department of Psychiatry, University of California, San Francisco, CA, Thomas C. Neylan, MD, Mental Health Service, San Francisco VA Medical Center, San Francisco, CA

Background: Posttraumatic stress disorder (PTSD) is associated with poor physical health, including metabolic risk factors related to increased mortality, although this topic has been understudied in young adults. Sleep disturbance is a key feature of PTSD and low sleep duration has been associated with metabolic risks in healthy samples. The present study investigated the relationship between PTSD, metabolic risk factors, and sleep duration in a sample of medically-healthy and medication-free young to middle-aged adults.

Methods: Participants with PTSD (n = 44, mean age = 30.6 years) and control participants free of lifetime psychiatric history (n = 50, mean age = 30.3 years) recorded their sleep at home using a sleep diary for 10 nights and actigraphy for 7 nights.
PTSD AND MEDICATION NON-ADHERENCE IN PATIENTS WITH UNCONTROLLED HYPERTENSION
Ian M. Kromish, MD, MPH, Medicine, Columbia University Medical Center, New York, NY, Jenny J. Lin, MD, MPH, Medicine, Icahn School of Medicine at Mount Sinai, New York, NY, Beth E. Cohen, MD, MAS, Medicine, University of California, San Francisco, San Francisco, CA, Corrine Toils, PhD, Medicine, Duke University Medical Center, Durham, NC, Briana Olamiju, high school diploma, Biology, Columbia University, New York, NY, Donald Edmondson, PhD, MPH, Medicine, Columbia University Medical Center, New York, NY

Background: PTSD increases risk of incident and recurrent cardiovascular events. The mechanisms explaining this risk, however, remain poorly understood. We aimed to determine whether PTSD was associated with a key risk-reducing health behavior – adherence to blood pressure (BP) medications.

Methods: We enrolled a cohort of 98 patients with uncontrolled hypertension from an urban primary care clinic. Patients were eligible if prescribed at least 1 BP medication and BPl > 140/90 mm Hg on ≥2 consecutive clinic visits. Patients were ineligible if they had dementia, psychosis, substance abuse, or resided in an institutional setting. PTSD was assessed using the 4-item Primary Care PTSD Screen, which asks patients whether, in response to a traumatic event, they had re-experiencing, numbing, avoidance, and hyperarousal. BP medication adherence was measured during the interval between two subsequent clinic visits using an electronic pillbox (MedSignals®). Patients were categorized as non-adherent if regimen adherence was <80%. Logistic regression was used to determine the association between PTSD and non-adherence after adjusting for age, gender, race, ethnicity, number of BP medications, and depressive symptoms.

Results: The mean (SD) age was 64 (9) yrs, 76% were women, 81% Hispanic, and 29% white. Fifty-nine percent had no PTSD symptoms, 20% had 1-2 symptoms, and 21% had 3-4 symptoms. Median regimen adherence was 86% (IQR 58%-97%), and 41% were non-adherent. There was a graded association between PTSD symptoms and medication non-adherence (Figure). In adjusted analyses, those who screened positive for PTSD (3-4 PTSD symptoms) had 5.2 (95% CI 1.1-24.4) increased odds of non-adherence compared to those without PTSD symptoms (p=0.04). Conclusions: This study is the first to demonstrate that PTSD is an independent risk factor for non-adherence in patients with uncontrolled hypertension, and offers a potential mechanism by which PTSD increases risk for cardiovascular disease. Future studies should explore pathways by which PTSD affects medication adherence and should develop interventions to improve medication adherence in those who suffer from PTSD.

Abstract 1508

POSTTRAUMATIC STRESS DISORDER AND SMOKING IN YEAR AFTER AN ACUTE CORONARY SYNDROME EVENT
Elena M. Brondolo, BSc, Medicine, Columbia University, New York, New York, Lauren Wasson, MD, Medicine, New York Presbyterian Hospital, New York, New York, Carmela Alcantara, PhD, Faith Parsons, BA, Donald Edmondson, PhD, Medicine, Columbia University, New York, New York

Background: Posttraumatic stress disorder (PTSD) is common after an acute coronary syndrome (ACS) event, and is associated with ACS recurrence and mortality. Mechanisms for that association are not well understood, but behavioral factors may play a role. In non-cardiac populations, PTSD has been associated with odds of smoking. Cessation of smoking is important for secondary prevention, but no study has assessed the association between PTSD and smoking status in ACS patients. The purpose of this study is to estimate the association of PTSD with smoking status at 1 year after an ACS event.

Methods: ACS-induced PTSD was assessed 1 month post-ACS by screening 301 adults using the Impact of Events Scale—Revised (IES-R), and a positive screen was defined as an IES-R score ≥ 24. Smoking status was assessed at 1-year post-ACS by self-report of cigarette smoking in the past 7 days. Logistic regression models were used to determine whether ACS-induced PTSD was associated with 1-year smoking status, with adjustment for age, sex, Black race, and Hispanic ethnicity.

Results: One year post-ACS smoking was present in 29 (10%) participants, and 24 participants screened positive for PTSD. Of participants who screened positive for PTSD, 21% reported smoking at 1 year, whereas only 7% of those who screened negative for PTSD reported smoking. After adjustment for demographic factors, ACS-induced PTSD was associated with a 3.45 (95% CI 1.6, 30.8) increase in odds for 1 year smoking.

Conclusion: The association of PTSD with adverse outcomes after ACS may operate through behavioral mechanisms. In this study, ACS-induced PTSD symptoms were associated with positive smoking status 1-year post ACS, suggesting that smoking may be an important mechanism to target in ACS patients who develop PTSD due to the cardiac event.

Abstract 1843

CHANGES IN THE INTERPLAY OF IMMUNE AND STRESS PATHWAYS IN PTSD
Kenneth P. Pitts, M.A., Nicolas Rohleder, Psy.D, Psychology, Brandeis University, Waltham, MA, Lilijana Joksimovic, PhD, Psychology, Clemens Kirschbaum, PhD, Biological Psychology, Dresden University of Technology, Dresden, Germany, Jutta Wolf, Ph.D, Psychology, Brandeis University, Waltham, MA

PTSD is a heterogeneous condition associated with increased risk for inflammation-mediated diseases. These potentially result from a PTSD phenotype of increased glucocorticoid (GC) sensitivity with increased expression of adrenergic and inflammatory factors. While RNA expression differences in PTSD are reported, it is unclear which intracellular processes are sustaining the phenotype due to overlapping and reciprocating pathways. The current study will explore how implicated pathways are differentially correlated in healthy and PTSD diagnosed participants to identify factors mediating GC sensitivity in PTSD.

To assess this question, 54 clinically diagnosed PTSD patients and 16 healthy controls were recruited. GC sensitivity of IL-6 producing PBMCs was assessed and the expression of GC receptor (GR), FKBP4, FKBP5, b2-AR, TLR-4, NF-kB, and I-kB were quantified by Real-Time RT-PCR. As expected, the PTSD group demonstrated higher GC sensitivity, (F1,67)=19.33, p=.001, which only in the PTSD group correlated with increased expression of GR RNA (r=.33, p=.016). Functionally related RNA parameters to GR expression were explored by Principle Component Analysis and revealed three components with Eigenvalues exceeding 1, explaining 85.42% of the variance in healthy individuals and 75.55% of the variance in the PTSD group. Oblimin Rotation revealed that loadings of GR expression across components 1 and 3 were similar for PTSD and healthy individuals. However, b2-AR expression accounted for more variance in PTSD patients than in the healthy group, while GR translocation factor FKBP4, and moreover, the counteracting co-chaperon FKBP5 accounted for less variance in PTSD patients compared to the healthy group. These findings indicate that intracellular allostatics in PTSD is dominated by the availability of GC receptors and b2-adrenergic receptors rather than inflammatory (TLR-4, NF-kB, 1-kB) and downstream GC negative feedback factors (FKBP4, FKPT5). As such, this shift in intracellular pathway orchestration in PTSD emphasizes the central role of stress hormones in sustaining immune dysfunctions in PTSD.

Symposium 1088

Immunological Aging: Causes, Consequences, and Biopsychosocial Influences
Suzanne C. Segerstrom, PhD, Psychology, University of Kentucky, Lexington, KY, CA, Rita B. Effros, PhD, Pathology and Laboratory Medicine, UCLA, Los Angeles, CA, Jan A. Bosch, PhD, Clinical Psychology, University of Amsterdam, Amsterdam, Netherlands, KY

The aging of the population brings into sharp focus the clinical relevance of immunological senescence. Older adults have increased incidence of, and suffer profound consequences from, a number of age-related immunosenescence deficits, including poor defense against novel viruses, poor response to vaccination, elevated systemic inflammation, and increased incidence of cancer. Research in immunological aging has recently started to point to replicative senescence as a potential root cause of all of these deficits and a contributor to important health outcomes.

The purpose of this symposium is to provide a cutting-edge picture of replicative senescence and suggest biopsychosocial factors that can accelerate or retard this aspect of immunological aging. Rita Effros, a leading figure in immunological
aging, will provide a primer on replicative senescence, including the roles of aging and latent virus infection and the immunological and health consequences. Jos Bosch will present data demonstrating that senescent T cells are sensitive to stress hormones and that higher levels of senescence are associated with other biopsychosocial health risks, such as low SES, low physical activity, and metabolic syndrome. Suzanne Segerstrom will present data on a cell subset that is often studied in psychoneuroimmunology, the natural killer (NK) cell. Replicative senescence in NK cells has only recently been well described. In her data, psychosocial resources are associated with a lower proportion of senescent NK cells in both younger and older women. In sum, this symposium will bring together immunology and psychology to describe and analyze replicative senescence in multiple cell types across the adult lifespan.

Individual Abstract Number: 1092

REPLICATIVE SENESCENCE: A PRIMER

Rita B. Effros, PhD, Pathology and Laboratory Medicine, UCLA, Los Angeles, CA

Normal human cells are strictly limited in the number of times they are able to divide. This so-called ‘Hayflick Limit’ is believed to have evolved as a mechanism to prevent cancer. Once a cell has undergone its maximum number of divisions, it reaches an end stage known as replicative senescence. Senescent cells have a variety of features that make them distinct from their progenitors, including the inability to enter the cell cycle, shortened telomeres (the termini of chromosomes that protect the ends from DNA damage), and significant changes in gene expression. Since extensive cell division is a requisite early step in effective immune responses, characterization of the unique senescence-associated features of T cells (the immune cells that control infections and cancer) is an essential step in understanding the mechanisms underlying many of the immunological features of aging. Extensive research has shown that human T cells that are driven to replicative senescence in cell culture following multiple rounds of antigen-driven proliferation lose expression of a critical signaling molecule, CD28, that is involved in a variety of important functions, such as turning off the immune response (which can result in telomere loss), and glucose metabolism. Senescent T cells lose the ability to secrete certain growth factors, and, instead, produce large amounts of inflammatory cytokines. Moreover, senescent T cells are no longer able to kill virally-infected cells and cancer cells. T cells with these same features accumulate during both aging and chronic infection with HIV, and are associated with a variety of pathologies, such as osteoporosis and cardiovascular disease. In addition to persistent viral infection, several in vivo factors, including cortisol (the stress hormone) and oxidized cholesterol, contribute to the generation of senescent T cells. Thus, interventions to retard or prevent the accumulation of senescent T cells are promising approaches for enhancing human health-span.

Individual Abstract Number: 1099

WHAT’S BUGGING YOU? INFECTIOUS AND PSYCHOSOCIAL FACTORS INTERACTIVELY PROMOTE IMMUNOSENESCENCE

Jan A. Bosch, PhD, Clinical Psychology, University of Amsterdam, Amsterdam, XA, Netherlands

A hallmark of an aging immune system (immuno senescence) is the gradual accumulation of so-called ‘terminally differentiated’ memory CD8+ T cells (tCFT). Terminally differentiated describes their impaired ability to proliferate to antigen, and these cells also have short telomeres and a high inflammatory potential. This accumulation starts as early as adolescence and spreads by a decrease in naive cytotoxic T cells (nCFT). Besides age, latent infection with Cytomegalovirus (CMV) is another key determinant of tCFT accumulation: individuals infected with this herpes virus have 3 to 6-fold higher tCFT numbers. Already in young adults (N = 160; mean age 19), both CMV infection and accumulation of tCFT were associated with characteristics features of immune aging, as weaker responses to vaccination and elevated IL-6. Three sets of studies provide novel data on how psychosocial factors interact with tCFT function and CMV to promote an immunosenescent profile. First, tCFT express 8-fold higher levels of the beta2-adrenergic receptor (as compared with nCFT) which makes these cells hyperresponsive to adrenergic stimulation. Acute social stress (N=50) and infusion with isoproterenol (ISO, N=24) selectively recruit these tCFT into the blood (stress +200%; ISO +340%), whereas nCFT numbers remain unperturbed. Second, because CMV infection drives the accumulation of (catabolism-sensitive) tCFT, we predicted that infected individuals would show a robust amplification of cytotoxic T cell mobilization and altered SE activity, and during acute stress and ISO infusion. This hypothesis was confirmed (CMT mobilization in infected versus noninfected during stress +400%; during ISO +380%). No effects were seen for other latent viruses suggesting that these effects are CMV-specific. Third, shifting the focus to protracted psychosocial influences, in a sample of working men (N = 860; age range = 19 to 67 years; 38% CMV infected) we find that components of the metabolic syndrome and low physical activity had the same effect. These effects were similar across age. In summary, CMV infection has parallel effects on T cell senescence and immunological responses to stress. These data further show that latent CMV infection and psychosocial risk factors may interactively accelerate immune aging across the lifespan.

Individual Abstract Number: 1089

PSYCHOSOCIAL RESOURCES AND NK SENESCENCE ACROSS THE LIFESPAN

Suzanne C. Segerstrom, PhD, Psychology, Ahmad Al Attar, MD, Charles T. Lutz, MD, PhD, Pathology and Laboratory Medicine, University of Kentucky, Lexington, KY

Immune senescence may increase risk for infectious and neoplastic disease. Senescence has recently been characterized in NK cells and identified with CD57 expression, poor proliferation, and poor responsiveness to cytokine signals. The present study examined how psychosocial resources relate to expression of CD57 on natural killer cells (NK) across age. In a sample of 112 women, who varied in age (N = 112; mean age = 46.1, SD in 11.7 years), we found that components of financial, psychosocial and social resources, and had blood drawn. Older women had a higher CD57+ percentage than young women in NK cells (p < .05). Examined both across and within the older women, age (standardized b = .26, p < .05, between; .32, p < .07, within) and fewer total resources (b = -.29, p < .05 between, -.40, p < .05, within) were associated with lower percentages of CD57+ cells. We observed a 16% influence of age in years of aging among the older women. Among the specific resource types, a preponderance of financial resources was associated with less CD57 expression on NK cells (b = -.48, p < .05), and this relationship did not significantly vary between younger and older women (b = -.26, p < .05). There was no evidence that depressive symptoms mediated the effects of resources on CD57 expression. These findings provide support for the hypothesis that the sense that one has substantial resources, particularly with regard to finances and possessions, may retard age-associated aspects of the microenvironment in which NK cells develop and mature. Resources may protect against stress and limit factors that drive NK activation and turnover, such as DNA damage and viral infection. This process is independent of effects on distress and may be present in young adulthood.

Thursday, March 13 from 9:15 to 10:30 am

Symposium 1457

Psychobiological Mechanisms and Asthma Outcomes: Laboratory Models, Longitudinal Observations, and Behavioral Intervention

Thomas Janssens, PhD, Psychology, KU Leuven (University of Leuven), Leuven, Belgium, Thomas Ritz, PhD, Psychology, Southern Methodist University, Dallas, TX, Quebec, Kim L. Lavoie, PhD, Psychology, University of Quebec at Montreal (UQAM), Montreal, Canada, NY, Rosalind J. Wright, MD MPH, Kravis Children's Hospital, Icahn School of Medicine at Mount Sinai, New York, NY, Paul Leher, PhD, Robert Wood Johnson Medical School, Rutgers University, Piscataway, NJ

Research into the psychobiological mechanisms of asthma has rapidly advanced over the past decade. There is also increasing evidence that asthma is not a uniform condition, but that substantial individual differences exist in inflammatory status, personal asthma triggers, hyperventilation, and symptom reports. However, despite novel research insights and treatment options, a considerable portion of the asthma patient population fails to achieve adequate asthma control. In this symposium, we showcase research on a variety of psychobiological mechanisms that have an impact on asthma morbidity. The presenters highlight different ways in which psychopathology and psychological mechanisms can explain individual differences in emotion-induced airway reactivity, hyperventilation, autonomic reactivity, and airway inflammation, which all may impact lung function, asthma symptoms, or other asthma outcomes. Furthermore, results of an intervention that is aimed at changing one of these mediators - hyperventilation-associated hypoxia - are presented. Taken together, these presentations give an overview of how research on different psychobiological mechanisms in asthma may help to understand individual differences in asthma morbidity and on how to translate these research findings into psychologically informed treatments of asthma.

Individual Abstract Number: 1523

PSYCHOSOCIAL, BEHAVIOURAL, AND PHYSIOLOGICAL MECHANISMS LINKING PSYCHIATRIC COMORBIDITY TO WORSE ASTHMA CONTROL: A CONSOLIDATION OF EVIDENCE FROM THE PSYCHOLOGICAL FACTORS IN ASTHMA LONGITUDINAL (PAL) STUDY

Kim L. Lavoie, PhD, Psychology, University of Quebec at Montreal (UQAM), Montreal, Quebec, Canada, Simon L. Bacon, PhD, Exercise Science, Concordia University, Montreal, Quebec, Canada

The Psychological factors in Asthma Longitudinal (PAL) Study is a longitudinal cohort study of 800 tertiary care adult asthmatics designed to elucidate the psychological and behavioral risk factors for worse asthma control, health service use, and quality of life. We have previously reported high rates of mood (20%) and anxiety (25%) disorders among patients with asthma, and cross-sectional associations between psychiatric comorbidity and worse asthma control and quality of life independent of disease severity. We have also reported a longitudinal association between anxiety disorders and worse asthma control at 2 months and mood disorders and a 61% increased risk of 5-year emergency visits, after adjustment for baseline control and disease severity. In an attempt to understand the mechanisms linking psychiatric morbidity to worse asthma control, we have examined the role of several psychosocial, behavioural, and physiological variables including socioeconomic status, self-efficacy, body mass index, smoking - medication adherence - autonomic activity, and dysregulated immune function. This paper will present a consolidation of this work in an attempt to describe a comprehensive model of disease risk that will provide specific targets for intervention.
CUMULATIVE PRENATAL AND EARLY CHILDHOOD STRESS ASSOCIATED WITH POOR LUNG GROWTH AND REDUCED EXHALED NITRIC OXIDE IN SCHOOL-AGED URBAN CHILDREN.
Rossi-Laub, A., Greaves, J., Perlik, M., Peck, M., and Kravis Children's Hospital, Icahn School of Medicine at Mount Sinai, New York, NY.

An important step toward identifying children at risk for chronic respiratory disorders is characterizing mechanisms that lead to and maintain early predisposition. We indexed pre- and postnatal maternal stress by a negative life events (NLEs) score (range 0-9) assessed prenatally, in the first 2 years of the child’s life (early postnatal) and at lung function testing (7.0 ± 0.9 years) (late postnatal) in the Asthma Coalition on Community, Environment, and Social Stress (ACCESS) Project. Outcomes were diagnosed asthma and forced expiratory volume in one second (FEV1), forced vital capacity (FVC) and the FEV1/FVC ratio as well as exhaled nitric oxide (eNO), a measure of eosinophilic airway inflammation. We considered pre- and/or postnatal NLEs separately and concurrently (all moderately correlated, r(0.5, p<0.01), by collapsing scores into low (0-2, <median) and high (≥3, >median) groups and categorizing as low pre/postnatal, high pre/low postnatal, low pre/high postnatal, and high pre/high postnatal stress. Mothers with higher NLEs in both the pre- and early postnatal periods were most likely to have children with asthma (n=502). Children of mothers with high NLEs in both pre- and early postnatal periods had decreased FEV1 and FVC with a preserved ratio (n=150). Children born to mothers reporting high NLEs across all 3 periods had lower eNO levels at the 7 year follow-up compared to children whose mothers reported low NLEs across all three periods. These data suggest that reduced lung function in relation to early life stress may be due to compromised lung growth starting in utero and that oxidative stress and non-eosinophilic inflammation may have a central role.

Individual Abstract Number: 1459
EMOTIONS AS ASTHMA TRIGGERS: EXPLORING THE ASSOCIATION OF SUFFOCATION FEARS WITH AIRWAY CONSTRUCTION DURING REPEATED EMOTION INDUCTION IN ASTHMA.
Thomas Janssens, PhD, Psychology, KU Leuven (University of Leuven), Leuven, Belgium, Ashon M. Steele, MA, Thomas Ritz, PhD, Psychology, Southern Methodist University, Dallas, TX.

Emotional stimuli can elicit airway constriction both in individuals with asthma and in healthy individuals. Although effects of emotional stimuli are usually short lasting, it is not known whether the effect of emotional stimuli on airway constriction remains with repeated stimulation. Furthermore, large individual differences exist in the susceptibility to emotion-induced airway constriction, and little is known about the role of these individual differences. In this study, we explored the effect of repeated emotion induction on respiratory resistance using a series of unpleasant, high-arousal surgery film clips. Furthermore, we explored the association of suffocation fear with changes in respiratory resistance. Participants with asthma (n = 13) and a control group (n = 13) watched a series of 12 short (45s) surgery film clips intermixed with 2-minute recovery periods. We assessed respiratory resistance at 5 Hz (Res5) and 20Hz (Res20) using impulse oscillometry. Respiratory resistance (Res5) during film clips was increased compared to recovery periods (F(1,24)=50.85, p<0.01). Central (Res20) and peripheral airway resistance (Res5-Res20) contributed to this effect, but constriction of peripheral airways was limited to individuals with asthma (F(1,24)=5.61, p=0.03). In individuals with asthma, airway constriction was furthermore moderated by suffocation fear (F(2,22)=7.09, p<0.01, [≥95]: higher levels of suffocation fear were associated with sustained reactivity to emotional film clips, whereas lower levels of suffocation fear were associated with a decline of airway reactivity over consecutive trials. In healthy controls, suffocation fear did not moderate airway reactivity. Increases in airway reactivity due to emotional stimulation occur in individuals with asthma as well as healthy controls. However, the role of peripheral airway constriction differs in both groups. The association of suffocation fear with more sustained emotional airway reactivity may imply that individuals with asthma and high levels of suffocation fear will have more severe asthma symptoms and an increased risk of asthma exacerbations in daily life.

Individual Abstract Number: 1463
CAPNOMETRY-ASSISTED BREATHING TRAINING FOR ASTHMA: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL
Thomas Ritz, PhD, Psychology, Southern Methodist University, Dallas, TX, David M. Rosenfield, PhD, Psychology, Southern Methodist University, Dallas, TX, Verenidje Staten, Ashon M. Steele, MA, Psychology, Southern Methodist University, Dallas, TX, Mark M. Millard, MD, Baylor University Medical Center, Dallas, TX, Aliceia E. Meare, PhD, Psychology, Southern Methodist University, Dallas, TX.

Hyperventilation has been associated with adverse effects on lung function, symptoms, and well-being in asthma. We examined the effects of adjunctive breathing training aimed at raising end-tidal carbon-dioxide levels (PCO2) on asthma symptoms and pulmonary function. 120 adult asthma patients were enrolled in a randomized-controlled trial to receive biofeedback training for either raising PCO2 (capnometry-assisted respiratory training, CART) or slowing respiratory rate (SLOW). Interventions consisted 5 sessions over 4 weeks with twice daily at home training assignments. The primary outcomes were asthma control, PCO2, and diurnal PEF variability. Secondary outcomes included asthma symptoms, medication use, spirometric lung function, respiratory resistance, airway inflammation, airway hyperreactivity, and quality of life. CART, but not SLOW patients achieved sustained increases in PCO2 throughout treatment and follow-up. Significant improvements were found across most outcome measures in both groups, including improvements in pulmonary function tests and methacholine challenge. CART patients showed lower respiratory resistance during therapy and superiority in long-term symptom reduction at 6-month follow-up. Thus, breathing training aimed at raising PCO2 or slowing respiration rate leads to sustained improvements in asthma symptoms and lung function. Raising PCO2 resulted in greater benefits in aspects of lung function and long-term symptoms.

Thursday, March 13 from 9:15 to 10:30 am
Paper Session: Cardiovascular Reactivity
Abstract 1533
COREGULATION OF CARDIOVASCULAR REACTIVITY TO LABORATORY-INDUCED RELATIONSHIP-RELATED STRESS AMONG DATING COUPLES: A MULTIPLE VARIATE APPROACH
Youngmee Kim, PhD, Charles S. Carver, PhD, Psychology, University of Miami, Coral Gables, FL.

Stress in the present personal and health context is regulated at both individual and dyadic levels, yet little is known about the latter. This gap in knowledge is substantial, since life events pertaining to problems in close relationships and health-related concerns have been known to be among the most devastating stressors and significant predictors of poor quality of life. This study investigated this question using cardiovascular reactivity as a stress marker in a laboratory setting. Heterosexual dating couples participated in a laboratory stress study. Stress was induced by a hypothetical scenario in which the couple was involved in a serious car accident. Heart rate variability (HRV) was measured every minute throughout three study phases (total 34 minutes): before, during, and after the stress task.

A multivariate dyadic model was employed to predict one’s HRV at Time (T) +1 by one’s HRV at T, study partner’s HRV at T, and study phase time effects (Level-1), gender and experimental role—speaker vs listener (Level-2), and study condition (paired with romantic partner or with a stranger: Level-3). Multilevel Linear Modeling results revealed the significant HRV changes confirming successful stress manipulation (p<.03). In addition, greater HRV was related to being the listener (p<.04), which was more pronounced among males (p<.03). Regardless of the study condition, both one’s own and the partner’s immediately prior HRV were related to one’s HRV at T (p<.07).

Findings provide evidence of stress coregulation at both individual and dyadic levels, suggesting a novel approach for clearer understanding of interpersonal and health-related stress effect on heart rate variability. Future studies are needed to investigate the impact of coregulation to an acute interpersonal stress on a long-term cardiovascular health, particularly among family members dealing with chronic illnesses.

Abstract 1262
BLOOD PRESSURE AND EMOTIONAL DAMPING IN YOUNG ADULTS: EFFECTS ON TREAT APPRAISAL AND RISK BEHAVIOR
James A. McCubbin, PhD, Psychology and Public Health Science, Clemson University, Clemson, SC, Aaron A. Nathan, Melissa A. Hildon, Justin A. Stephens, Anamaria A. Morrison, Jack F. Woeste, Ronald A. Schram, BS, Gregg W. Hayden., Psychology, Clemson University, Clemson, South Carolina.

Recent studies have shown that resting blood pressure is inversely related to subjective responses to emotionally meaningful stimuli, including evocative photos, facial expressions and text passages. According to Lazarus’ model of stress, cognitive appraisal of potential threat or harm is critical to motivate coping behavior. If cardiovascular emotional damping reduces perception of threat, then blood pressure may have an influence on risk appraisals and risk-taking behavior. We hypothesize that this cardiovascular emotional damping may reduce threat appraisal and increase risk taking behavior.

We measured resting blood pressure (mmHg), perception of affect accuracy (% correct) and risk behavior (% of highest risk score) in 53 healthy young adults (26 men, 27 women) between 18 and 30 years old (average [+/-SE] age =21.1 +/- .313). Blood pressure was measured using a calibrated GE Dinamap Pro 100v2, recognition of affect was measured with the Perception of Affect Task (PAT), and risk behavior was assessed with a modified Youth Risk Behavior Survey. Men had significantly higher systolic blood pressure (118.8 +/- 2.02) than women (106.2 +/- 2.42; p<.001). Men also had marginally higher risk scores (.461 +/- .0255) than women (.400 +/- .0183; p=.059). Risk behavior was positively correlated with both systolic (rS=+.416, p=.002) and diastolic blood pressure (DBP; rS=+.508, p<.001), positively correlated with resting systolic BP (r(51)=+.362, p=.008) in the PAT Faces subtask. A multiple regression predicting risk behavior from age, gender, PAT Face accuracy and DBP indicated significant, independent prediction of risk by age (p=.032), and DBP (p=.001), with PAT Faces marginally significant (p=.059). The correlations between BP and risk behavior were generally significant in men, and nonsignificant or marginally significant in women, although the effect of DBP on risk showed no significant interaction with sex. These results indicate that young adults with higher DBP report more risk taking behavior and show less accuracy in recognition of emotion in faces, suggesting that...
cardiovascular emotional dampening may reduce threat appraisal and increase high risk behavior. This effect is most apparent in young men the blood pressure/risk relationship could be bidirectional. The effect of blood pressure on risk behavior could contribute to increased disease risk later in life.

Abstract 1688

ACTIVATION CONTROL: HEIGHTENED OR BLUNT CARDIAC SYMPATHETIC REGULATION?

Derek P. Spangler, Master’s, Psychology, Virginia Tech, Blacksburg, Virginia, Xiao Yang, Master’s, Bruce H. Friedman, Ph.D., Psychology, Virginia Tech, Blacksburg, Va.

Activation control (AC) describes the ability to mobilize a behavior against strong inclination to not do so and likely predicts reduced susceptibility to stress (Evans & Rothbart, 2007). The link between heightened cardiac sympathetic regulation (CSR) and chronic stress supports the notion that CSR is negatively coupled with AC (Cacioppo et al., 1993). Specifically, augmented CSR may predict high AC due to the role the former plays in effort mobilization (Gendolla et al., 2012). In the current study, the relation between CSR and AC was explored using a pooled cross-sectional approach. Eighty-four volunteers (mean age = 19.6, SD = 1.8) completed the AC scale of the Adult Temperament Questionnaire. ECG and impedance cardiography (ICG) were recorded while subjects completed a mental arithmetic, verbal fluency, and speech preparation task. Each task was preceded and followed by baseline and recovery periods. Interbeat interval (IBI) was derived from the ECG to index heart period, while pre-ejection period (PEP) was calculated from the ICG to index cardiac sympathetic activation. Reactivity and recovery scores were computed and entered into regression analyses. Results indicate that AC moderated the relation between PEP and IBI reactivity across tasks, β = -0.375 (t(78) = -2.41, p = .018. IBI was more strongly related to PEP reactivity at low levels of AC, β = .634 (t(78) = 4.19, p < .001, compared to high levels of AC, β = .132 (t(78) = .56, p = .342. These results suggest that AC is negatively related to CSR, supporting models linking behavioral regulation to inhibition of sympathetic activity (Thayer & Lane, 2000). These findings also suggest that increased sympathetic cardiac activity during effort in previous studies (Gendolla et al., 2012) may reflect approach tendencies independent of regulatory mechanisms (Derryberry & Rothbart, 1997).

Abstract 1514

DEPRESSIVE SYMPTOMS ARE ASSOCIATED WITH WORSENING OF ARTERIAL STIFFNESS WITH MENTAL STRESS

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Introduction: Arterial stiffness is an important marker of cardiovascular risk which worsens with acute mental stress. Psychological conditions, particularly depression, have been linked to recurrent cardiac events and death, but the mechanisms are unclear. We examined whether depressive symptoms, anxiety and anger worsen arterial stiffness induced by mental stress.

Methods: In 81 subjects with a history of MI in the previous 6 months, we used the Sphygmocor® Pulse Wave Velocity system at rest and 60 minutes after a standardized psychological stress protocol (via speech tasks) and after a conventional physical (exercise or pharmacological) stress test. The central augmentation index (CAx) was derived by pulse wave analysis software and the difference between CAx after each stress condition and the respective resting phase was calculated. Depressive symptoms were assessed with the Beck Depression Inventory-II (BDI-II), state and trait anxiety with the State-Trait Anxiety Inventory (STAI), and state and trait anger with the State-Trait Anger Expression Inventory (STAXI-II). Linear regression models were used to model the association between change in CAx with each stress (dependent variable) and BDI total score, anxiety and anger subscales as individual predictors, adjusting for potential confounding factors.

Results: Forty-one subjects were >50 years of age, 41 were female and 46 were non-white. Systolic and diastolic blood pressure and heart rate significantly increased in response to mental stress (48 ± 23 and 30 ± 13 (mmHg), and 28 ± 18 (bpm); p=0.001 for each), but this increase was not related to psychosocial risk factors. Neither psychosocial risk factors were associated with baseline CAx. In unadjusted analysis, BDI total score, trait anger and trait anxiety were all significantly associated with an increase in CAx with mental stress. After adjustment for demographic factors, CAD risk factors, CAD severity, and hemodynamic changes induced by mental stress, each 1-point increase in the BDI total score was associated with 0.34 units increase in mental stress-induced change in CAx (95% CI: 0.10 to –0.57, p=0.005). The association did not persist for trait anger and trait anxiety, however. None of the psychosocial risk factors were related to changes in CAx induced by physical stress.

Conclusion: Higher depressive, but not anxiety or anger symptoms are associated with an increase in arterial stiffness during mental stress. This finding may provide a mechanistic link for the association between depression and adverse cardiovascular outcomes.

Abstract 1275

WE ARE WATCHING YOU: TYPE D PERSONALITY IS ASSOCIATED WITH EXAGGERATED CARDIOVASCULAR STRESS REACTIVITY BUT ONLY UNDER HIGH SOCIAL EVALUATIVE THREAT

Adam Bibeau, BSc (Hons), C. Phillips, PhD, Douglas Carroll, PhD, Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Edgbaston, Birmingham, United Kingdom

The Type D personality has been associated with a range of negative health outcomes including cardiovascular disease. A potential mechanism is large magnitude cardiovascular reactivity to stress. However, the studies on reactivity to acute psychological stress in Type D individuals have reported equivocal findings, potentially due to the varying social aspects of the stressor employed. The present study, examined whether cardiovascular reactivity in Type D and Non-Type D undergraduate students differed according to an asocial (31 Type D, 34 Non-Type D: 55% female) or social (35 Type D, 34 Non-Type D: 52% female) version of the stress task. Type D personality was assessed using the DS14 questionnaire, with participant’s blood pressure and heart rate recorded at rest and during a 15-minute stress protocol comprising the Stroop and a mental arithmetic task. With adjustment for age, cardiovascular fitness, perceived stressfulness (which differed between the groups) and baseline levels (which did not differ between groups), there were significant group x condition interactions for systolic (p = .010) and diastolic (p = .029) blood pressure, and heart rate (p = .033) reactivity. Under the social condition, Type D individuals exhibited significantly greater systolic blood pressure (p = .010), and heart rate (p = .009) reactivity, with no group differences under the asocial condition. Diastolic blood pressure reactivity did not significantly vary according to Type D status within either condition. Interestingly, Type D individuals’ responses were somewhat lower than non-Type D individuals for all reactivity measures in the asocial condition, although this was not significant. This study highlights that Type D individuals only exhibit exaggerated haemodynamic reactions under conditions of high social evaluative threat. Further, this suggests that the possible mechanism underlying the association between Type D personality and increased cardiovascular disease risk is via stress responses in highly social situations.

Thursday, March 13 from 1:00 to 2:15 pm

Symposium 1329

Aging in the Context of Chronic Disease: Premature, Accelerated, Normal, or Unaffected?

Paige A. Green McDonald, PhD, MPH, Basic Biobehavioral and Psychological Sciences Branch, National Cancer Institute, Rockville, MD, Catherine Alfano, PhD, Office of Cancer Survivorship, National Cancer Institute, Rockville, MD, CA, Steven G. Deeks, MD, Medicine, University of California, San Francisco, Francisco, CA, D. Lisa S. Jeste, MD, Psychiatry, University of California, San Diego, La Jolla, CA, Owen M. Wolkowitke, MD, Psychiatry, University of California, San Francisco, San Francisco, TN, Kirsten K. Ness, PT, PhD, Epidemiology and Cancer Control; Pediatric Medicine, St. Jude Children's Research Hospital, Memphis, Jerry Sals, PhD, Behavioral Research Program, National Cancer Institute, Rockville, MD, German increases in life expectancy and significant improvements in life extension, treatment, and supportive care have modified the morbidity and mortality landscape of the United States. More individuals are living with, and in some cases, living longer with human immunodeficiency virus (HIV), major depressive disorder (MDD), schizophrenia, and some cancers. While this shift in chronic disease epidemiology is encouraging, significant unmet needs are observed. Clinical and population based studies have documented excess risk for age-associated morbidities and downward trends in the average ages of functional impairments such as frailty, cognitive decline, and compromised independence. Clinicians and researchers have begun to explore whether certain chronic diseases, therapies, and behavioral/lifestyle factors might singularly or synergistically perturb biological, physical, psychological, and social trajectories of aging across the lifespan. A critical issue is whether the converging data suggest the emergence of premature or accelerated aging phenotypes in the context of chronic disease. To address this question, four preeminent clinician-scientists will present their empirical data and scholarly perspectives drawn from long-standing programs of research in HIV, MDD, schizophrenia, and some cancers. Every presentation will highlight plausible biobehavioral mechanisms and opportunities to promote healthy lifespans and successful aging in the context of chronic diseases.

Individual Abstract Number: 1782

HIV DISEASE AS A MODEL FOR THE STUDY OF AGING

Steven G. Deeks, MD, Medicine, University of California, San Francisco, San Francisco, CA

HIV infected adults who are effectively treated with antiretroviral therapy (ART) have an unexplained excess risk for several age-associated complications, including cardiovascular disease, osteoporosis, cancer, liver dysfunction, renal dysfunction, and neurocognitive disease. Many of these complications are predicted by immune dysfunction and inflammation, both of which persist during effective ART. Indeed, the immune system during ART shares some similarities with that seen in the very old ("immunosenescence"). In the context of other risk factors associated with healthy aging—particularly social isolation, poverty substance abuse, and polypharmacy—there are growing concerns that the multimorbidity of HIV disease will lead to early onset of age-associated functional impairments (e.g., frailty). A
multidisciplinary research agenda is being assembled to address this growing concern. It is hoped that lessons learned from the study of HIV disease will be informative to the study of aging in other chronic conditions.

Individual Abstract Number: 1785

PREMATURE AGING IN SCHIZOPHRENIA?
Dilip V. Jeste, MD, Psychiatry, University of California, San Diego, La Jolla, CA

Background: Schizophrenia is associated with higher medical comorbidity and a shorter life span than the general population. It is not clear if this is a result of premature aging (i.e., whether the process of aging begins early in life) and/or accelerated aging (i.e., whether there is progressive worsening with age). Methods: We used a structured multi-cohort design to recruit 72 outpatients with schizophrenia (39 women; mean age 50.1 years; SD 10.5) and 64 demographically comparable healthy subjects. Mean duration of schizophrenia was 25.2 years (SD 13.2). Results: There were a number of significant differences between the schizophrenia and comparison groups in terms of physical health, cognitive functioning, mental health, and fatigue. This suggests that schizophrenia is associated with aging and suggests that childhood cancer survivors may have accelerated aging. Recent evidence indicates that both the frailty phenotype and chronic health conditions are influenced not only by cancer and treatment related risk factors but also by other potentially preventable risk factors (obesity, hypertension, poor fitness) known to be associated with less than optimal life habits, like smoking, sedentary behavior and unhealthy lifestyle choices. We will review data from the Childhood Cancer Survivors Study and the St. Jude Lifetime Cohort Study describing the prevalence of and risk factors for age associated chronic conditions in childhood cancer survivors. A major focus of the presentation will be on lifestyle associated risk factors that possibly accelerate cardiovascular disease and other age related conditions in long term survivors of pediatric, adolescent, and young adult cancers.

Thursday, March 13 from 1:00 to 2:15 pm
Paper Session: Obesity

Abstract 1687
THREE GENERATIONAL MECHANISMS ASSOCIATED WITH WEIGHT GAIN IN ADOLESCENCE
Angelina R. Satin, Ph.D., Medical Humanities and Social Sciences, Florida State University College of Medicine, Tallahassee, FL, Richard Robins, Ph.D., Keith F. Widaman, Ph.D., Psychology, Rand Conger, Ph.D., Human and Community Development, University of California, Davis, Davis, CA

Among adults, poor psychological functioning increases risk of obesity and weight gain, whereas positive psychological functioning is protective. Some evidence suggests that child psychological functioning contributes to childhood obesity, but less is known about how psychological risks associated with parents transfer to risk for obesity for the child. Adolescence is a particularly vulnerable period that can have long-lasting consequences for adult health. Across this developmental period, the characteristics of the parent and child may differentially contribute to weight gain. The objectives of this research are twofold: (1) to identify parent and child factors associated with weight gain and obesity in adolescence and (2) to test whether these effects vary across adolescence. Participants were drawn from the California Families Project, a longitudinal study of Mexican-origin youth (N=674) and their parents. Children and their parents completed measures of personality, depressive symptoms, and parenting. Growth curve analyses were used to estimate the trajectory of body mass index (BMI) across adolescence from annual BMI assessments from ages 12 to 16. Children with conscientious parents had lower average BMI, but parent conscientiousness was unrelated to child weight gain. In contrast, child conscientiousness was associated with less weight gain across adolescence. Results were similar for depressive symptoms and parenting. In addition, parent BMI was associated with higher child BMI and more weight gain from 12 to 16; these effects were stronger for father’s BMI than mother’s BMI. These findings suggest that parents’ psychological functioning may matter for initial weight when entering adolescence, whereas the child’s psychological functioning is more important for weight gain across adolescence. Further, mother and father characteristics may have differential effects on child BMI and weight gain. This research highlights the importance of family dynamics and identifies translational mechanisms that contribute to weight gain across adolescence.

Abstract 1830
GLUCOCORTICOID RECEPTOR MEDIATED REGULATION OF INFLAMMATION IN OBESITY IS EXPLAINED BY DEPRESSIVE MOOD
Tien Cheng, B.S., Stoyan Dimitrov, Ph.D., Nuzhat Beg, M.D., Gary Lyasch, B.S., Suzi Hong, Ph.D., Psychiatry, University of California San Diego, La Jolla, CA

Glucocorticoid receptor (GCR) sensitivity is influenced by numerous factors, including age, chronic stress, and psychosomatic disease. Recent literature reports the association between GCR sensitivity and inflammation, which remains unclear in obesity in spite of the well-documented low-grade inflammation in obesity. In addition, both elevated inflammation and obesity are linked with depression. Thus, we aimed to investigate the role of depressive mood on the GCR-mediated regulation of inflammation (“GCR”) in obesity in 28 healthy men (n=16) and women with normal to mild SBP elevation (SBP: 123.8 ± 15.1mmHg; age: 37.5 ± 11.4 years; BMI: 29.9 ± 6.9 kg/m²). To directly examine inflammatory cytokine production governed by GCR responsiveness, we developed a cellular model of LPS-stimulated monocytic TNF production in the presence of physiological level (0.1μM) of cortisol ex vivo. Monocyte identification and intracellular TNF production were measured via flow cytometry with GCR calculated as a percent inhibition of TNF production by cortisol. Depressive mood was assessed using Beck Depression Inventory (mean BDI: 4.9 ± 6.1). Statistical significance was determined at p<0.05. Univariate correlation revealed that BMI was negatively associated with GCR (r= -0.38, p=0.05) as well as BDI (r= -0.39, p=0.04). BMI was positively correlated with BDI (r= 0.31, p=0.10). Obese participants (BMI ≥ 30kg/m²) reported higher BMI scores compared to the normal- and overweight (5.9 ± 6.8 vs. 3.9 ± 5.9, p=0.1). Multiple regression analyses showed that obesity was a predictor of lower GCR (β=-0.38, p=0.07) as well as greater BMI scores (β=0.31, p=0.09) after controlling for the covariates (age, gender, systolic BP). However, when depressive mood was controlled for in the model, obesity no longer explained GCR. Our results show that the relationship seen between obesity and impaired inflammation regulation via GCR is in part mediated by depressive mood even in asymptomatic individuals. Our findings provide initial evidence of the role
of depression and glucocorticoid resistance of immune cells in obesity-related inflammation, which is of great clinical significance.

Abstract 1417
MATERNAL OBESITY, CHILD TEMPERAMENT, AND THE INTESTINAL MICROBIOTA IN TODDLERS
Lisa M. Christian, PhD, Psychiatry, Jeff Galley, BS, Oral Biology, Sarah Schoppe-Sullivan, PhD, Human Development and Family Sciences, Claire Kamp-Dush, PhD, Department of Human Sciences, Michael Bailey, PhD, Oral Biology, The Ohio State University, Columbus, Ohio
Background: Among U.S. children 2-5 years, 26.7% are overweight or obese. Alterations in bacteria that naturally reside in the intestines may contribute to obesity. Because the infant microbiota are derived from the mother, alterations in the maternal microbiota may link maternal and child obesity. Moreover, emerging data suggest that emotional reactivity is associated with altered microbial profiles in mice and non-human primates. This study examined whether maternal obesity and child temperament are associated with altered profiles of microbiota in young children.

Methods: This study included 77 women and their children, ages 22-26 months. Women completed measures of maternal health, child diet, and the Early Childhood Behavior Questionnaire, a well-validated measure of child temperament. Women collected stool samples from their children which were analyzed by deep sequencing. The adonis statistic, a function of the vegan package of the statistical software program R and implemented into the open-source sequencing pipeline software package Quantitative Insights Into Microbial Ecology, was used to measure differences in distance matrices between variables.

Results: Results showed no association of child temperament with microbial populations. However, the microbiome structure in children differed based on maternal obesity (p < .01). Specifically, higher maternal BMI predicted greater prevalence of Prevotella, Oscillibacter, and Roseburia in the child. Children born to obese mothers also had a significantly higher Shannon Diversity Index (SDI; p<0.01), indicating increased bacterial diversity. Child weight-height ratio (WHR) was marginally related to differences in their microbiota (p = .08). However, child WHR was not associated with the SDI (p = .23) and the relationship between maternal obesity and the SDI remained after controlling for the child WHR, indicating that effects of maternal obesity were independent of the child’s BMI. Obese and non-obese mothers were demographically similar and showed no statistically significant differences related to feeding behavior in their children. Conclusions: Maternal obesity during pregnancy may predict differences in the gut microbiota of offspring. In particular, we found that maternal obesity predicted elevations in Prevotella and Oscillibacter in toddlers, microbial populations that have previously been associated with obesity in humans and animals respectively. This may be a mechanism by which maternal obesity confers risk of obesity in offspring.

Abstract 1252
CHILDREN’S STRESS INFLUENCES THEIR DIET, PHYSICAL ACTIVITY AND ADIPOSY: LONGITUDINAL ASSOCIATIONS AND HORMONAL PATHWAYS
Nathalie Michels, MSc., Public Health, Ghent University, Ghent, OV, Belgium, Sioux Isabelle, Dr., Public Health, Liesbet Boone, Dr., Caroline Braet, Prof., Dr., Developmental, Personality and Social Psychology, Barbara Tansel, PhD, Inge Heyrman, PhD, Public Health, Ghent University, Gent, OV, Belgium, Els Claes, PhD, Public Health, Ghent University, Gent, 9000, Belgium, Stefaan De Henauw, Prof., Public Health, Ghent University, Gent, OV, Belgium
Background: Psychosocial stress and adiposity are important public health threats that have been associated with each other. Longitudinal studies are needed to reveal the directionality and underlying behavioral and hormonal factors (see figure). In young children, literature is scarce.

Methods: In 312 Belgian children (5-12y) of the ChiBS study, the two-year longitudinal stress-lifestyle-adiposity relation was examined. Stress data (negative events, problem behavior, negative emotions), lifestyle (food consumption, psychological eating behavior, physical activity by accelerometer, screen time, sleep duration) and adiposity (BMI, fat% by BodPod, waist) were measured. At baseline, also fasting serum leptin and salivary cortisol levels (awakening response and evening) were determined. Mplus cross-lagged analyses tested the longitudinal stress-lifestyle-adiposity relations. Multilevel time modeling examined the cross-sectional relation of cortisol with diet and leptin.

Results: Children with a high stress score reported more sweet food consumption, emotional eating, external eating, restrained eating and physical activity. Stress increased adiposity in children with high sweet food consumption, high screen time or high cortisol awakening response (enhancing moderators). Stress decreased adiposity in children with high physical activity (protective moderator). In the other direction, adiposity also increased stress. High cortisol (overall, awakening response and diurnal slope) was associated with an unhealthy diet especially with the sweet foods. High cortisol (overall) was also associated with higher leptin levels in girls. Conclusions: The associations of cortisol with leptin and diet support the theory of cortisol-induced comfort food preference. Indeed, children’s stress deteriorates their diet which amplifies adiposity. On the other hand, stress can also enhance physical activity which inhibits adiposity. This creates a perspective for multi-factorial obesity prevention, targeting stress and lifestyle factors in parallel. Concerning lifestyle, the environment should be an ‘activity encouraging, healthy food zone’ that minimizes opportunities for stress-induced eating. Concerning stress, appropriate stress coping skills should be acquired. Concerning adiposity, psychological support for obese children should be organized.

Abstract 1525
A PERSONALIZED MEDICINE APPROACH TO SUBTYPE IDENTIFICATION IN OBESITY: ARE CIRCADIAN LEPTIN-CORTISOL INTERACTIONS A VULNERABILITY FACTOR?
Kirstin Aschbacher, Ph.D., Psychiatry, University of California, San Francisco, CA, San Francisco, CA, Maria Rodriguez-Fernandez, Ph.D., Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA, Shamini Jain, Ph.D., Psychiatry, University of California, San Diego/ Samuels Institute, La Jolla, CA, Herman van Wietmarschen, Doctoral Student, Analytical Biosciences, Leiden University, Leiden, 2333 CC Leiden, Netherlands, Frank Doyle, Ph.D., Chemical Engineering, University of California, Santa Barbara, Santa Barbara, CA, Jan van der Greef, Ph.D., Analytical Biosciences, Leiden University, Leiden, Leiden, Netherlands
Background: Maintenance of weight loss is often unsuccessful, perhaps in part because caloric restriction triggers a decrease in the hormone leptin and an increase in cortisol, which drives motivation to eat. As fat stores subsequently increase, leptin rises again, restoring equilibrium. Hence, this feedback system, and leptin-cortisol dynamic interactions specifically, may constitute an important regulator of weight, which may be particularly relevant during periods of caloric restriction and/or high stress. We hypothesized that, in some individuals, an over-activation or systemic imbalance of this leptin-cortisol circuit might contribute to the maintenance of obesity. Methods: 18 obese women participated in a rapid sampling study, providing blood samples every 10 minutes over 24 hours in an inpatient setting. These samples were assayed for cortisol, ACTH and leptin, yielding 7830 total data points. We extended a published personalized dynamic HPA systems model to incorporate leptin as a predictor of cortisol, and analyzed the resultant individual-level parameters in relation to the ratio of 24hr lean body mass (FL/BMA), assessed by dual-energy X-ray absorptiometry. Results: Leptin at a given time-point was significantly and inversely predictive of cortisol levels 10 minutes later in 8 of the 18 women, while accounting for previous cortisol and ACTH. Further, this subgroup, characterized by leptin-cortisol inhibition, exhibited a significantly greater F/LBA ratio (p<.01), lower LBM (p<.02), no differences in body mass index (ns), but significantly lower 24hr average leptin levels (p=.02), and a greater nocturnal cortisol secretion in response to ACTH (p=.05), relative to the remainder of the sample. In contrast, this pattern of effects was not revealed by looking at average levels of each hormone individually. Conclusions: Though preliminary, these data suggest the possibility that personalized dynamic systems analyses of leptin-cortisol interactions may reveal a physiologic phenotype associated with stress or glucocorticoid-related risk for obesity in women. However, future studies are needed to explore whether this phenotype is altered in states of chronic psychological stress, caloric restriction, or whether it predicts difficulty maintaining weight loss.
Thursday, March 13 from 1:00 to 2:15 pm
Paper Session: Cancer

Abstract 1425
RELATIONSHIPS OF TUMOR EPIDERMAL GROWTH FACTOR RECEPTOR (EGFR) GENOTYPES WITH MAJOR DEPRESSIVE DISORDER AND CYTOKINE HORMONE IN PATIENTS WITH STAGE IV NON-SMALL CELL LUNG CANCER (NSCLC)
William Pirl, MD, MPH, Lara Traeger, PhD, Joseph Greer, PhD, Justin Eavesib, MA, Naomi Simon, MD, Psychiatry, Jennifer Temel, MD, Medicine, Harvard Medical School, Boston, MA
Depression is associated with poorer survival in patients newly diagnosed with stage IV NSCLC, but the mechanism for this association is unknown. One possibility is that depression might be a marker for sub-types of NSCLC with worse prognoses. NSCLC tumors with certain somatic gene mutations, such as EGFR mutations, have better prognoses and responses to treatments, relative to EGFR wild-type tumors. In a pilot study, we found that, before genotyping, patients with stage IV NSCLC harboring EGFR mutations were also less likely to be depressed around the time of cancer diagnosis. We hypothesized that the relationship with depression might be a result of serum levels of cytokines differing by tumor EGFR genotype. Methods: Patients with newly diagnosed stage IV NSCLC were recruited consecutively at their first oncology visit (7/11-8/13) prior to routine tumor genotyping. Patients with prior genotyping were ineligible. Study assessments, including a blood sample, the Mini International Neuropsychiatric Interview (MINI) and PHQ-9, were completed before being recruited genotyping results. Serum ELISAs were conducted to quantitate IL-1ß, IL-6, and TNF-alpha levels. We tested differences in categorical variables with Fisher's exact test and continuous variables with Wilcoxon rank sum test. Results: The 55 patients had a mean age of 62.1 (11.7) and 87% (48) had ECOG Performance Status 0-1; 20% (14) were women; 64% (35) were married; 18% (10) community smokers; and 93% (51) were white. Approximately 20% (14) met criteria for current major depressive disorder (MDD) on the MINI, and clinically and demographically variables did not differ by MDD status. Nine participants (16%) had tumors with typical EGFR mutations, whereas 46% (25) of EGFR wild-type tumors were less likely to be depressed compared to EGFR wild-types (0.9/13.36, p<.05) and had lower PHQ-9 scores (p=.04). Among cytokines, only serum levels of TNF-alpha were associated with both MDD (p=.008) and EGFR genotype (p=.05), with higher levels in patients with MDD and in patients with EGFR wild-type tumors. Additional analyses indicated that the risk of MDD with higher TNF-alpha was only present in patients with EGFR wild-type tumors. Moreover, patients with both EGFR wild-type tumors and higher TNF-alpha were substantially more likely to have MDD (OR=40.7, CI 2.1, 811.3). Conclusions: We replicated our prior finding of an association between depression and NSCLC EGFR genotype, and extend these results by finding that tumor EGFR genotype may moderate the association between TNF-alpha and MDD in patients with newly diagnosed stage IV NSCLC.

Abstract 1544
EFFECTS OF MINDFULNESS MEDITATION ON STRESS AND INFLAMMATION IN BREAST CANCER SURVIVORS: A RANDOMIZED CONTROLLED TRIAL
Julienne E. Bower, PhD, Psychology and Psychiatry/Biobehavioral Sciences, Patricia A. Ganz, MD, Medicine and Public Health, Alexandru D. Cresswell, MA, Psychology, Catherine M. Crespi, PhD, Biostatistics, Annette L. Stanton, PhD, Psychology and Psychiatry/Biobehavioral Sciences, David W. Cole, PhD, Medicine, UCLA, Los Angeles, CA
Background: Among cancer survivors, inflammation is associated with behavioral symptoms, disease recurrence, and mortality. Pre-clinical animal models suggest that stress can drive cancer progression via effects on inflammatory processes. The goal of this study was to determine whether mindfulness meditation could reduce stress and inflammatory activity in younger breast cancer survivors, a particularly vulnerable group. Method: Women who had been diagnosed and treated for premenopausal breast cancer were randomly assigned to a 6-week mindfulness meditation intervention designed for breast cancer survivors (n=39) or to a wait-list control group (n=32). At pre- and post-intervention, participants completed questionnaires and provided blood samples for genome-wide transcriptional profiling and bioinformatic analyses. We focus here on intervention effects on the Perceived Stress Scale (PSS) and genetic markers of inflammatory activity, including the pro-inflammatory transcription factor NF-kB. Plasma inflammatory markers were also assessed (IL-6, CRP, IL-1RA, soluble TNF receptor II). Results: Participants were on average 47 years old and 4 years post diagnosis. Results of mixed model analyses showed a significant group x time interaction for perceived stress, driven by a significant decline in PSS scores among intervention group participants relative to controls (p=0.004). The intervention group also showed significant down-regulation of pro-inflammatory genes, with accompanying biomarker reduction. Conclusions: Results support the stress reducing effects of mindfulness meditation in younger breast cancer survivors and suggest that this intervention may also have beneficial effects on inflammatory processes, with potential relevance for behavioral and disease-related outcomes.

Abstract 1741
ALTERED GENETIC TRANSCRIPTION PROFILES AMONG HEMATOPOIETIC STEM CELL TRANSPLANT RECIPIENTS BASED ON SOCIOECONOMIC STATUS
Jennifer M. Knight, MD, Psychiatry, J. Douglas Rizzo, MD MS, Hematology/Oncology, Brent Logan, PhD, Institute for Health and Society, Medical College of Wisconsin, Milwaukee, WI, Steve Cole, PhD, Hematology/Oncology, UCLA, Los Angeles, CA
Low socioeconomic status (SES) is associated with worse overall survival and higher transplant-related mortality in unrelated donor (UDR) hematopoietic stem cell transplantation (HCT) outcomes. The biological, psychosocial, and environmental mechanisms that might account for this relationship are unknown. SES is inversely related to morbidity and mortality in a wide variety of populations, with inflammation postulated as a key biological pathway mediating this association. Given the extreme and dynamic hematopoietic cell population changes HCT recipients undergo and their role in post-transplant complications, it is important to understand the immunobiologic mechanisms by which pre-existing factors, such as SES, may impact HCT outcomes. We analyzed genome-wide transcriptional activity in peripheral blood mononuclear cells (PBMC) from a population of 38 low vs. 38 high-SES individuals who received an URD myeloablative HCT for acute myelogenous leukemia in first complete remission to better understand whether differing gene expression patterns may be associated with survival differences. Analysis of genes showing >20% difference in expression (in linear models controlling for age, sex, BMI, and number of co-existing medical conditions) identified significantly up-regulated pro-inflammatory genes and down-regulated Gene 1 interfering genes in low- vs. high-SES HCT recipients (p < 0.01). Promoter-based TELIS bioinformatic analyses indicated increased NF-kappaB (NFkB) activity, decreased activity of interferon regulatory factors (IRF), increased cAMP response element-binding protein (CREB) activity, and decreased activity of the glucocorticoid receptor in low- vs. high-SES recipients (all p < 0.05); this indicates that increased sympathetic nervous system activity may contribute to differential gene expression profiles observed. These results suggest that exposure to socioeconomic adversity is associated with a marked pro-inflammatory/anti-antiviral shift in the PBMC transcriptome; this finding may represent one mechanism contributing to previously observed poorer survival in low- vs. high-SES HCT recipients.

Abstract 1166
DISTRESS AND SUPPORT: LINKS WITH CIRCADIAN DISRUPTION AND QUALITY OF LIFE IN CYNOLOGIC CANCER
Whitney N. Rehbolz, B.A., Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY, Inka Weissbecker, PhD, MPH, International Medical Corps, Damascus, Syria, Department of Surgery, Division of Otolaryngology, University of Louisville School of Medicine, Louisville, KY, René Bayley, BA, Lauren A. Zimmaro, BA, Sandra E. Sephton, PhD, Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY
Psychological distress and social support can impact cancer quality of life (QOL) and tumor progression. Among women with gynecologic cancer we investigated biological correlates of distress and social support with a focus on physiological measures of chronic stress: circadian disruption and allostatic load (AL). We explored associations of psychosocial and biological factors with QOL. Women within five years of diagnosis of ovarian (n=21) or endometrial (n=24) cancer reported on distress (PSS-IES composite), social relationships (Duke, Yale), psychophysiology (STAI, BDI) and QOL (FACT-O). We assessed diurnal salivary cortisol rhythms and calculated an AL summary score using 10 indices (serum cortisol, DHEA, urinary catecholamines, glycosylated hemoglobin, cholesterol, blood pressure, waist circumference). Hierarchical regressions adjusted for cancer stage and type, and examined predictors of cancer disruption, AL and QOL. Supportive social relationships were associated with more rhythmic diurnal cortisol profiles (Duke-agnostic support, partial r=.31, p<.05). No significant predictors of AL emerged. Women reporting high distress had poorer QOL (r =-.72 p<.001). Women in supportive social relationships had higher QOL (affection, r =-.38, r =.65, p<.001) while those reporting aversive social relationships had poorer QOL (r =-.62, p<.001). Psychopathology was also linked with poorer QOL (STAI state, r =-.71; trait, r =-.75; BDI, r =-.65; p<.001). The association of social support with circadian regulation invites further inquiry. It is increasing that psychological but not physiological factors were associated with QOL in this relatively recently diagnosed sample. These findings contribute to the differential gene expression observed.

Abstract 1835
BIOLOGICAL CORRELATES OF MARITAL STATUS IN RECENTLY DIAGNOSED BREAST CANCER PATIENTS
Sandra E. Sephton, Ph.D., Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY, Elizabeth Cash, Ph.D., Department of Surgery, Division of Otolaryngology, University of Louisville School of Medicine, Louisville, KY, Anees B. Chagpar, M.D., Department of Surgery, Yale University School of Medicine, New Haven, CT, David Spiegel, M.D., Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine,
Thursday, March 13 from 3:45 to 5:00 pm
Symposium 1430
A Stepwise Psychotherapy Intervention to Reduce Risk in Coronary Artery Disease (Spiri-Cad) - First Results of a Multicenter Randomized Trial
Christoph Herrmann-Lingen, MD, Psychosomatics, Univ., Göttingen, Germany, Christian Albus, MD, Psychosomatics, Univ., Cologne, NRW, Germany, NRW, Christoph Albus, MD, Psychosomatics, Univ., Cologne, Germany, Katja Petrovski, PhD, Psychosomatics, Univ., Dresden, Germany, Cora S. Weber, MD, Psychosomatics, Charité, Berlin, Germany, Neil Schneiderman, PhD, Psychology, University of Miami, Miami, FL, Redford Williams, MD, Psychiatry and Behavioral Sciences, Duke University, Durham, NC
The German SPIRR-CAD trial is one of the largest psychotherapy trials in depressed patients with coronary artery disease. It tests the hypothesis that a stepwise psychotherapy intervention improves depressive symptoms, quality of life, and physiological risk factors more than usual care plus one information session. In this "late braking" symposium, first baseline and efficacy data from ongoing analyses will be presented. In the first presentation the design and rationale will be summarized and data will be presented on the screening and randomization process, showing that despite considerable challenges, SPIRR-CAD was able to recruit the projected number of patients in due time and to come to an almost perfect balance in baseline data between both study arms. The second talk focuses on the primary and some secondary outcome analyses, including prespecified subgroup analyses. First analyses suggest that depression improved in both study arms without a significant difference between both groups. Analyses are ongoing and more detailed analyses will be presented. The third talk will focus on changes in heart rate variability accompanying the overall decrease in depressive symptoms. It will show that R-MSSD as a vagal marker of autonomic modulation decreased over time despite improved emotional state and try to identify underlying causes. In the final presentation, associations of socioeconomic status with depressive symptoms on one side and biological factors such as heart rate variability and coagulation markers on the other side will be described. Although SPIRR-CAD could be conducted successfully and despite considerable measures for quality assurance, some major results of this trial do not confirm previous expectations. Two independent researchers will discuss the findings and facilitate a discussion, what lessons can be learned from this trial.
ASSOCIATION BETWEEN CHANGES IN DEPRESSIVE SYMPTOMS AND IN HEART RATE VARIABILITY IN DEPRESSED PATIENTS WITH CORONARY HEART DISEASE - RESULTS FROM THE SPIRR-CAD TRIAL

Katja Petrovski, PhD, Psychosomatics, Univ., Dresden, Germany; Christian Albus, MD, Psychosomatics, Univ., Cologne, Germany; Christoph Herrmann-Lingen, MD, Psychosomatics, Univ., Göttingen, Germany; Hans C. Deter, MD, Psychosomatics, Charité, Berlin, Germany; Wolfgang Söllner, MD, Psychosomatics, Klinikum, Nuremberg, Germany; Cora S. Weber, MD, Psychosomatics, Charité, Berlin, Germany; SPIRR-CAD Study Group

Depression is a common comorbidity and a risk factor for cardiac morbidity and mortality in patients with coronary heart disease (CHD). Depression symptoms are associated with autonomic nervous system dysfunction (eg, lower heart rate variability, HRV). Lower HRV is a serious predictor of adverse prognosis in these patients. However, the temporal association between changes in depressive symptoms and changes in HRV is still unknown. For example, in the SADHART trial (Glassman et al. 2002) HRV remained unchanged over 16 weeks despite improvement in depression.

The aim of the current analysis is to analyze in a well-defined large cohort of CHD patients if changes in depressive symptoms are accompanied by changes in HRV.

In the SPIRR CAD trial, HRV and depressive symptoms (HADS, PHQ, HDRS) were evaluated at baseline (t0) and at 18-month assessment (t3) in at least mildly depressed CHD patients. The root mean squares of successive differences (RMSSD) were evaluated under rest as well as during an arithmetic task.

In the subsample of N = 217 who had complete pre-post HRV data (37 female, 180 male, mean age 58.2 (SD = 9.1) y), HADS depression scores decreased significantly from 10.1 (SD 2.3) to 8.0 (SD 4.0; p < .001) between t0 and t3. At baseline assessment, RMSSD was significantly lower during the arithmetic task (M = 18.0; SD = 11.3) compared to the resting condition (M = 21.4; SD = 14.6; p < .001), as expected. Over time, RMSSD significantly decreased from t0 to t3 both at rest (p < .001) and during the arithmetic task (p < .007). This unexpected decrease in RMSSD was unrelated to the concomitant improvement in depressive symptoms (for resting condition r=0.00 p=0.99, for mental stress r=-0.05; p=0.44.) Further analyses will be conducted and presented in order to elucidate possible reasons for the decline in HRV.

In conclusion, despite the decrease in depressive symptoms, RMSSD as a vagally controlled parameter of HRV decreased further. A normalization of the relatively low HRV at baseline could not be observed in a time frame of 18 months. HRV might need an even longer period of time to show changes after depressive symptom reduction. However, our null finding together with the SADHART results might also indicate that improvement in depression does not necessarily improve HRV. Further analysis of our data may give information about the link between depressive symptoms and blunted HRV in CHD patients and possible recovery processes over time.

Individual Abstract Number: 1760

PATHOGENIC SOCIO-ECONOMIC PATHWAYS IN CORONARY HEART DISEASE - AUTONOMIC DYSBALANCE AND HEMOSTATIC PROFILE

Cora S. Weber, MD, Psychosomatics, Charité, Berlin, Germany; Kristina Orth-Gomér, MD PhD, Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; Katja Petrovski, PhD, Psychosomatics, Univ., Dresden, Germany; Christoph Herrmann-Lingen, MD, Psychosomatics, Univ., Göttingen, Germany; Christian Albus, MD, Psychosomatics, Univ., Cologne, Germany; Hans C. Deter, MD, Psychosomatics, Charité, Berlin, Germany; SPIRR-CAD Study Group

Background: Low heart rate variability (HRV) has been proposed as a mediating pathway of depression in patients with coronary heart disease (CHD). Depression worsens prognosis in patients with CHD. Low socioeconomic status (SES) is known to increase risk of both cardiac morbidity and mortality.

Methods: The current study is part of a comprehensive set of analyses of pathogenic SES pathways in CHD in a well-defined large cohort of German CHD patients. This SPIRR CAD study is a DFG funded multicenter trial on 570 CHD patients with a depression score of 8 and more on the “HADS” (Pf. C. Herrmann-Lingen, C. Albus). In the present paper, we analyze baseline data of SES, defined as educational attainment, and autonomic dysfunction, defined as low heart rate variability (HRV).

Results: Preliminary analyses show that 24% of the patients are academicians (high SES) and 42% belong to lower SES classes (mandatory or low education). Patients of lower SES classes showed higher depression scores (HADS; p=.004). We expect, that HRV will be low and the prothrombotic index will be high in low social class.

Updated results will be presented at the symposium.

Discussion: A linear relationship between HRV and prothrombotic index has been previously established (v.Kaenal, Orth-Gomér 2006). Further bio-psycho-physiological pathways (inflammation, coagulation, HPA axis) need to be considered, next to lifestyle (BMI, smoking, physical activity). Although the current cross sectional analysis precludes causal interpretations and the study cohort may not be regarded as representative of German CHD patients (selection process, recruitment at university hospitals), the data may give us further insights into the socio-economic causality of CHD.
Abstract 1263

CHARACTERISTICS OF AN ABUSE HISTORY PREDICT DIFFERENT STRESS REACTIVITY PHENOTYPES IN PERIMENOPAUSAL WOMEN
Jennifer L. Gordon, PhD, David R. Rubinow, M.D, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC; Lana L. Watkins, PhD, Psychiatry and Behavioural Sciences, Duke University, Durham, NC; Jane Leserman, PhD, Susan S. Girdler, PhD, Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC

Background: A history of abuse has been associated with long-term alterations in physiological stress reactivity, though discrepant results exist with regards to the direction of abuse effects (i.e., hyper-reactivity versus hypo-reactivity). Abuse characteristics may predict the stress reactivity phenotype and thereby help explain discrepant findings. Furthermore, research suggests that the menopausal transition may be a unique time during which the long-term physiological sequelae of past abuse are revealed. Methods: In our ongoing study, healthy women (age 45-55) meeting criteria for perimenopause were included if they experienced abuse in childhood or adolescence. Women completed a trauma interview assessing lifetime physical and sexual abuse and were exposed to the Trier Social Stress Test (TSST). Plasma cortisol and IL-6 were sampled following a baseline rest and in response to the TSST. Via continuous heat-to-heat blood pressure assessment, the amplitude of the oscillations in systolic blood pressure at the 10-second rhythm (Mayer waves) was also measured at rest and during stress to provide an index of sympathetically-mediated vasomotor control. Results: To date, 125 women have completed testing. Forty-one reported past sexual or physical abuse occurring between 3 and 49 years of age. Using repeated measures GLMs and adjusting for age at study enrollment, income, and recent life stress, women with a history of either sexual or physical abuse exhibited lower cortisol (F’s = 6.0 & 3.9, p’s = .016 & .052) and elevated IL-6 levels (F’s = 6.5 & 10.0, p’s = .012 & .002) at rest and in response to the TSST relative to women with no abuse history. Furthermore, a younger age of first physical abuse predicted higher IL-6 at rest and during stress (β = -.04, F = 8.9, p = .008). Regarding sympathetic vasomotor control, women with a history of sexual abuse exhibited increased Mayer wave power at baseline (F = 5.5, p = .022). Discussion: During the menopause transition, a history of abuse is associated with dampened HPA axis activation, but increased immune activation at rest and in response to stress. Combined with the finding that a younger age of physical abuse predicted greater immune activation, this may reflect repeated adaptations to extreme stress, particularly if occurring early in life. Only a history of sexual abuse was associated with elevated sympathetic control of the vasculature during rest. Taken together, these results suggest that the type of abuse and the age of abuse may predict distinct phenotypes in stress-response pathways.

Abstract 1295

STRESS RESILIENCE - A LOW-ANXIETY GENOTYPE PROTECTS MALE MICE FROM THE CONSEQUENCES OF CHRONIC PSYCHOSOCIAL STRESS
Stefan O. Reber, Prof. Dr. rer. nat., Laboratory for Molecular Psychosomtics, University Hospital of Ulm, Ulm, Baden-Württemberg, Germany, Inga D Neumann, Prof. Dr. rer. nat., Andrea M. Füchsl, Dipl. Biol., Department of Behavioural and Molecular Neurobiology, University of Regensburg, Regensburg, Bavaria, Germany

Chronic psychosocial stress is a risk factor for the development of affective as well as somatic disorders. However, the vulnerability to adverse stress effects varies between individuals, with previous negative life events along with the genetic phenotype mediating resilience to both affective and somatic consequences of chronic stress. Here, we investigate the impact of genetic variation on the stress response phenotype mediating resilience to CSC among 157 young adults (Mean Age=25.6 years; 94% Caucasian; 53% Male) who experienced the divorce of their parents during childhood. Young adults reported on the frequency of alcoholic beverages consumed per week/month/year, number of days intoxicated over the past 6 months, and frequency of binge drinking over the past 2 weeks. Participants also responded to questions assessing heavy drinking (i.e., consuming a fifth of liquor in one day or drinking for several days without sobering up at least once in the last 3 months). Latent growth curve modeling was used to predict the intercept and linear slope of cortisol from these different measures of use, controlling for gender, nicotine intake, and caffeine consumption. All models fit the data well: Chi-square = 6.41-7.66, p=.027-38; RMSEA = .02-.04; CFI = .99-999; SRMR = .01-.02. Average number of alcoholic beverages consumed in a week and number of days intoxicated predicted significantly higher pre-task cortisol (β = .17, p=.001 and β = .15, p=.01, respectively) and a greater increase in cortisol across the task (β = .18, p=.003 and β = .19, p=.004, respectively); frequency of having 5 drinks in a row in the past 2 weeks predicted higher cortisol reactivity to the task (β = .13, p=.02) but was not related to pre-task cortisol (p=.12). Compared to those categorized as non-heavy drinkers, heavy drinkers exhibited higher average cortisol (β = .25, p=.001), but showed no difference in cortisol reactivity to task (p=.19). Findings suggest that number of alcoholic beverages consumed per week and number of days intoxicated in the last 6 months may best capture the relationship between alcohol use and different indices of the cortisol stress response in young adults.

Abstract 1404

LONG-TERM STABILITY OF DIURNAL SALVARY CORTISOL AND ALPHA-AMYLASE
Nadine Skoluda, MSE; Department of Psychology, University of Marburg, Marburg, Hesse, Germany, Andreas Mueller, PhD, Institute of Occupational and Social Medicine, University of Düsseldorf, Düsseldorf, North Rhein-Westphalia, Germany, Heribert Limm, PhD, Department for Psychosomatic Medicine and Psychotherapy, University of Ulm, Ulm, Baden-Württemberg, Germany, Birgit Merten-Mittag, PhD, Department of Occupational, Social and Environmental Medicine, Ludwig Maximilian University, Munich, Bavaria, Germany, Harald Gündel, Professor, Department for Psychosomatic Medicine and Psychotherapy, University of Ulm, Ulm, Baden-Württemberg, Germany, Peter Angerer, Professor, Institute of Occupational and Social Medicine, University of Düsseldorf, Düsseldorf, North Rheine-Westphalia, Germany, Urs M. Nater, Professor, Department of Psychology, University of Marburg, Marburg, Hesse, Germany

Objective: Both salivary cortisol (sCort) and salivary alpha-amylase (sAA) reflect stress-related changes in HPA axis and autonomic nervous system regulation, respectively. Previous studies, predominately using a correlational approach, suggest that sCort and sAA display a relatively stable diurnal profile over the course of a few days. However, there is a lack of studies investigating long-term stability of both sCort and sAA. The current study aimed to investigate the stability of sCort and sAA diurnal profiles over a 22-months period using hierarchic linear modeling (HLM).

Methods: 189 industrial employees in the production line with leadership responsibility (mean age: 41.1±8.1, 180 men) collected 7 saliva samples on a single weekday (at awakening, +30min, +60min, 8:00, 11.00, 15.00, 20.00) during 3 waves (at baseline, at 11 months, and at 22 months). For the estimation of the stability of sCort and sAA, 2-level models (aggregated measures of single waves, nested within subjects) and 3-level models (single sample time points, nested within waves, nested within subjects) were conducted. A number of covariates (BMI, age, smoking status, chronic stress, stress reactivity) were included. Results: 2-level models revealed that 64-90% of the variance in the aggregated sCort measures was explained by variations over the three measurement waves with no impact of covariates, whilst 34-81% of the aggregated sAA measures were explained by variations over the three waves. 3-level models confirmed these findings on intra-individual variability, controlling for covariates. Conclusion: Our findings suggest a relatively low long-term stability for both sCort and sAA. These findings underpin the need for multiple-days assessments and consideration of state variables that might explain some of the variance in diurnal measurements. This is of particular importance when investigating the role of stress over the course of illness or using these biomarkers as therapy outcome variables.
Thursday, March 13 from 3:45 to 5:00 pm
Paper Session: Pain

Abstract 1768
EGG Imaging and Neurmodulation of Acute Pain in Head and Neck Cancer Patients Undergoing Radiotherapy
Sarah Primusio, PhD, General Oncology, MD Anderson Cancer Center, Houston, TX, Randall Lyle, PhD, Marriage and Family Therapy, Mt. Mercy University, Cedar Rapids, Iowa, Sherry Garcia, PA-C, David Rosenthal, MD, Radiation Oncology, Lorenzo Cohen, PhD, General Oncology, MD Anderson Cancer Center, Houston, TX

Methods: Patients undergoing head and neck radiation (N=12; 9 male; mean age=53.5) completed baseline EGG and underwent a baseline EEG. A second EGG was done upon the first written prescription for pain medications, but before the medications were started, and a final EGG was performed at the conclusion of radiotherapy. Patients were scheduled for a total of 6 LORETA neurofeedback sessions after their pain became at least a 4 on a 0-10 scale for 3 consecutive days. Patients were asked to rate their pain on a scale of 0-10 before and after the neurofeedback session. The Brief Pain Inventory (BPI), the Multidimensional Pain Inventory (MPI), and the MD Anderson Symptom Inventory for Head and Neck Cancer (MDASI-HN) were completed at baseline and end of radiotherapy. Results: LORETA results demonstrated that (1) regions of the pain network showed significant differences in alpha (8-12) and beta (13-21 Hz) activity relative to baseline (primary somatosensory cortex, dorsolateral prefrontal cortex). During LORETA neurofeedback sessions, patients could normalize activity in the pain network relative to their ‘painful’ EGG map activity. Pain ratings also decreased from pre to post-session (mean decrease=1.9). Self-report data and the association between self-report and brain activity will be presented. Conclusions: We were able to capture brain activity during acute pain onset and show that patients can change that brain activity to a less painful state with LORETA neurofeedback. Identification of these regions and successful EGG neurofeedback training will allow a targeted approach to acute pain management that is independent of medications.

Abstract 1583
DO POSITIVE SOCIAL RELATIONS CARRY OVER TO IMPACT NEXT-DAY FATIGUE IN WOMEN WITH FIBROMYALGIA?
Wan H. Yeung, Ph.D., Mary C. Davis, Ph.D., Leona S. Aiken, Ph.D., Psychology, Arizona State University, Tempe, AZ

Fibromyalgia (FM) is a widespread chronic pain condition with debilitating fatigue. Prior daily diary studies have shown that FM fatigue is negatively associated with the pursuit of social goals, reduces the occurrence of positive social events, and limits positive affect on a daily basis (e.g., Affleck et al., 1998; Parrish et al., 2008; Zautra et al., 2007). Moreover, an increase in positive social events is linked to lower fatigue on the same day (Parrish et al., 2008). A recent within-day diary study provided evidence of the temporal ordering of the relations between fatigue and social relations across the day: it revealed that on days when morning fatigue was below one’s average morning fatigue level, afternoon enjoyment of social relations was elevated, which in turn, diminished end-of-day fatigue levels (Yeung, 2013). Surprisingly, number of positive social events on a day was positively associated with levels of fatigue on the next day (Parrish et al., 2008). Plausibly, energy gained from increase in positive engagement on one day may lead to over-exertion on the next day, resulting in higher fatigue in the next evening. To address the beneficial effect of positive social engagement on FM, the current study asked whether the linkage between afternoon social enjoyment and lower end-of-day fatigue on the same day would lead to a decrease in fatigue levels on the next morning. 176 women with FM completed 21 days of electronic diaries; daily assessment included reports at 11 am fatigue, 4 pm enjoyment, and 7 pm fatigue. Multilevel structural equation models found that the cycle linking morning fatigue, afternoon enjoyment, and end-of-day fatigue continued to the following morning; that is, lower end-of-day fatigue on the same day predicted lower morning fatigue. The examination of the carry-over effect is particularly important as it addresses whether social enjoyment can potentially generate an upward spiral that fosters long-term improvement in fatigue among patients with FM. This finding suggests that fostering social enjoyment in clinical interventions for FM may help foster long-term improvement in fatigue among patients with FM. This finding suggests that fostering social enjoyment in clinical interventions for FM may help foster long-term improvement in fatigue among patients with FM.

M.D., Obstetrics and Gynecology, Karl Kreder, M.D., Urology, University of Iowa Hospitals and Clinics, Iowa City, IA

Purpose: Interstitial Cystitis/Painful Bladder Syndrome (IC/PBS) is a condition of unknown etiology characterized by urinary urgency, frequency and pain. We have previously reported correlated cortisol abnormalities associated with symptom severity but IC/PBS symptoms have not previously been examined in the context of inflammatory processes. Methods: Female IC/PBS patients (n=58) and healthy controls (HC) (n=28) completed questionnaires, including the female Genitourinary Pain Index (GUPI), Female Sexual Functioning Inventory (FSFI), Interstitial Cystitis Symptom Index (ICI), and Brief Pain Inventory (BPI) as part of the Multidimensional Approach to Pelvic Pain (MAPP) Network baseline assessment. Peripheral blood mononuclear cells (PBMC) were isolated and stimulated with Toll-Like Receptor (TLR) 2 and 4 agonists, then assayed for interleukin-6 (IL-6) and Interleukin-1β (IL-1β) production. Plasma was assayed for IL-6 and C-reactive protein. Subjects collected salvia 3 times a day for 3 days for cortisol assessments. Z-scores were generated for the IL-6 and IL-1β response to TLR2 stimulation and a flatter diurnal cortisol pattern. The TLR4 z-score was also associated with pain frequency and intensity (p<.001) and pain during intercourse (p<.001) and but did not predict either urinary urgency or frequency. Conclusions: These findings indicate that IC/PBS is marked by inflammatory dysregulation, including an elevated response to TLR2 stimulation and a flatter diurnal cortisol pattern. The TLR4 cytokine response was strongly associated with a variety of pain responses, a pattern hypothesized to be consistent with spinal glia pain amplification as a potential mechanism underlying IC/PBS pain.

Abstract 1284
PAIN PATIENT CATASTROPHIZING AND SPOUSE RESPONSES IN DAILY LIFE: A TEST OF COMMUNAL AND INTERPERSONAL MODELS
John W. Burns, PhD, James Gerhart, PhD, Behavioral Sciences, Rush Univ Medical Center, Chicago, IL, Kristy Peterson, PhD, psychology, University of La Verne, La Verne, CA, David Smith, PhD, psychology, Univ of Notre Dame, Notre Dame, IN, Laura Porter, PhD, Psychiatry and Behavioral Sciences, Duke Univ, Durham, NC, Erik Schuster, MA, Behavioral Sciences, Rush Univ Medical Center, Chicago, IL, Francis Keefe, PhD, Psychiatry and Behavioral Sciences, Duke Univ, Durham, NC

The Communal Model holds that pain catastrophizing is part of a broad communal coping style in which it serves to elicit support, or counteract reactions from other people. If so, pain catastrophizing would be related to increased spouse support. The Interpersonal Model (of depression) holds that negative patient behavior, such as pain catastrophizing, may elicit critical/hostile reactions from spouses. If so, pain catastrophizing would be related to increased spouse criticism/hostility. We tested the degree to which Communal and Interpersonal Models explain links between patient pain catastrophizing and spouse support and criticism/hostility using longitudinal daily diary methods. Chronic low back pain patients (n=103) and their spouses (n=103) used Personal Data Assistants for 14 days, and were prompted 5x/day to respond to pain catastrophizing, support, criticism, and hostility items; 3 day recall/564 answers per patient/couple. Pain catastrophizing at Time 1 was significantly related to increased patient perceived spouse support, criticism and hostility at Time 1, and increased spouse reports of their criticism and hostility toward the patient at Time 1. Lagged analyses revealed pain catastrophizing at Time 1 was significantly related to increased patient perceived spouse support at Time 2 (ie, 3 hrs later), and decreased spouse reports of their criticism and hostility toward the patient at Time 2 (ie, 3 hrs later). Results suggest that state fluctuations in pain catastrophizing may elicit an initial mix of spouse support, hostility, and criticism, thus supporting both communal and interpersonal conceptualizations of the function of pain catastrophizing. Over the next 3 hours, however, patient perceived support may increase again, while spouses report reductions in their criticism and hostility toward the patient, thus firmly supporting a communal model. The communication function of pain catastrophizing may work in a 2-stage process wherein pain catastrophizing may initially elicit spouse antagonism (fight and criticize stage), but then subsequently bring forth a more uniform pattern of positive spouse responses, including increased support and decreased dispositional rejection (forgive and empathize stage).

Abstract 1238
LAUGHTER IS NOT ALWAYS THE BEST MEDICINE: LAUGHING AT A SPINAL INJURY PATIENT PROTECTS THE SELF BUT HURTS THE SPouse
Joyce K. Atten, PhD, Beckman Institute for Brain Science, University of Illinois, Urbana, IL, Sarah Prinsloo, PhD, General Oncology, MD Anderson Cancer Center, Houston, TX, Karl Kreder, M.D., Obstetrics and Gynecology, Yale School of Public Health, New Haven, CT, Margaret S. Clark, PhD, June Gruber, PhD, Psychology, Yale University, New Haven, CT

In most cases laughter is good for our health, enhances well-being, facilitates coping with stress, and builds and maintains social relationships. However, little work to date has taken into account the social or relational context in which laughing occurs. We examined the intrapersonal and interpersonal consequences of laughter in the context of witnessing and providing support to a spouse in pain. Participants were 77 older adult couples in which one partner self-reported having a musculoskeletal condition. Spouses were videotaped and their blood pressure was monitored while they watched their partner with the musculoskeletal condition perform a brief pain

Abstract 1203
TOLL-RECEPTOR 4 AND INFLAMMATION IN INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME: ASSOCIATIONS WITH PAINFUL SYMPTOMS
Andrew D. Schrepf, M.A., Susan Logtendorf, Ph.D., Psychology, University of Iowa, Iowa City, IA, Michael O'Donnell, M.D., Yi Luo, Ph.D., Urology, Catherine Bradley, University of Iowa, Iowa City, IA, Jorge A. L. M. Coelho, Obstetrics and Gynecology, Iowa City, IA, Margaret S. Clark, PhD, University of Iowa, Iowa City, IA, Margaret S. Clark, PhD, University of Iowa, Iowa City, IA, Margaret S. Clark, PhD, University of Iowa, Iowa City, IA, Margaret S. Clark, PhD, University of Iowa, Iowa City, IA

Purpose: IL-6 and IL-1β are key pro-inflammatory cytokines associated with IC/PBS symptoms. The TLR4 signaling pathway is upregulated by IL-6 and IL-1β and is involved in the development of IC/PBS. We examined the intrapersonal and interpersonal consequences of laughter in the context of witnessing and providing support to a spouse in pain. Participants were 77 older adult couples in which one partner self-reported having a musculoskeletal condition. Spouses were videotaped and their blood pressure was monitored while they watched their partner with the musculoskeletal condition perform a brief pain
eliciting task. The Facial Action Coding System was used to code the spouse’s Duchenne, or genuine, laughter. More than a third (38%) of the spouses laughed at their partners during the task. Interpersonally greater laughter frequency was associated with lower marital satisfaction and a perception that their partner was not as funny (r=.56, t=4.2, p<.001). From the Netherlands, Daniel Cukor, PhD, Psychiatry and Behavioral Science, Downstate Medical Center, New York, NY, was the corresponding author. Finally, participants who used the partner’s negative affect to improve their own mood scored lower on the Depressive subscale of the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992). QOL was measured using the Medical Outcomes Study questionnaire (Stewart & Ware 1992). Significant linear and curvilinear relationships were found linking optimism and anger to QOL. Optimism had a positive, linear relationship with physical functioning (p < .001) and a curvilinear relationship with self-assessed health (SAH) (p = .007). The latter indicated that SAH was most positive at intermediate levels of optimism. Anger had a negative linear relationship with physical functioning (p = .001) and a quadratic relationship with SAH (p < .001). The quadratic equation indicated that SAH was most positive at intermediate levels of optimism. These findings have implications for understanding how personality factors influence QOL. Further research is needed to examine personality factors that contribute to improved QOL. An important determinant of QOL following surgery may be personality factors such as optimism and anger.
their medications. The BMQ – Concerns scale assesses concerns based on beliefs about dangers of dependence, long-term toxicity, and disruptive effects of the prescribed medication. The BMQ – Necessity scales assesses beliefs about the necessity of the drug treatment for the disease in question. Higher scores indicate higher concerns, and lower scores indicate necessity, respectively. The Immunosuppressive Therapy Adherence Scale (ITAS) was modified to assess dialysis patients’ self-reported adherence to their medication regimen such that higher scores indicate higher non-adherence. Results indicated higher specific concern positively correlated to nonadherence (r = .39, p < .05) as well as higher trait anxiety (r = .31, p < .05). Higher trait anxiety also positively correlated to non-adherence (r = .43, p < .05). Beliefs about medication necessity did not correlate with nonadherence or trait anxiety (p > .05). In a regression analysis that controlled for age and gender, only specific concerns about medication independently predicted medication non-adherence (β = .174, p < .05). Trait anxiety in this model did not significantly predict medication non-adherence (β = .04, p > .05). These results indicate the importance of assessing psychosocial factors, such as anxiety and medication beliefs, when exploring non-adherence in dialysis patients.

43) Abstract 1778

OXYTOCIN AND INTERPERSONAL CONFLICT: RESULTS FROM PLASMA AND GENETIC STUDIES

Benjamin A. Tabak, PhD, Psychology, UCLA, Los Angeles, CA, Michael McCullough, PhD, Psychology, University of Miami, Coral Gables, FL

The neuropeptide oxytocin has been associated with a host of prosocial behaviors that are beneficial for maintaining positive social relationships. Paradoxically, however, oxytocin has also been associated with relational distress and out-group aggression. To address these contradictory findings, in Study 1, oxytocin reactivity was measured in young adult women following recent interpersonal harms. Elevated mean peripheral oxytocin reactivity was associated with increased post-conflict anxiety and decreased levels of forgiveness. In Study 2, we examined how variations in 10 SNPs on the oxytocin receptor gene were associated with behavior and emotional reactions after a betrayal of trust in an iterated Prisoner’s Dilemma Game. One haplotype (C-rs9840864, T-rs2268494) was significantly associated with faster retaliation post-betrayal, an association that appeared to be due to this haplotype’s intermediate effect of exacerbating people’s anger after they had been betrayed. Results across both studies suggest that the oxytocin system may contribute to individual differences in negative reactions to interpersonal conflict. These findings contribute to an emerging more nuanced picture of oxytocin’s influence on social processes.

44) Abstract 1814

A LONGITUDINAL STUDY OF ILLNESS BELIEFS AMONG ADULT CYSTIC FIBROSIS PATIENTS: ASSOCIATIONS WITH PHYSICAL AND MENTAL HEALTH FUNCTIONING

Allen C. Sherman, Ph.D., Stephanie Simonton-Atchley, Ph.D., Behavioral Medicine, Raghu M. Reddy, MD, Internal Medicine, Catherine E. O’Brien, Ph.D., Department of Pharmacy Practice, Dianne Campbell, MSW, Cystic Fibrosis Clinic, Bethany Jensen, Ph.D. candidate, Department of Pharmacy Practice, Laura Wagner, BA candidate, Behavioral Medicine, Paula J. Anderson, MD, Internal Medicine, University of Arkansas for Medical Sciences, Little Rock, AR

Patients’ personal interpretations of illness may have a significant impact on health outcomes, as suggested by Leventhal’s self-regulation model. Adults with cystic fibrosis are confronted with a life-threatening disease, infectious complications, and demanding daily treatments. Thus far, few investigations have explored illness beliefs in this important patient group. Participants in this longitudinal study were receiving care at a regional CF center. Median age at diagnosis was 8.0 months, median age at study registration was 27.5 years, and median FEV1% was 63.5 (25.6). Selected scales from the Illness Perceptions Questionnaire-Revised evaluated illness beliefs at baseline. The SF-12 was used to assess health-related quality-of-life (QOL) at baseline and 6 month follow-up. We hypothesized that improved physical and mental health domains of functioning would be related to greater perceptions of (1) illness coherence, (2) personal control over the illness, (3) and treatment control. No predictions were offered regarding time-line beliefs (brief vs. chronic), in view of the protracted course of the disease. Bivariate analyses indicated that baseline perceptions of illness coherence (p<0.001), treatment control (p<0.001), and illness timeline (p =0.049) were each related to physical functioning at 6-month follow-up. None of these beliefs was related to subsequent mental health functioning. Regression analyses that adjusted for severity (FEV1%) and significant demographic covariates, baseline illness coherence (β = .24, p =0.02) and treatment control (β = .26, p =0.02) remained significant predictors of 6-month physical functioning. Only illness coherence (β = .21, p =0.02) remained significantly predictive after adjustment for baseline physical functioning (i.e., predicting change in functioning).

Findings are an extension of the illness beliefs literature to a novel and understudied population. Results suggest that perceived understanding of one’s illness (coherence) may predict subsequent modest improvement in daily physical functioning, among adults with CF. The importance of illness coherence seems an especially interesting finding given the complexity of CF and its treatments. Results regarding illness control beliefs were more limited. Further research is needed to confirm these relationships and to examine potential mediators (e.g., adherence, symptom reporting, immune parameters, etc.).

45) Abstract 4691

INCREASED PREVALENCE OF POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME IN PSYCHOCIGENIC FEVER PATIENTS

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Background: To determine the characteristics of cardiovascular responsiveness to orthostatic stress in patients with psychogenic fever. Methods: Twenty five psychogenic fever patients and 25 age- and gender-matched healthy subjects completed the Center for Epidemiologic Studies Depression Scale (CES-D), Spielberger’s State-Trait Anxiety Inventory (STAI), and underwent orthostatic tests. Results: Increase in heart rate (HR) after standing was significantly higher in psychogenic fever patients (mean HR difference between supine and standing position: 17.6±1.2bpm) than healthy subjects (11.5±1.2bpm) across time (t(1)=15.29, p<0.001) with no difference of systolic or diastolic pressure between the two groups. The number of subjects who met the criteria of postural orthostatic tachycardia syndrome (POTS) was also significantly higher in psychogenic fever patients (24%) than healthy subjects (4%). Psychogenic fever patients had higher CES-D and STAI scores than healthy subjects. However, only STAI-2 score had positive correlation with HRmax, i.e. maximal changes in HR after standing (p=0.047, r=0.343). Conclusions: This study demonstrated that psychogenic fever patients have heightened HR responsiveness to orthostatic stress than healthy subjects. It also suggests a relation between trait anxiety and HR responsiveness in psychogenic fever patients. Trait anxiety-related autonomic hyper-responsiveness may contribute to the pathogenesis of psychogenic fever.

Table 1. Demographic characteristics and prevalence of orthostatic intolerance in psychogenic fever patients and healthy control subjects

<table>
<thead>
<tr>
<th>Age, years</th>
<th>Patients</th>
<th>Controls</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.4±4.1</td>
<td>33.8±1.5</td>
<td>n.s.</td>
<td></td>
</tr>
<tr>
<td>Gender (male-female)</td>
<td>7/18</td>
<td>7/18</td>
<td>n.s.</td>
</tr>
<tr>
<td>Temperature, sc(°C)</td>
<td>37.1±0.1</td>
<td>36.9±0.1</td>
<td>n.s.</td>
</tr>
<tr>
<td>CES-D &gt; 27</td>
<td>20/9.0</td>
<td>2.1</td>
<td>0.004</td>
</tr>
<tr>
<td>STAI1 score</td>
<td>49.5±2.0</td>
<td>36.9±1.3</td>
<td>0.004</td>
</tr>
<tr>
<td>STAI2 score</td>
<td>51.4±2.1</td>
<td>40.1±1.2</td>
<td>0.001</td>
</tr>
<tr>
<td>Orthostatic intolerance #</td>
<td>POTS</td>
<td>6 (24%)</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>OH</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>NMS</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Normal</td>
<td>19 (76%)</td>
<td>24 (96%)</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>25 (100%)</td>
<td>25 (100%)</td>
<td>-</td>
</tr>
</tbody>
</table>

Values are mean ± S.E.M or number (%). *p value based on independent samples (Student’s) t-test; †p value based on Pearson Chi-Square test; ‡p value based on Fisher exact probability test; n.s. = not significant.

CES-D= Center for Epidemiological Studies Depression Scale; STAI1= state anxiety; STAI2= trait anxiety; Spielberger State-Trait Anxiety Inventory; POTS= postural tachycardia syndrome; OH= orthostatic hypotension; NMS = narrowly-mediated syncope.

46) Abstract 1237

PSYCHOLOGICAL DETERMINANTS OF SELF-CARE IN PATIENTS WITH CHRONIC HEART FAILURE: A SYSTEMATIC REVIEW

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Background: Psychological distress (e.g., depression, Type D personality) has been associated with poor outcomes in patients with chronic heart failure (HF) and it has been suggested that this may partly be due to poor self-care behavior. This systematic review summarizes and discusses the current evidence concerning presumed psychological determinants of self-care in patients with chronic HF.

Method: A systematic search in the electronic databases PubMed, PsycINFO, and Web of Science was conducted to select relevant studies that were published between 1980 and Nov-2012. Study quality was assessed according to the level of risk of bias.

Results: Forty-five studies were identified for inclusion. Studies varied considerably with respect to sample and study characteristics. Risk of bias was relatively high in the reviewed studies and most problematic with regard to selection bias (90%). Four studies had an overall low risk of bias and only seven studies used objective self-care measures. Findings were inconsistent with respect to the association of depression and anxiety with self-care, irrespective of measurement method (i.e., objective versus self-report). With regard to personality traits, self-care confidence and self-efficacy were rather consistently associated with improved self-care (β range = -22.63) while Type D personality was associated with poor consulting behavior (odds ratio (OR) range = 1.80-2.67). In studies with low risk of bias, there was also evidence for depressive symptoms and hostility as correlates of physical inactivity (OR = 0.53, 95% CI [0.35-0.78]) and poor self-reported medication adherence (β = .22, p = .04), respectively. None of the psychological determinants were associated with objectively measured self-care.
A-26

49) Abstract 1174

FAMILY FUNCTIONING AND HEALTH HABITS IN THE ORTHODOX JEWISH COMMUNITY
Debora Ganz, MA, Clinical Psychology, Sonia Suchdaj, PhD, Clinical Psychology, Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, New York
Recently, there has been a dramatic increase in at-risk adolescents from orthodox Jewish communities (Pelcovitz, 2005). “At-risk” behavior is defined for this study as behavior that causes serious distress to the adolescent and/or their family and is accompanied by significant functional impairment. Professional symposia on this topic have suggested that factors associated with at-risk behavior in Jewish youth are different from these factors in other populations. However, since no current research has explored many of the factors associated with at-risk behavior, research in this area is important. The current study examines family functioning and self-reported health habits among young adults in the Jewish community. It is hypothesized that better family functioning would predict better health habits in an Orthodox Jewish population compared to two different Western populations: Yeshiva University, a Jewish undergraduate institution and Project Extreme, a program for at-risk Jewish youth (N=140, Mage=21.13, SD=2.62; 63% Female). Following informed consent, participants completed demographics and questionnaires via Survey Monkey including the Family Functioning Questionnaire (FFQ) assessing the degree of healthy family relationships and the Healthy Habit Questionnaire (HHQ) assessing self-reported health habits. Since the FFQ (M=46.06, SD=10.33) was significantly correlated with the HHQ (M=100.8, SD=15.06), p<.001, follow up regressions were conducted. Regression analyses indicated that high self-reported family functioning predicted better health habits (β=.36, p<.001). These findings were maintained after controlling for age, sex, race, and education. These results suggest that Jewish adolescents who come from homes with poor family functioning are less likely to engage in healthy behaviors and more likely to engage in at-risk behaviors that may impact their health (e.g., smoking, alcohol and drug use). The implication of these findings for researchers and clinicians will be discussed.

50) Abstract 1229

EFFICACY OF SEROTONIN REUPTAKE INHIBITORS IN POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME
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Background and aim: Postural orthostatic tachycardia syndrome (POTS) is a subtype of orthostatic intolerance (OI) characterized by orthostatic heart rate increase without orthostatic hypotension. POTS has various psychosomatic symptoms and often overlaps with anxiety disorders and chronic fatigue syndrome. POTS is caused by abnormality of cardiovascular and autonomic nervous system, and vasoconstriction drugs is a first line medication in a guideline. Although serotonin reuptake inhibitors (SSRIs) have less effect on the cardiovascular system, these have been reported to be effective in preventing neurocardiogenic syncope, another subtype of OI. The purpose of this study was to determine whether SSRIs could improve POTS. Methods: Participants were POTS outpatients at the Department of Psychosomatic Medicine, St. Luke’s Hospital from 2007 to 2013. Participants were treated by SSRIs or Midodrine hydrochloride, a selective alpha-agonist. Clinical assessments and standing tests in medical records were reviewed retrospectively, and these were compared SSRIs patients with Midodrine patients. Results: Seventy-seven patients (27.6%) were women and mean age, supine heart rate 69.3 +/- 9.4 beats per minute, supine blood pressure 110.5+/-.11 / 66.4+/-7.2mmHg) were eligible for analysis. SSRIs group included in 7 patients with Paroxetine (24.3%+/-3.5mg and 5 patients with Sertraline (85.9+/-.33.5mg). Midodrine group comprised 15 patients given midodrine (7.2+/-.7mg). Fifteen patients (55.6%) were improved clinically during 6.7+/-.8.8 months of follow-up. There were no significant differences in mean age, sex, supine heart rate and change of blood pressure between two groups. However, in SSRIS group, orthostatic heart rate increase was significant suppressed than Midodrine group (-14.6+/-9.5 vs. -4.2+/-7.6 beats per minute, p<.001). SSRIS group was also superior to clinical improvement (83.3%+/-33.3% vs. p=.05 ). Discussion and Conclusion: Compared with Midodrine, SSRIS could more improve the physiological examination and clinical symptoms of POTS. SSRIS may be useful for treating POTS, because it could suppress abnormal heart rate increasing without changing blood pressure.

51) Abstract 1137

POSTURE AFFECTS MOOD, BEHAVIOUR, AND PHYSIOLOGY DURING STRESS
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Background: It has been previously demonstrated that postural manipulation can elicit changes in cognition, autonomic, and stress indices (Broadbent & Schofield, 2001; Broadbent & Schofield, 2005). This study explored the effects of a slump versus upright posture on emotional and physiological outcomes during a stress task. The novel contributions were the combined use of self-report, implicit, behavioural, and physiological measures, using a stress task during the postures, and using a cover story so that participants were unaware of the postural manipulation. Seventy-four healthy participants completed a study on ‘the effects of physiotherapy tape on cognitive processing’. They were
randomly assigned to one of two conditions. Group one had physiotherapy tape placed on their backs in a slumped seated posture (bowed head, rounded shoulders and a stooped back) while group two were taped in an upright-seated posture (elevated head, straight shoulders and an erect back). While taped, participants completed a standardized speech task, a stress task, as well as questionnaires assessing mood and degrees of fear in threat scenarios. The speech tasks were analysed using Linguistic Inquiry and Word Count (LIWC). Participants in the upright condition read more words (p<.001), reported higher self-esteem (p<.001), higher levels of arousal (p<.001), better mood (p<.04), and less fear in the social threat situations (p<.001) compared to the slumped condition. In the speech task, slumped participants used more negative emotion words (p<.001), first-person singular pronouns (p<.001), words reflecting affective processes and sadness (p<.001), whilst the upright participants had higher use of positive emotion words (p<.001) and a higher word count (p<.001). The upright group had higher pulse pressure during the stress task (p<.005). Adopting an upright versus a slumped posture can improve emotional outcomes and alter blunted physiological responses. These results may have implications for improving mental health using simple postural interventions.

52 Abstract 1452
PSYCHOSOMATIC SYMPTOMS ASSOCIATED WITH TRAUMATIC EVENTS EXPERIENCED IN CHILDHOOD
Adriana S. Bahan, PhD, Alina Cosma, PhD, Robert Balazsi, PhD, Psychology, Babes-Bolyai University, Cluj-Napoca, Cluj, Romania, Dinesh Sethi, MD, Violence and Injury Prevention, WHO Regional Office for Europe, Copenhagen, Copenhagen, Danmarkar, Victor Olavský, MD, WHO Country Office Romania, WHO Country Office Romania, Bucuresti, Bucuresti, Romania.

The exposure to adverse experiences during the first 18 years of life can have negative long term effects on people’s mental and physical health. The consequences of adverse childhood experiences (ACEs) such as child maltreatment and other traumatic stressors for health status have been the focus of a growing number of studies. ACEs include emotional, physical, or sexual abuse, as well as family dysfunction (e.g., an incarcerated, mentally ill, or substance-abusing family member; domestic violence; or absence of a parent because of divorce or separation).

Using a CDC/WHO methodology, the present study aimed to investigate the prevalence of adverse childhood experiences (ACEs) in a Romanian university sample, and to investigate the relationship between exposure to child maltreatment and physical and mental health complaints in adulthood. The sample consisted from 2097 Romanian university students (1332 female and 765 male). With few exceptions, men and women reported similar prevalence for each ACE category. The exceptions included physical abuse which was reported more often by men than women who were more likely to report higher prevalence for sexual abuse and an sexual abuse. The regression analysis revealed that for mental health problems (accessing mental health services) the significant predictors were: psychological abuse (B = -2.11, p<.003), mental illness in the family (B = .735, p<.000), and criminal behavior in the household (B = .874, p<.003). Irritable bowel symptoms, headaches, low back pain and sleeping problems were predicted by the sexual and psychological abuse. Substance abuse in young adulthood was best predicted by physical abuse and domestic violence in childhood.

This is the first Romanian study which investigates the relationship between traumatic childhood experiences and mental and psychosomatic health problems in a national representative university sample. Considering the high prevalence of these events and their strong impacts between exposure to adverse experiences and mental and psychosomatic health problems, several preventive, counseling and national policy recommendations are presented.

53 Abstract 1534
MEASURING PHYSICAL ACTIVITY IN OLDER ADULTS WITH EARLY ALZHEIMER’S DISEASE
Aili I. Breda, B.S., Amber Watts, Ph.D., Psychology, University of Kansas, Lawrence, Kansas, Jeffrey Burns, M.D., M.S., Alzheimer’s Disease Center, University of Kansas, Kansas City, Kansas.

Older adults are the least physically active of any age group and individuals with Alzheimer’s disease (AD) are even less active. Our recent study found that older adults with and without AD rarely reported participation in structured exercise or vigorous physical activity (PA). Their primary forms of PA were unstructured (i.e., walking and household chores). Existing self-report measures of PA lack sensitivity for unstructured activity, especially in older adults. The regression analysis revealed that for mental health problems (accessing mental health services) the significant predictors were: psychological abuse (B = -2.11, p<.003), mental illness in the family (B = .735, p<.000), and criminal behavior in the household (B = .874, p<.003). Irritable bowel symptoms, headaches, low back pain and sleeping problems were predicted by the sexual and psychological abuse. Substance abuse in young adulthood was best predicted by physical abuse and domestic violence in childhood.

This is the first Romanian study which investigates the relationship between traumatic childhood experiences and mental and psychosomatic health problems in a national representative university sample. Considering the high prevalence of these events and their strong impacts between exposure to adverse experiences and mental and psychosomatic health problems, several preventive, counseling and national policy recommendations are presented.

54 Abstract 1789
PERCEIVED STRESS AND FIBROMYALGIA IMPACT: MODELING MECHANISMS OF ACTION
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Data from 694 patients meeting 2011 American College of Rheumatology criteria for fibromyalgia who ones questionnaires packages included in the Perceived Stress Scale, Revised Fibromyalgia Impact Questionnaire, Brief Pain Inventory, Multidimensional Fatigue Inventory, Profile of Mood States, Medical Outcomes Sleep Scale, Multiple Ability Self-Report Questionnaire, and Composite Autonomic Symptom Score were included in this analysis. Pearson correlation analysis for the study variables showed expected associations and all correlations were statistically significant at p < .001. Stress was positively correlated with increased fibromyalgia impact (r = .50). Stress was also positively related to increased pain (r = .29), fatigue (r = .57), negative mood (r = .77), sleep problems (r = .37), cognitive impairment (r = .47), and autonomic dysregulation (r = .34). In turn, pain (r = .49), fatigue (r = .59), negative mood (r = .58), sleep problems (r = .37), cognitive impairment (r = .45), and autonomic dysregulation (r = .37) were positively correlated with increased fibromyalgia impact. Following this we utilized a multiple mediation model to assess the effects of stress on fibromyalgia impact and the mediating effect of the symptom variables. In the mediation model, though the total effect of stress on fibromyalgia impact was statistically significant (B = 3.51, p < .001), the direct effect of stress on fibromyalgia impact was not significant after controlling for all the mediating variables (B = .33, p > .05). That is to say, the total indirect effect of all mediators (B = 3.18, p < .05) was statistically significant and fully explained the association between stress and fibromyalgia impact. However, not all mediators contributed to stress impact on fibromyalgia impact in this model. When simultaneously adjusting for all possible mediators in the multiple mediator model it was pain (B = .55, p < .05), fatigue (B = 1.08, p < .05), negative mood (B = 1.13, p < .05), and cognitive impairment (B = .25, p < .05) that showed statistically significant indirect effects. The indirect effects of stress are associated with negative mood and autonomic dysregulation were no longer significant in the mediation model. The results suggest that stress is significantly associated with fibromyalgia impact, and this association is accounted for by several key mechanisms including: pain severity, fatigue, negative mood, etc. That is, perceived stress impacts fibromyalgia through its mediating effects on key fibromyalgia mechanisms. Our results suggest that stress management treatment approaches hold potential to improve symptom burden related to fibromyalgia.

55 Abstract 1251
FACTORIAL STRUCTURE OF THE 20-ITEM TORONTO ALEXITHYMIA SCALE (TAS-20) IN A LARGE SAMPLE OF SOMATOFORM PATIENTS
Andreas Kohl, M.A. in Psychology, Ingo Wegener, PhD, Marlis Opolka, MD, Ruedi Conrad, MD, Department of Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, NRW, Germany

Although a strong association between alexithymia and somatisation has been postulated in numerous studies, no systematic study has investigated the psychometric properties of the TAS-20 in a sample of patients with somatoform disorder yet. The purpose of this study was to investigate whether the original three-factorial model proposed by Bagby et al. (1994) which is widely used in clinical research and practice is replicable in a large sample of somatoform patients. The TAS-20 was administered to a sample of 700 adult inpatient and outpatient somatoform patients and somatoform controls. The three-factorial Bagby model and two other models derived from literature including a three-factorial model by Popp et al. (2008) and a four-factorial model by Franz et al. (2001) were compared in their goodness-of-fit using confirmatory factor analyses. In addition, factor solutions with two, three and five factors detected by our prior exploratory factor analysis were included into confirmatory factor analyses. These three models were found using a randomized half of the somatoform patients (n = 403). Finally these models were compared with the our prior exploratory factor analysis were included into confirmatory factor analyses. These three models were found using a randomized half of the somatoform patients (n = 403). Finally these models were compared with the our prior exploratory factor analysis were included into confirmatory factor analyses. These three models were found using a randomized half of the somatoform patients (n = 403). Finally these models were compared with the our prior exploratory factor analysis were included into confirmatory factor analyses. These three models were found using a randomized half of the somatoform patients (n = 403). Finally these models were compared with the our prior exploratory factor analysis were included into confirmatory factor analyses. These three models were found using a randomized half of the somatoform patients (n = 403). Finally these models were compared with the our prior exploratory factor analysis were included into confirmatory factor analyses.
ASSOCIATIONS BETWEEN SLEEP DISRUPTIONS AND INFLAMMATORY RESPONSES TO ACUTE PSYCHOLOGICAL STRESS

Antony W. domest, PhD, Exercise Science, Concordia University, Montreal. CAMH, Quebec, Canada. Roland von Känel, MD, Psychosomatic Medicine, Bern University Hospital, Bern, Switzerland. Switzerland, Paul J. Mills, PhD, Psychiatry, University of California, San Diego, La Jolla, CA.

Background: Psychological stress and sleep problems often co-occur and are both associated with elevating cardiovascular disease (CVD) risk. A common mechanism through which stress and sleep problems may combine to increase CVD risk is inflammation. Thus, we examined whether measures of disrupted sleep were associated with inflammatory responses to an acute stressor. Method: In healthy participants (N=113; 62 male), total sleep time (TST), sleep efficiency (SE), apnea-hypopnea index (AHI), time of oxygen saturation < 90% (SpO2L90) and percent of TST spent in slow wave sleep (%SWS) were determined from polysomnographic records. The Pittsburgh Sleep Quality Index (PSQI) was also completed to rate subjective sleep quality. On a subsequent testing day, participants completed a laboratory protocol consisting of a 30-min baseline followed by two stressors (a 3-min mirror-star tracing task and a 5-min public speaking task) presented in random order and performed in immediate succession. Blood was drawn immediately before and after the stressors for assessment of C-reactive protein (CRP), interleukin-6 (IL-6), soluble ICAM1 (sICAM1), and soluble tumor necrosis factor receptor-1 (sTNFRf1). GLMs were used to assess whether sleep variables were associated with reactivity of inflammatory markers. Results: sICAM1 reactivity was significantly associated with SpO2L90, β (95% CI) = -3.28 (-5.97, -.59), p = .017. A one unit increase of SpO2L90 was associated with a 3.28 decrease in the sICAM1 response to the stressors. sTNFRf1 reactivity was significantly associated with AHI, β (95% CI) = -1.415 (-0.76, -.79), p = .05. A one unit increase in AHI was associated with a 1.415 increase in the sTNFRf1 response to the stressors, whereas a one unit increase in SWS% was associated with a 3.05 decrease in the sTNFRf1 response to the stressors. No significant effects were found linking sleep and CRP or IL-6 activity. Conclusions: Sleep objective measures of disrupted sleep but not subjective measures (PSQI) were associated with some inflammatory changes during acute stress in this study. Poor sleep and increased stress may combine to increase inflammation.

MIND-BODY DISCONNECTION MEDIATES AN ASSOCIATION BETWEEN CHILDHOOD ADVERSITY AND FOOD ADDICTION SYMPTOMS

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Objectives: Childhood adversity (CA) is a risk factor for compulsive eating in adulthood. Although we know that CA is associated with increased dissociative symptoms, such as poor awareness of bodily experiences, we know little about whether subclinical levels of mind-body disconnection are associated with CA and eating dysregulation. To determine these associations, self-reported psychological and psychophysiological measures of disconnection between psychological and physiological process mediate the association between CA and compulsive eating.

Methods: Obese adults (N=186; 36 men; mean BMI=35.6) completed self-report measures of CA (before the age of 18, experiencing bullying and/or sexual, divorce, substance abuse, or harsh discipline), food addiction symptoms (Yale Food Addiction Scale; YFAS), and perceived disconnection between their psychological and physiological process (Body Responsiveness Questionnaire; BRQ). Participants then completed a standardized laboratory stressor involving speech and math tasks (Stressful Speech-Math Task, SST). We determined physiological (respiratory sinus arrhythmia; RSA) throughout the TSST. After the TSST, participants reported on the feelings of anger they experienced when they were asked to prepare for the TSST. We assessed objective disconnection between psychological and physiological process as the absolute value of the discrepancy between RSA reactivity (speech preparation period-resting baseline) and self-reported feelings of anger response to the TSST (RSA-anger). Results: In regression analyses, (1) CA was associated with BRQ (r=0.10, p<.02) and RSA-anger (r=0.08, p=.03), (2) YFAS was associated with BRQ (r=0.59, p<.01) and RSA-anger (r=0.29, p<.02), and (3) CA was associated with YFAS (r=0.11, p<.06). Greater CA, BRQ, RSA-anger values were associated with greater food addiction symptoms (YFAS). INDIRECTIONS show that CA and BRQ (r=0.10, p=.06; r=0.19, p=.07) and RSA and BRQ (r=0.11, p=.06; r=0.09, p=.14) significantly mediated an association between CA and YFAS.

Conclusions: Both perceived and objective disconnection between psychological and physiological process may explain associations between CA and food addiction symptoms.
Stressful social experiences have been associated with numerous indicators of poor physical health. However, research has tended to use laboratory stressors or retrospective interviews to assess the health effects of social stress. An important question is whether different types of naturally-occurring stressors also influence physical functioning. Moreover, it is necessary to explore potential moderators of the link between stress and physical health. In particular, early life stress has been linked to increased stress reactivity and risk for physical illness, and might amplify the negative health effects of stressors. The current study used a daily diary format to examine whether social and non-social stressors predicted increased physical complaints on a daily basis, and whether early life stress was a moderator of these relationships.

Participants were 52 undergraduate students who reported on daily stressors and physical symptoms once per day (at bedtime) for 14 days. Participants who reported having asthma, diabetes, experiences of sexual abuse, steroid medication use, or BMI > 30 were excluded. A checklist of daily stressors included 12 social stressors and 7 non-social stressors, and daily physical symptoms were measured using a list of commonly reported symptoms from the Pennenbaker Inventory of Limbic Languidness (PILL). Stressful early environments were assessed using the Risky Families Questionnaire, a self-report measure of harsh or neglectful early family environments. Hierarchical linear modeling was used to model daily social stress and non-social stress as predictors of daily physical symptoms, and early life stress as a Level 2 moderator of these relationships.

Results showed that social stress (b = .13, SE = .06, p < .05), but not non-social stress (b = .48), predicted elevations in same-day physical symptoms. Contrary to hypotheses, early life stress predicted a significantly weaker relationship between daily social stressors and daily physical symptoms (b = .22, SE = .08, p < .01). Additional findings suggest that social stressors, but not non-social stressors, are associated with increased physical complaints in young adults on a daily basis. Moreover, moderately stressful early family environments might to some extent buffer the negative effects of daily stress exposure on physical symptoms. These findings contribute to explanatory models of the effects of stress on physical illness, and could inform efforts to prevent the negative health consequences of early adversity and ongoing stress.

NEURAL UNDERPINNINGS OF POSTOPERATIVE COGNITIVE DYSFUNCTIONS (POCD) IN PATIENTS WITH BREAST CANCER

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Postoperative cognitive dysfunction (POCD) is defined as the decline of cognitive functions after surgery with anasthesia. POCD includes a wide range of cognitive domains, such as attention, memory, and executive functions (Murkin 1995). POCD was frequently reported in patients after invasive surgery such as cardiac surgery, but also observed in those after low invasive surgery such as breast cancer surgery (Mork 2008). Possible mechanisms of POCD depended on toxic effects of anesthesia (Wei 2009), and systemic inflammation due to surgery (Cibelli 2010). However, its neural bases remained unclear. The aim of the present study was to clarify the neural mechanism of POCD after the low invasive surgery. To this end, we examined 30 postmenopausal women with early-stage breast cancer (Pt) and 20 age matched postmenopausal healthy women (HW), and assessed their cognitive functions (attention, memory, and executive function), and brain structural MRI 1.5 ± 0.5 days before (Pre) and 5.6 ± 1.2 days after (Post) surgery in Pt, as well as matched interval in HW. Written informed consent was obtained from each subject. Decreased attention scores in Pt compared to HW (p = .001), was identified as a predictor of POCD in patients with breast cancer after low invasive surgery.
medicated or mixed studies was -5.3mmHg (95%CL: -7.7- -2.9, p<.0005). The difference between these 2 groups was significant at p=.001. There was significant heterogeneity between unmedicated and medicated or mixed studies(p=0.007).This metaanalysis suggests that relaxation treatments alone are ineffective in substantially lowering bp in hypertensives and that the effect on medicated hypertensives may relate to other factors such as promoting adherence.

65) Abstract 1264 CORRELATES OF HEALTH DISTRESS IN AN HIV+ SAMPLE: LIFE REGARD, POSITIVE STATES OF MIND AND PERCEIVED STIGMA Cali L. Kirkham, BA, Alexandra Wike, MA, Mark Vosvick, PhD, Psychology, University of North Texas, Denton, TX People living with HIV (PLWH) experience persistent worries about health status (Wu et al.,1991) which can translate into psychological distress and poor quality of life (QOL; Deimling et al.,2005). Optimism and positive states of mind are associated with better health outcomes of health involvement (baseline functioning in PLWH (Ironsion et al.,2005; Salovey et al.,2000). PLWH who report positive and optimistic thought patterns report better adjustment and coping (Taylor et al.,2000). Stigma is a predictor of HIV-related symptom severity, symptom intensity and symptom perceptions (Beseh et al.,2006; Vanable et al.,2006). We explore the relationships between health distress, optimism, positive states of mind and stigma. Lazarus and Folkman’s model of stress and coping (1984) is our conceptual framework, which proposes that stress results when coping resources are insufficient. We hypothesize that PLWH with higher positive and optimistic thinking experience less health distress, while those who perceive more stigma experience more health distress. Participants recruited from the DFW Metroplex completed the Positive States of Mind Scale (PSOM; Horowitz et al.,1988; a=.77), the Life Regard Index-Revised (Harris & Standard, 2001; a=.92), the HIV Stigma Scale (Berger et al.,2001; a=.96) and the MOS-HIV (Health Distress subscale, Wu et al.,1999; a=.91-.94). Our sample of 194 participants (55.8% men, 42.6% women, 1.5% transgender) had an average age of 41 years (SD=8.5 years). Controlling for ethnicity, religion and gender a regression analysis found that PSOM, optimism and perceived stigma accounts for 23% of the variance in health distress(F(3,190)=18.8, p=.001). Stigma is related positively to health distress (β=.18, t=2.79, p=.01) but life regard and positive thought are negatively related to health distress (β=.26, t=3.71, p=.001; β=-.19, t=-2.01, p=.05). Limitations include data was collected from a single geographical area and is self-report hence subject to social desirability bias. In clinical settings, stigma, positive thought and positive life regard should be addressed to improve QOL. Future research should explore other complex psychological stressors contributing to health distress in PLWH.

66) Abstract 1379 PERSONALITY AND INTERPERSONAL INFLUENCES ON AMBULATORY BLOOD PRESSURE IN COUPLES Carolyenne E. Baron, B.A., Timothy W. Smith, PhD, Psychology, University of Utah, Salt Lake City, UT, Bert N. Uchino, PhD, Psychology, University of Utah, Salt Lake City, UT, U.S.A., Wendy Birmingham, PhD, Psychology, Brigham Young University, Provo, UT Research indicates that individual differences in aspects of negative affect are risk factors for cardiovascular disease. Further, few studies have examined effects of both the individual’s own personality characteristics (i.e., actor effects) and the effects of a spouse’s personality (i.e., partner effects) on cardiovascular health. The current study has adequately addressed the issue of overlap among negative affective traits. This study examined associations of ambulatory blood pressure (ABP) and self-report personality measures of composite (NA) and its individual components. Methods: 94 married couples (mean age 29) completed the NEO-PI-R, and a 1-day ABP protocol with random interval- contingent measurements using a Suntech monitor and Palm Pilot-based measures of control variables. Results: Hierarchical analyses were used to accommodate couples and multiple measurement occasions (Proc Mixed; SAS), and controlled individual differences (e.g., BMI, age) and potential confounds (e.g., posture, activity). For actor effects, higher levels of NA predicted higher ambulatory diastolic blood pressure (DBP) for both genders, and higher systolic blood pressure (SBP) for women. In separate analyses of individual traits, anxiety predicted lower DBP in men but higher DBP in women. Depression similarly predicted higher women’s SBP and DBP. In analyses considering all negative affective traits simultaneously, the significant positive association emerged between anger and men’s SBP. Stigma is a predictor of HIV-related symptom severity, symptom intensity and symptom perceptions (Beseh et al.,2006; Vanable et al.,2006). We explore the relationships between health distress, optimism, positive states of mind and stigma. Lazarus and Folkman’s model of stress and coping (1984) is our conceptual framework, which proposes that stress results when coping resources are insufficient. We hypothesize that PLWH with higher positive and optimistic thinking experience less health distress, while those who perceive more stigma experience more health distress. Participants recruited from the DFW Metroplex completed the Positive States of Mind Scale (PSOM; Horowitz et al.,1988; a=.77), the Life Regard Index-Revised (Harris & Standard, 2001; a=.92), the HIV Stigma Scale (Berger et al.,2001; a=.96) and the MOS-HIV (Health Distress subscale, Wu et al.,1999; a=.91-.94). Our sample of 194 participants (55.8% men, 42.6% women, 1.5% transgender) had an average age of 41 years (SD=8.5 years). Controlling for ethnicity, religion and gender a regression analysis found that PSOM, optimism and perceived stigma accounts for 23% of the variance in health distress(F(3,190)=18.8, p=.001). Stigma is related positively to health distress (β=.18, t=2.79, p=.01) but life regard and positive thought are negatively related to health distress (β=.26, t=3.71, p=.001; β=-.19, t=-2.01, p=.05). Limitations include data was collected from a single geographical area and is self-report hence subject to social desirability bias. In clinical settings, stigma, positive thought and positive life regard should be addressed to improve QOL. Future research should explore other complex psychological stressors contributing to health distress in PLWH.

68) Abstract 1435 PATIENT CONTROLLED AUTONOMIC REGULATION IN HEART FAILURE Christine S. Moravec, PhD, Cardiovascular Medicine, Dana L. Schneebberger, PhD, Pathobiology, Cleveland Clinic, Cleveland, Ohio, Lamesh Khoshshid, PsyD, Health Promotion and Disease Prevention, VA Hospital, Los Angeles, CA, Michael G. McKee, PhD, Psychiatry and Psychology, Cleveland Clinic, Cleveland, Ohio Heart failure (HF) incidence and cost continue to escalate in the US, leading to an ongoing search for novel and more effective therapies. Autonomic imbalance contributes to the pathophysiology of HF. For years, treatment of the overactive sympathetic nervous system (SNS) has been accomplished with beta blocking drugs. More recent approaches include direct vagal nerve stimulation, increasing input from the parasympathetic nervous system (PNS). Vagal nerve stimulation, while it appears promising, is costly and invasive. We hypothesized that biofeedback mediated stress management (BFSM) could be used to train patients with HF to modulate their own autonomic balance (i.e., own hyperventilation, own bradycardia). BFSM could be used to train patients with HF to modulate their own autonomic balance (i.e., own hyperventilation, own bradycardia). BFSM appears promising, is costly and invasive. We hypothesized that biofeedback mediated stress management (BFSM) could be used to train patients with HF to modulate their own autonomic balance. Twenty-eight patients with end-stage HF were enrolled. The study included initial and final psychophysiology stress assessments, separated by six BFSM training sessions and daily homework assignments. Patients learned to regulate respiratory rate, skin conductance and finger temperature. Heart rate and heart rate variability (HRV) were monitored, and a six minute walk performed when possible in ambulatory patients. All patients who completed BFSM were on the transplant waiting list. When they received a transplant, hearts were taken to the laboratory for study. We tested the hypothesis that BFSM training results in biological remodeling of the failing human heart. We measured isolated muscle contraction, response to SNS stimulation, and density of beta adrenergic receptors. Of the 28 patients who began the study, 21 patients completed both stress assessments and all BFSM sessions. Twelve patients have received a heart transplant to date. Preliminary results demonstrate that patients with end stage HF are able to learn to regulate their own physiology, decrease their respiratory rate, and improve their HRV (measured as SDNN). Results further show that tissue removed from patients undergoing BFSM training had higher beta adrenergic receptors, and novel molecular hallmarks of HF, including the beta adrenergic inotropic response and beta adrenergic receptor density. We have previously shown such changes following support of the failing human heart with a mechanical pump. The current results lead us to hypothesize that BFSM can improve autonomic balance in HF. The promise of this technique for patients with end-stage HF should be explored in a randomized controlled clinical trial.

69) Abstract 1266 MATERNAL PRENATAL PSYCHOLOGICAL DISTRESS AND EARLY INFANT RESPIRATORY SINUS ARRHHYTHMIA AT REST AND DURING STIMULATION Jenna C. Thomas, B.Sc. (Hons), Clinical Psychology, University of Calgary, Calgary, Alberta, Canada, Joshua Rash, M.Sc., Clinical Psychology, Umar Safari, B.HSc. (Hons), Health Sciences, Tavis Campbell, PhD, Psychology, Nicole L. Letourneau, PhD, Nursing & Medicine (Pediatrics), Gerald F. Giesbrecht, PhD, Pediatrics, University of Calgary, Calgary, AB, Canada Adolescents living with cancer must learn to face not only the physical symptoms of their condition, but also the anxiety and uncertainty related to the progression of the disease, the anticipation of physical and emotional pain related to illness and treatment. The significant changes implied in living with cancer, as well as the fear of recurrence after remission. Mindfulness-based meditation constitutes a promising option to alleviate these psychological drawbacks. This pilot study was aimed at evaluating the effects of a mindfulness-based meditation intervention on sleep, mood and quality of life in adolescents with cancer, compared to a control group. A prospective, longitudinal, experimental design involving three time points (baseline, post-intervention, and follow-up) and two groups (experimental and control) was developed for this project. Twenty-one teenagers with cancer participated in this project. Fourteen took part in the mindfulness meditation program, while the remaining seven served as wait-list controls. All participants completed pre and post intervention measures. Preliminary statistical analyses on the first experimental group (N=8) were conducted using non-parametric testing. Results from the Wilcoxon Signed Ranks Tests revealed trends towards significance in the reduction of depressive symptoms, z= -1.753, p=.08, with a moderate effect size (r =.13). Similar results were found in the reduction of sleep problems in girls only, z= -1.826, p=.068, with a moderate effect size (r =.18). The mean scores on the Beck Youth Inventory and Pittsburgh Sleep Quality Index decreased from pre-assessment (M=14.7 ; M=15.6) to post-assessment (M=9.4 ; M=11). No significant reduction in health-related quality of life was observed between pre and post assessment point. Results from the second experimental group and wait-list controls will be included in the conference presentation. Despite the small sample included in these analyses, as predicted, the mindfulness-based intervention had an impact in decreasing sleep and mood problems for the experimental group. Mindfulness-based interventions for teenagers with cancer appear as a promising option to alleviate psychological drawbacks of living with cancer.
Introduction: Respiratory sinus arrhythmia (RSA) is variability in heart rate that is in phase with respiration and is considered a proximal measure of parasympathetic influence on the heart. Low baseline RSA and less RSA withdrawal indicate a reduced ability to respond appropriately to different environmental stimuli. Both low baseline RSA and less RSA withdrawal have been identified as risk factors for psychopathology. Maternal prenatal psychological distress (MPD) is thought to have programming effects on infant autonomic function. The aim of this study was to investigate the association between MPD and infant autonomic response to stress.

Methods: Maternal distress was measured repeatedly in the first (T1) and second half (T2) of pregnancy using standardized measures of depression (Edinburgh Postnatal Depression Scale) and anxiety (Symptom Checklist-90 Revised). At 6-months of age, infant heart period was continuously recorded during stress testing: baseline (RSAb), attention (RSAa), and frustration (RSAf). Spectral analysis was performed on 45 second epochs and averaged across stress task. RSA was quantified as the variability between 0.24Hz and 1.04 Hz. ARSA was calculated by subtracting baseline from each task, RSAb was log transformed to adjust for skew. A repeated measures ANOVA with a post hoc Tukey Test was used to evaluate the effects of maternal distress on RSA.

Results: There was no direct association between MPD and RSAb (F(19) = 1.175, p > .05, but there were effects of MPD on RSAf, F(180) = 22.403, p < .000, AR2 = .08 and RSAa, F(183) = 7.056, p < .01, AR2 = .03, that were moderated by RSAb. The association between MPD and infant stress reactivity was only observed for infants with low or high RSAb and was not found for infants with average RSAb. For infants low in RSAb, greater MPD was associated with higher RSAf and RSAa whereas for infants high in RSAb greater MPD was associated with lower RSAf and RSAa.

Discussion: Resting RSA may serve as a risk or resiliency factor for the effects of MPD exposure on infant stress reactivity. Among infants with lower resting RSA, increasing MPD resulted in less vagal withdrawal during frustration and greater vagal application during attention, both of which are not consistent with an appropriate response to stress. Infants with higher resting RSA experienced greater vagal withdrawal with increasing MPD during both the frustration and attention tasks. The findings suggest that the effects of MPD on infant autonomic reactivity depend on baseline function.

70) Abstract 1362

ANXIETY AND POSTTRAUMATIC GROWTH PREDICT PROGRESSION-FREE AND OVERALL SURVIVAL FOLLOWING AUTOLLOGOUS STEM CELL TRANSPLANTATION FOR MULTIPLE MYELOMA

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Individuals with multiple myeloma undergoing hematopoietic stem cell transplantation (HSCT) frequently experience high levels of distress associated with the demanding treatment regimen and progressive or recurrent nature of the disease. We examined the extent to which psychological distress and well-being predicted progression-free (PFS) and overall survival (OS) among multiple myeloma patients following autologous HSCT. Participants (N=94) completed measures of depression (IDS), anxiety, and well-being (PTGI posttraumatic growth, PANAS negative affect) pre-HSCT and 3 months post-HSCT and were followed prospectively for 3 to 60 months. Cox proportional hazard regression models were used to examine relationships between distress/well-being scores and time from transplant to disease progression and death. All models were adjusted for ISS stage and cytogenetic risk, and hazard ratios (HR) were standardized to correspond to a 2 SD difference in distress/well-being scores. During the follow-up period, 59 participants (62.8%) progressed or relapsed, and 32 (34.0%) died. Individuals who experienced higher levels of negative affect pre-HSCT had a longer PFS (HR=577, p=.042) but not OS (HR=308, p=.545). Follow-up analyses clarified that this effect was most pronounced for the fear/avoidance component. Similarly, those who reported more anxiety at 3 months post-HSCT had a longer PFS (HR=430, p=.031) and a trend toward longer OS (HR=308, p=.060). With regard to well-being measures, participants who experienced greater posttraumatic growth at 3 months post-HSCT had a longer PFS (HR=491, p=.023) and OS (HR=409, p=.037). These effects were seen for indices of having a larger repertoire of life, and managing fear and distress better. The current study investigated and had the capacity to see new possibilities. Depression and positive affect were not related to OS or PFS. We observed indirect mediating effects of MPD on RSA (beta for specific indirect effect = 0.26, 95% CI (.0000-0.6510). Depressive symptoms were not a significant mediator.

Conclusions: These findings identify hot flashes as an important mediator of sleep problems in young BCS who have experienced a change in their menopausal status. Given the negative effects of sleep disturbance on quality of life and overall health, it is critical to better understand and reduce the risk for sleep problems in this group. Treatments aimed at reducing physiological symptoms of menopause, specifically hot flashes, might partially alleviate sleep disturbances in this population.

72) Abstract 1861

PILOT FEASIBILITY STUDY OF CENTRAL MEDITATION AND IMAGERY THERAPY FOR MAJOR DEPRESSIVE DISORDER

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Background: Current treatments for Major Depressive Disorder result in clinical remission less than 50% of the time. We aimed to test the feasibility of a meditation and guided imagery intervention, Central Meditation and Imagery Therapy (CMIT), for major depression, and study its effect on heart rate variability.

Methods: 9 adult subjects with a current major depressive episode, as defined by meeting DSM-IV criteria on Mini International Psychiatric Interview, and having a 17-item Hamilton Depression Scale (HAM-D) ≤18, were enrolled in CMIT. Subjects received heart rate variability monitoring at baseline. Remission was defined as HAM-D ≤7 at study endpoint (12 weeks).

Results: Eight subjects (89%) completed the study. Average reduction in HAM-D in the completer sample was 47 ± 36% (HAM-D 18.1 ± 3.6 to 9.5 ± 6.6, p = .02). Four subjects achieved remission (50% of remission in non-completers). Subjects received heart rate variability monitoring at baseline. Remission was defined as HAM-D ≤7 at study endpoint (12 weeks).

Conclusions: CMIT was a feasible intervention for depressed patients, and resulted in a moderate rate of remission among completers. Reduction in low frequency heart rate variability over the course of the trial was associated with depressive symptom improvement. These findings should be confirmed in controlled trials.

73) Abstract 1265

FETAL PROGRAMMING OF INFANT HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS FUNCTION

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Background: Maternal psychological distress is associated with fetal exposure to elevated maternal cortisol. This is a potential mechanism for fetal programming of infant stress reactivity. Despite strong evidence linking maternal psychological distress to infant stress reactivity, few studies have assessed prenatal cortisol exposure and no previous studies have examined dysregulation (flattened rhythms) of maternal cortisol patterns during pregnancy in relation to infant hypothalamic-pituitary-adrenal (HPA) axis function.

Methods: Maternal cortisol was sampled twice daily in the second trimester (3 months, total infant cortisol secretion (area under the curve from ground; AU(Cg)), cortisol reactivity, and cortisol recovery after a blood draw were assessed. At 6 months, total infant cortisol secretion and infant cortisol reactivity to a series of frustrating tasks were assessed. Multilevel models tested the association between components of
maternal prenarial diurnal cortisol (awakening levels, cortisol awakening response, and daytime slope) and infant cortisol secretion. Maternal report of postnatal psychological distress was included in all models to adjust for potential effects of the postnatal environment on infant HPA axis function. All significant results were adjusted for multiple comparisons, unless otherwise stated.

Results: While there was no relationship between maternal prenatal cortisol and with infant cortisol reactivity at either 3 or 6 months, there was an association between prenatal cortisol on infant AUcG at both 3 and 6 months. Specifically, decreased maternal waking cortisol and flatter daytime trajectories were associated with greater total infant cortisol production (AUcG). Similar results were observed for cortisol recovery at 3 months, indicating that rapid recovery following a blood draw is associated with dysregulated maternal cortisol in pregnancy. A reduced maternal prenatal awakening recovery was also associated with infant AUcG (p = 0.06) at 6 months. No 2- or 3-way interactions with trimester were observed suggesting that the effects of maternal cortisol on infant HPA axis function were not specific to exposure during any particular trimester. Results remained unchanged when adjusting for maternal socioeconomic status and infant age at birth. Conclusions: Infant HPA axis function is influenced by maternal diurnal cortisol rhythms during pregnancy. Patterns suggesting dysregulation of maternal HPA axis during pregnancy may program a high set point in the infant HPA axis. Contrary to expectation, rapid cortisol recovery following a painful stressor was also associated with flattened maternal cortisol rhythms. Furthermore, their HR responses during the task were also blunted in the low SES group. These findings suggest that individuals with lower SES, probably by prolonged exposure to chronic stress, might have impaired functions in front-striatum neural circuits and blunted autonomic responses, and thus might show more impulsive and habit-related decision-making styles. Such styles of decision-making in them might increase probabilities of unhealthy behaviors such as consumption of unhealthy foods, alcohol, and tobacco, and thus might increase risks of diseases.

76) Abstract A1305 DEVELOPMENT OF A COMPREHENSIVE STRESS RATING SCALE FOR ECOLOGICAL MOMENTARY ASSESSMENT: PRELIMINARY ANALYSIS BY ITEM RESPONSE THEORY Hiroe Kituchi, MD, PhD, Psychosomatic Research, National Institute of Mental Health, National Center of Neurology and Psychiatry, Kodaira, Tokyo, JAPAN, Kazuo Umemori, M.D., PhD, Science University, Tokyo, Japan, Tetsuya Ando, MD, PhD, Psychosomatic Research, National Institute of Mental Health, National Center of Neurology and Psychiatry, Kodaira, Tokyo, JAPAN, Hidenori Kato, MD, Japan Fruitinstitute, Tokyo, JAPAN

Computerized ecological momentary assessment (EMA) has been applied for investigating temporal relationships between a wide variety of diseases and psychosocial factors with its advantages of ecological validity and time accuracy. Although existing paper-based questionnaires have usually been diverted to EMA use, items may be lengthy and too many for repeated recordings. In addition, reliability and validity of the scale should ideally be confirmed from both between- and within-individual perspectives by EMA data. Therefore, the aim of this study was to develop a comprehensive scale of stress for EMA data collection. As a preliminary survey, item analysis by item response theory was used to determine the item structure in order to achieve efficient measurement. Fourteen candidate items for stressors, eight for social support and 65 for stress responses were created and conducted in outpatients of the psychosomatic medicine department (PT, by a paper questionnaire; 19 men and 60 women, age 50 (20-80) y.o.) and in healthy controls (HC, by a web questionnaire; 40 men and 63 women, age 42 (20-76) y.o.). After confirming unidimensionality, item response theory was applied and sensitivity and severity parameters were calculated for each item. Items with insufficient sensitivity or extreme severity were excluded. Consistency of item severity between PT and HC was also investigated by differential item functioning analysis. Finally, 11 items for stressors (six for psychological demand and five for interpersonal stress), eight items for social support, and 2 items for stress responses remain after analysis. ECG were measured before and after the six week intervention period to calculate heart rate and heart rate variability measures. Age, gender, combat exposure, PTSD duration, PTSD severity, co-morbid depression, adherence, perception of clinical change were used as covariates.

Results: There were no group differences in heart rate. The low frequency/high frequency ratio heart rate variability increased in the MM + SB and SQ and decreased in the MM and SB (within-subject p = 0.027). There was a marginal significant group difference overall (LHF/HF *TX p = 0.094) and a post-hoc significant difference between MM + SB and SQ (p = 0.035). Age (p = 0.01) and Time Since Event (p = 0.0005) were significant covariates.

Conclusions: Heart rate variability but not heart rate was modestly changed from the interventions. Further research to examine nonlinear and time domain HRV parameters is needed.
more persistent arousal responses and less capacity for emotional self-regulation. Other explanations are possible, including poorer self-care, less adherence to medical regimens, greater substance use or the effects of poorer physical health on completion of eLEAS. We are currently preparing a prospective study to evaluate whether emotional awareness plays a causal role in health outcomes. Greater awareness of emotional vulnerability may be a resilience factor in physical health, and the eLEAS appears to be an efficient and effective tool for assessing it.
82) Abstract 1055
ASSOCIATION BETWEEN DEPRESSIVE SYMPTOM SEVERITY AND BIASED ATTENTION TOWARD FOOD CUES
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Although depression is associated with an increased risk of obesity, the mechanisms underlying this relationship are poorly understood. Increased attention toward food cues in the environment is one potential pathway from depression to obesity, as biased attention to food may lead to increased caloric intake. To date, no studies have examined the relationship between depression and food attentional bias, despite suggestive evidence that attention to food cues increases following negative mood induction. Our objective was to examine whether greater depressive symptom severity is associated with increased attention toward food cues.
Participants were 79 young adults [mean age=22.1 ± 5.4 years, 43% female, 30% non-white, mean body mass index (BMI)=25.5 ± 5.7 kg/m²]. Depressive symptoms were measured using the Patient Health Questionnaire-8 (PHQ-8). PHQ-8 somatic and nonsomatic subscales were computed based on previous factor analyses. Participants completed a computerized visual probe task displaying pairs of food and non-food images (e.g., a yellow apple vs. a tennis ball). Attentional bias scores were calculated using reaction times (RTs) to food vs. non-food cues. Positive RT bias scores indicate faster RTs to food cues (food bias), whereas negative scores indicate faster RTs to non-food cues (nonfood bias).
In the full sample, linear regressions adjusted for age, gender, and BMI revealed that the PHQ-8 total was not significantly associated with RT bias (β=0.12, p=0.32).
Relationships between the somatic (β=0.18, p=0.14) and nonsomatic (β=0.03, p=0.81) subscales and RT bias were also not detected. Due to our interest in food attentional bias as a potential pathway from depression to obesity and past evidence of food cue avoidance among obese individuals, we reran the models after excluding those with BMI ≥ 30 kg/m². In this subgroup, the PHQ-8 total was positively associated with RT bias and approached significance (β=0.25, p=0.06). A trend was shown for the somatic scale (β=0.25, p=0.06); the nonsomatic subscale was not significantly related to RT bias (β=0.15, p=0.25).
Our findings suggest that greater depressive symptom severity may be associated with biased attention toward food cues and that this effect may be more pronounced for the somatic symptoms and nonsomatic subscales. The explanation is that eating may reduce negative mood in depressed individuals. Thus, eating is reinforced, and food becomes a more salient stimulus. Future studies should examine whether food attentional bias partially mediates the prospective depression-obesity association.

83) Abstract 1112
REPORTED HISTORY OF CHILDHOOD TRAUMA PREDICTS INCREASED PRE-SLEEP AROUSAL IN HEALTHY ADULTS
Michelle A. Silver, BS, Holly K. Rau, MS, Matthew R. Cribbet, PhD, Lindsay R. Vaux, MS, Paula G. Williams, PhD, Psychology, University of Utah, Salt Lake City, Utah
Childhood trauma has been associated with increased mental and physical illness. Disrupted sleep may be a mechanism by which trauma adversely affects health. The current study examined pre-sleep arousal, a vulnerability factor for the development of insomnia, and self-reported sleep quality in adults reporting childhood trauma. Participants (n=67) were healthy adults aged 20-45 years who did not meet criteria for insomnia. During baseline assessments participants completed the Childhood Trauma Questionnaire (CTQ), a retrospective measure of childhood maltreatment including five categories of abuse and neglect, as well as the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality over the previous month. Participants reporting childhood trauma in two of the five CTQ categories displayed significantly increased pre-sleep arousal compared to participants reporting no trauma. Individuals reporting a sexual abuse (25.4% of participants) or physical neglect (26.9%) history reported greater pre-sleep arousal, t(65)=3.0 and p<0.01. Participants reporting physical neglect or physical abuse (13.4%) had significantly increased PSAS scores compared to participants reporting no trauma, t(65)=-2.0 and p<0.05. A trend was shown for the nonsomatic scale (β=0.25, p=0.06); the nonsomatic subscale was not significantly related to RT bias (β=0.15, p=0.25). Researchers are encouraged to examine the role of childhood trauma in increased pre-sleep arousal and sleep quality in healthy adults.

84) Abstract 1248
PERCEIVED STRESS AND THE TRIER SOCIAL STRESS TEST IN AN ONLINE VIRTUAL REALITY
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Background: The current study utilized the Trier Social Stress Test (TSST) using virtual reality. Although the standardized “real world” procedure has demonstrated the validity of the TSST, there are many potential differences in the variability in laboratory settings and confederates. These limitations may be reduced through the use of virtual reality. Recently the TSST administered in a head mounted virtual reality system has been shown to produce comparable cortisol responses to the “real” world TSST (Jönsson et al 2010). The present study investigated whether subjective measures of stress were increased during the TSST conducted through an online, 3rd person virtual reality.
Methods: Twenty-nine undergraduates (female=16) participated in the virtual TSST. They were told that through a virtual reality program called Second Life, they would give a 5-minute speech to faculty at the business school for a hypothetical job, followed by a mental math task. Faculty would judge them by explaining how their experiences, abilities, and education make them the best candidate. Participants prepared for 3 minutes and were shown how to navigate their avatar in the virtual world. A headset and microphone was used and the avatar confederates, gave their speech, and perform the math task. During the TSST, the avatar confederates also used gestures indicating boredom (e.g., shrugs to imply that they were uninterested, head shaking to indicate an incorrect math answer). Subjective stress ratings were taken at 4 time points (baseline, 15, 30, and 45 minutes) and analyzed with repeated measures analysis of variance (MANOVA).
Results: Participants rated the task as significantly more stressful than baseline, or even recovery measure (baseline: [M=3, SD=2.22], 15 min: [M=4.97, SD=2.24], 30 min: [M=3.24, SD=1.77], 45 min: [M=2.24, SD=1.53]; t tests between time points ranged from 7.2 to 11.9, all p values <.001).
Conclusion: The present study found that the TSST can be conducted in an online, 3rd person virtual reality with perceived subjective stress responses comparable to a TSST administered in the “real” world. Using a virtual TSST could improve the reliability of the test through a more standardized procedure, consistency in laboratory settings, and feedback from the confederates. Future analyses of the present study will include examining salivary cortisol samples taken during the virtual TSST.

85) Abstract 1817
COPING STYLE PREDICTS INCREASED DISTRESS AND WITHDRAWAL SYMPTOMS AFTER ACUTE STRESS AMONG CHRONIC SMOKERS
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Research indicates that coping styles, such as vigilance (V) and cognitive avoidance (CAV), influence cognitive stress response. While these coping styles have been shown to be related to physiological response to stress, little research has been done in chronic smokers. This is an important question as nicotine dependence is linked with alterations in psychophysiological response to stress. The aim of this study was to examine the extent to which coping styles moderated psychological stress response in nicotine dependent men and women. Minimally deprived smokers (N=104) completed a laboratory session including 45 min baseline, 20 min acute stress, and 20 min recovery. The Mainz Coping Inventory was used to evaluate levels of VIG and CAV in each individual. Smokers were classified into four groups: low anxiety (low VIG, low CAV; n=25), high anxiety (high VIG, high CAV; n=25), vigilant (high VIG, low CAV; n=20) and cognitive avoidant (low VIG, high CAV; n=25) based on median splits. Saliva samples to measure cortisol, and cardiovascular as well as subjective mood and withdrawal symptoms measures were collected throughout the session. A series of 4 group x 3 time multivariate analysis of variance (MANOVAs) were conducted. Gender was included as a covariate, and coping styles. This analysis indicated a significant change in time effects in all measures reflecting stress-related increases in physiological and subjective measures regardless of coping groups (p<0.05). Significant main effects post-hoc comparisons found greater levels of withdrawal symptoms and distress in VIG smokers than in CAV smokers (p<0.05). While VIG smokers showed a pattern of attenuated cortisol activity, this did reach statistical significance. These observations suggest the role of coping styles, particularly vigilance, in enhancing negative affect and withdrawal symptoms in response to acute stress. More research is needed to elucidate the role of coping styles in stress regulatory mechanisms, and their associations with smoking relapse.

86) Abstract 1593
CIRCULATING LEPTIN AND PAIN PERCEPTION AMONG TOBACCO DEPENDENT INDIVIDUALS
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The appetite hormone leptin is released by adipose tissue and regulates satiety and energy expenditure. Recent evidence suggests that leptin may modulate the stress response and may be a promising biological marker of craving for addictive substances including tobacco and alcohol. The extent to which leptin is influenced by nicotine dependence has not been systematically examined. In addition, preclinical evidence suggests the role of leptin in increasing nociception. Effects of nicotine dependence on leptin response to acute painful challenges have not been examined. In this study, we examined for the first time the extent to which cigarette smoking is associated with leptin levels during an extended rest period and in response to noxious stimuli. Repeated blood samples were collected during a laboratory session from smokers (N=23) and nonsmokers (N=20) to assay for leptin.
Heat gain threshold, tolerance, pain ratings during a 90-sec cold pressor test, the McGill Pain Questionnaire (MPQ), affect, physical symptoms, as well as neuroendocrine and cardiovascular measures were collected. We observed that leptin increased over time, but only in nonsmokers (p<0.01). Correlation analysis revealed consistent positive correlations between leptin levels and pain reports (MPQ scores and ratings) after the two pain stimuli, although these correlations were significant only in nonsmokers (p<0.001; see Figures below). The flat pattern of leptin release and the weaker associations of this hormone with pain in smokers suggest long-term effects of tobacco dependence on this regulatory hormone. In light of leptin’s influence on reward pathways related to drug use and appetite, research focusing on leptin involvement in the link between nicotine dependence and appetite regulation is warranted.

87) Abstract 1258
CHILDREN’S HEART RATE VARIABILITY: LONGITUDINAL EFFECTS OF PHYSICAL ACTIVITY, ADIPOSITY AND NEGATIVE EMOTIONS.
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Background: Heart rate variability (HRV) is increasingly used as a quantitative marker of the autonomous nervous system i.e. the sympathetic and vagal parasympathetic activity (SA and PA, respectively). After all, a reduction of HRV is a pathway/mechanism to increased morbidity and mortality. Several physiological factors have been hypothesised to influence HRV such as physical activity and adiposity. Apart from these physiological determinants, also psychological factors such as emotional status might influence HRV.
Methods: In 341 children (5-11y) of the Belgian ChiBS study, 5-minute HRV measurements in supine position were performed twice (in 2010 and 2011). Derived HRV parameters are the mean R-R interval (mRR), the root mean square of the successive differences (RMSSD), the percentage of consecutive normal R-R intervals differing more than 50 ms (pNN50), high frequency power (HF), low frequency power in normalized units (LFnu) and LF/HF. Body composition (body mass index, fat%, fat free mass) was measured. Questionnaire data on negative emotions (anger, anxiety, sadness) and physical activity were collected. Longitudinal mixed model analysis was used to examine the effect of physical activity, adiposity and negative emotions on HRV change. Analyses were corrected for age, sex and socio-economic status.
Results: High fat% decreased PA parameters (mRR, RMSSD, pNN50, HF) in both sexes and also increased LF and LF/HF ratio in girls. High physical activity increased PA parameters (mRR, RMSSD, pNN50, HF) in girls. Reports of anger were associated with lower PA parameters in boys (mRR, RMSSD, pNN50). Conclusions: Physical activity, fat% and anger were important predictors for 1-year HRV changes (especially the parasympathetic activity), although sex differences were found. Within the next months, we will be able to analyse the results of the third wave (2012) to verify whether these associations remain over a longer time period. The relations of these physiological and psychological parameters with HRV might explain their importance for health and disease.

88) Abstract 1698
SOCIAL AND PHARMACOLOGICAL EXPOSURE TO SMOKING AND RISK FOR SMOKING INITIATION DURING ADOLESCENCE
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Social exposure to smoking, which refers to observing smokers in one's social environment, is a well-established predictor of smoking behavior during adolescence. Emerging evidence suggests that pharmacological exposure to smoking (i.e., nicotine exposure through secondhand smoke; SHS) is also associated with smoking behavior. Specifically, nonsmokers exposed to SHS inhale concentrations of nicotine that can be comparable to those observed in smokers. Never-smoking adolescents exposed to SHS report nicotine dependence (ND) symptoms. Further, biomarkers of SHS exposure (e.g., hair nicotine, salivary cotinine) collected in never-smokers are associated with reported nicotine withdrawal and smoking initiation. This study investigated whether social and pharmacological exposure to smoking independently predict greater risk for smoking initiation among adolescent never-smokers. Participants included 338 never-smokers (Mage=12.9, SD=4; 53% female) in the AdoQuest study, Montréal, QC. They answered questions about their social exposure to smoking (i.e., situations of SHS exposure derived from the parental version of the validated S3 Scale), and known risk factors for smoking initiation (i.e., expected benefits and costs, aversion to SHS, ND symptoms, smoking susceptibility). Saliva and hair samples were collected to derive pharmacological measures of cotinine and nicotine. Participants also wore a monitor to measure airborne nicotine. Multivariable regression simultaneously tested social and pharmacological exposure to smoking as predictors of risk factors for smoking initiation. Social exposure to SHS predicted ND symptoms (e.g., β=.15, p=.02) and smoking susceptibility (e.g., β=.18, p=.01). Conversely, airborne nicotine predicted expected benefits (e.g., β=.14, p<.03) and hair nicotine predicted aversion to SHS (e.g., β=.13, p=.03); the remaining associations were not statistically significant. When adolescents inhale nicotine, a psychoactive substance, they may feel calm or relaxed, and learn to expect greater smoking-related benefits. With repeated exposure to SHS, adolescents may also develop greater tolerance to the aversive effects of SHS exposure. Adolescents interacting with smokers who talk openly about their ND symptoms may come to believe that they (should) also experience such symptoms; similarly, adolescents wishing to imitate their role models’ smoking behavior may consider themselves more susceptible to initiate smoking, possibly due to social modeling.

89) Abstract 1233
VAGAL TONE MEDIATES THE ASSOCIATION BETWEEN WORK-STRESS AND GLYCEMIC STATUS: RESULTS FROM THE MANNHEIM INDUSTRIAL COHORT STUDY (MICS)
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Background Work-stress is associated with an increased risk of (pre)diabetes, inflammation as well as decreased vagally-mediated heart rate variability (HRV). Also, a brain – liver circuit is known to regulate glucose homeostasis by efferent vagal outflow to the liver rooted in central inhibition of fat oxidation. We investigate to what extent the association between work-stress and glycemic status is mediated by HRV and/or inflammation.
Methods Cross sectional data from the Mannheim Industrial Cohort Study with 9937 participants were available. The root mean squared successive differences (RMSSD) from long-term heart rate monitoring during worktime and sleeptime periods was used to index ANS function. Fasting plasma glucose (FPG) and glycylated hemoglobin (HbA1c) were assessed to determine glycemic status, Effort-Reward-Imbalance (ERI) to index work-stress, and C-reactive protein (CRP) to index inflammation. All mediation models were adjusted for age, sex and occupational status and bootstrapped with 5000 replications.
Results ERI was significantly negatively associated with RMSSD in both glycemic measures and during both time periods (Figure 1). ERI had a significant direct effect on HbA1c. ERI had a significant indirect effect through RMSSD on both glycemic measures during both time periods. Introducing CRP as further mediator to the previous model did not alter the indirect effect. Adding CRP as exclusive mediator revealed smaller direct and indirect effects. Additional analyses showed that the mediating role of CRP itself was mediated by RMSSD. Conclusion Our results suggest that the association between work-stress and glycemic status is partly mediated through vagally-mediated HRV independent of inflammatory markers such as CRP. Work-stress may decrease efferent vagal outflow to the liver, which in turn may lead to an increase in glucose production. An increase in HbA1c by 0.1% has been found to increase the risk for a cardiovascular event by 3.1% in healthy adults of the Copenhagen City Heart Study (Eskesen et al. 2013). We conclude that work-stress may be an additional factor promoting a diabetic-metabolic state. Both, work-stress as well as HRV are modifiable factors. If supported by prospective evidence, these results lead to a new approach towards the primary prevention of diabetes.
THE RELATIONSHIP BETWEEN ANGER EXPRESSION AND CARDIOVASCULAR HEALTH OUTCOMES IN MINORITY POPULATIONS
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Background: Health disparities between minority and majority populations are apparent across a range of physical health ailments including higher incidence of cardiovascular disease among African Americans. In general, an understanding of how mental states and affective responses that are associated with experiences of discrimination might be related to cardiovascular risk would be an important step forward in identifying racial health disparities. Anger is the primary affective response associated with experiences of discrimination but may not have uniformly negative consequences depending on how it is regulated, expressed or suppressed. Personality traits associated with greater self-control, such as conscientiousness and agreeableness, influence the expression of anger in stressful interpersonal interactions, and may therefore also predict CVD risk. Combating racial health disparities in CVD may require a nuanced understanding of anger as an emotion with both adaptive and maladaptive effects, dependent on the cultural context.

Method: Thirty-five African Americans were recruited from a community sample. Participants completed the Big Five Inventory, which measures five dimensions of personality: extraversion, agreeableness, conscientiousness, neuroticism, and openness. Participants also completed the Anger Expression Scale, which measures the experience, expression, and control of anger. Finally, blood samples were collected and assayed for the CVD risk markers: LDL and HDL cholesterol and C-reactive Protein (CRP).

Results: First order correlations controlling for age, gender, and BMI revealed that African Americans who endorsed greater anger expression had significantly lower LDL/HDL ratios (r = -.44, p = .01). Moreover, agreeableness was significantly correlated with higher LDL/HDL ratio scores (r = .46, p < .008) and lower HDL levels (r = -.48, p = .006). Further, people who rated higher on conscientiousness had significantly higher LDL/HDL ratios, (r = .37, p = .04). CRP was not related to anger or personality profiles.

Discussion: Among African Americans, greater anger expression and lower levels of adaptive personality traits were associated with better cholesterol profiles. The expression of anger can facilitate adaptive and maladaptive responses; e.g., it may damage an interpersonal relationship, but conversely, it may also empower an individual by giving them a voice. Racial/ethnic groups historically subjected to discrimination may therefore exhibit differential relationships between anger and CVD risk than majority groups.

91) Abstract 1290 MITOCHONDRIAL ALLOSTATIC LOAD (MAL): PUTTING THE ‘GLUC’ BACK INTO GLUCOCORTICOIDS
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Chronic metabolic and psychosocial stressors contribute to physiological dysregulations that predispose to pathology. Although the stress-disease link has been extensively documented, the cellular mechanisms by which stressful life experiences and their associated neuroendocrine mediators cause biological damage, aging and disease remain poorly understood. Building from the allostatic load model, here we emphasize the metabolic aspects – especially glucose imbalance – of the physiological response to chronic psychosocial stress, its related health-damaging behaviors (lack of exercise, unhealthy diet, poor sleep) and glucocorticoids. At the crossroad of the metabolic environment and cellular function lies the mitochondria, a critical cellular organelle involved in cellular energy production and cell signaling. Chronically elevated blood glucose levels damage mitochondria and mitochondrial DNA, which in turn, can produce toxic products that hasten cellular senescence, promote inflammation and alter gene expression. Mitochondrial allostatic load (MAL) outlines the structural and functional changes that mitochondria undergo in response to elevated glucose and other primary stress mediators, contributing to fragility and sequence of events whereby stress impairs physiological and neurological systems, mitochondrial dysfunction may contribute to allostasis in two major ways: i) by the release of reactive oxygen species (oxidative stress) and pro-inflammatory molecules that drive cell senescence; and ii) by diminishing the energy-producing capacity of cells and tissues, which further impairs successful adaptation and biological resilience. In support of this model, experimental data demonstrates that genetically altered mice with impaired mitochondrial function exhibit exaggerated stress-induced hyperglycemia, whereas mice with increased mitochondrial content (mimicking an endurance trained state) are resistant to stress-induced metabolic perturbations. Establishing the cellular mechanisms by which chronic stress leads to biological damage may contribute to the development of preventative and therapeutic interventions to mitigate the pro-aging effects of chronic stress.

92) Abstract 1097 ASSOCIATION OF HEART RATE VARIABILITY WITH CARDIOVASCULAR RISK FACTORS IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION
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Objectives: There is substantial evidence that decreased heart rate variability (HRV) is associated with the development of a number of cardiovascular risk factors, while increased HRV is related to low risk profiles. Little is known about the relationship between decreased HRV, metabolic factors and illness perception in patients with acute myocardial infarction (MI). Our hypothesis was that decreased HRV is associated with cardiovascular risk factors in patients with acute MI. The role of illness perception in this context was also explored.

Design and Methods: 50 patients with acute MI (74.1% men, mean age 59.6 ± SD = 10.1) were examined within 48 hours after the cardiac event. Patients’ cognitive representations of their MI were assessed using a brief German version of the self-rated revised illness perception questionnaire (IPQ-R). Frequency domain measures of HRV were assessed from 5-minute electrocardiogram recordings during stable supine resting. Metabolic factors (glucose, HDL-cholesterol and triglycerides) were recorded within 48 hours of admission (fasting blood sample).

Results: Decreased levels of HRV was associated with increased illness perception and higher metabolic risk factors controlling for age, gender and body mass index (BMI). Decreased HRV was associated with a higher sum score of IPQ-R, (r = -.47, p < .05) controlling for age, gender and BMI. There also was a relationship between metabolic risk factors and HRV such that decreased levels of HRV were correlated with higher levels of glucose (r = .33, p < .05) and triglycerides (r = -.42, p < .05). Increased levels of HRV were associated with higher levels of high density lipoprotein cholesterol (r = .46, p < .05).

Conclusions: The data suggest that decreased levels of HRV measured early after MI is associated with patient’s perception of the heart disease as threatening and is accompanied by cardiometabolic risk factors. This provides one explanation for the poor cardiovascular prognosis in post-MI patients related to decreased HRV.

93) Abstract 1108 ASSOCIATION BETWEEN OVERALL PSYCHOLOGICAL DISTRESS AND POSTTRAUMATIC STRESS LEVELS THREE MONTHS AFTER ACUTE MYOCARDIAL INFARCTION
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Objectives: Sociodemographic and psychosocial variables, including perceived distress during myocardial infarction (MI), have been identified as “risk factors” for the development of posttraumatic stress in response to MI. We hypothesized that increased levels of overall psychological distress are associated with increased levels of acute posttraumatic stress three months after MI. Design and Methods: 32 patients with acute myocardial infarction (84.4% men, mean age 59.50 ± SD = 9.47) were examined within 48 hours after the traumatic event and three months after discharge. Patients completed the German version of the self-rated symptom checklist-9 (SCL-9-K) to measure overall psychological distress. The incidence of DSM-IV PTSD symptoms at the 3-month follow-up was assessed with the German version of the Clinician-Administered PTSD Scale (CAPS).

Results: There was a significant correlation between the SCL-9-K sum score assessed shortly after MI and posttraumatic stress levels at three months after MI (r = -.473, p < .05) controlling for gender, age and the prognostic Grace Score.

Conclusions: This data suggest that substantial psychological distress predicts an increased risk of posttraumatic stress after three months and supports the idea that psychological variables are important prognostic risk factors. The association between psychosocial variables and cardiovascular markers and the development of PTDS symptoms as prognostic risk factors warrants further studies.
of distress. Lower HR of depressed patients during the 6MWT may be due to
In conclusion, depressive symptoms but not anxiety were related to HR and HRV in
6MWT walking distance (r=-0.12; p<0.05), walking distance per se was unrelated to
(p<0.05 and p=0.01, resp.). While HADS depression was weakly related to shorter
(p<0.05), log LF (p<0.01) and log-total power (p<0.05). The interaction also
Furthermore, significant time*HADS depression interactions were found for HR
depression were seen on HR (p<.05) and the log-transformed LF/HF ratio (p<0.05).
In the whole sample, HR significantly decreased and all HRV parameters
dependent on duration of HRV measurement, HRV parameters studied, severity of
Elevated anxiety was found in 16.9% and elevated depression in 13.2% of patients.
We recruited 1120 U.S. adults to participate in an online survey study. Participants
answered a series of questions about their experiences of bullying in school and if
They were therefore measured during the baseline period and followed by a 5-minute recovery period. The sample was composed
HRV was associated with Relaxed, β = .38, SE = 0.20, and Calm, β = .51, SE = 0.18, affect during interactions with a romantic partner
These findings suggest that to a degree, all PNS physiology consistently permits flexible and adaptive emotional responses may have particular implications for associations between close relationships and health.
95) Abstract 1635
ASSOCIATIONS OF ANXIETY AND DEPRESSION WITH SHORT-TIME HEART RATE AND HEART RATE VARIABILITY DURING DIFFERENT CONDITIONS IN 468 PATIENTS WITH CARDIOVASCULAR RISK FACTORS
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Anxiety and depression have been reported to be associated with increased heart rate and reduced heart rate variability. However, discrepant findings have been reported depending on duration of HRV measurement, HRV parameters studied, severity of anxiety/depression, and somatic patient characteristics.
We therefore measured heart rate (HR) and heart rate variability (HRV; both time and frequency domain) in 468 patients (47% female, 57% male) with the two resting conditions during the last two minutes of a 6-minute walking test (6MWTD) and, after at least 5 minutes of rest, during 5 minutes of metronomic breathing at 6/min and during 5 minutes of spontaneous respiration. Anxiety and depression were assessed by the Hospital Anxiety and Depression Scale (HADS) and dichotomized at the cutoffs recommended by the test manual (anxiety >10, depression >8).
Elevated anxiety was found in 16.9% and elevated depression in 13.2% of patients. In the whole sample, HR significantly decreased and all HRV parameters significantly increased from 6MWTD to the two resting conditions, as expected (all p<0.001). In repeated measures analyses of covariance, main effects for HADS depression were seen on HR (p=0.05) and the log-transformed LF/HF ratio (p=0.05). Furthermore, significant time*HADS depression interactions were found for HR (p=0.05), log LF (p=0.01) and log-total power (p<0.05). The interaction also appeared significant for log-LF/HF (p=0.07). Within test phases, depressive symptoms were associated with significantly lower HR during the 6MWTD (p=0.01) and, unexpectedly, lower log LF/HF during the Implicit condition (p=0.05 and p=0.01, resp.). While HADS depression was weakly related to shorter 6MWTD walking distance (r=0.12; p<0.05), walking distance per se was unrelated to HR and HRV. No main or interaction effects on HR or HRV could be found for elevated HADS anxiety (all p>0.09).
In conclusion, depressive symptoms but not anxiety were related to HR and HRV in this large sample of patients with cardiovascular risk factors and mainly mild levels of distress. Lower HR of depressed patients during the 6MWTD may be due to reduced motivation, although the actual distance walked was unrelated to HR and HRV. The relatively low LF/HF ratio in depressed patients during both resting conditions needs further explanation.
96) Abstract 1855
BULLYING AND PHYSICAL HEALTH: DO THE REASONS FOR BULLYING MATTER?
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About one-third of the children in the United States have reported some experience of bullying. There is a breadth of research that has shown the detrimental effects of school bullying on physical health. For instance, studies have demonstrated that victims of bullying experience greater number of psychosomatic problems, such as fatigue, headaches, and irritability. The present pilot study examined whether the reasons for bullying modifies the relationship between bullying and physical health. The teenage period is a common time for youths to go through the process of discovering their identity, which also includes an important domain of sexual identity. Thus, we hypothesized that being bullied in domain of sexuality will have the most negative impact on physical health compared to other common reasons for being bullied (lower income, weight).
We recruited 1120 U.S. adults to participate in an online survey study. Participants answered a series of questions about their experiences of bullying in school and if they experienced any form of bullying, they indicated why they think they were a target for bullying. They also provided self-report physician-diagnoses of various health problems ranging from cardiovascular diseases to immune problems. Controlling for important demographic and behavioral characteristics that are known to be related to physical health (age, weight, smoking), we conducted a Poisson regression to examine whether the different reasons for bullying predict greater number of health problems as adults. Participants who were verbally bullied about their sexuality (being gay, lesbian, bi, or transgendered, or thinking they were a trans woman) were 37% more likely to experience physical health problems as adults (p<0.05). The same was true for physical bullying, where participants who were physically harassed about their sexuality were at 56% increased incidence of developing physical health problems (p<0.01). Other common reasons for bullying, such as weight, race, and lower birth weight, did not significantly impact physical health. These results suggest that future researchers and interventions should recognize the importance of the specific characteristics of bullying when examining the link between bullying and health. In this case, the reasons for bullying do matter.
97) Abstract 1656
RACISM: THE EFFECTS OF CULTURAL-SYMBOLIC RACISM ON CARDIOVASCULAR REACTIVITY AMONG BLACK AND WHITE ADULTS
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The past 20 years has produced a promising body of research examining links between interpersonal racial discrimination and stress related disease. These experiences, however, may reflect only a slice of racism-related stress exposure. In turn, our current understanding of racism’s contribution to stress-related disease is limited to a gross underestimation of the effects of racism on health. The present pilot study was designed to examine patterns of cardiovascular reactivity among Black and White adults during exposure to laboratory-based cultural-symbolic racial stimuli presented in the form of blog “snapshots.” Cultural-symbolic racism is defined as racism expressed through imagery and language in news and entertainment media. This type of racism-related stressor captures vicarious as well as potentially pervasive exposures given expression through mass media rather than one-to-one encounters typically reflected in interpersonal discrimination measures. Subjects were randomly assigned to one of three conditions and were asked to view and respond to a series of racially offensive images designed to capture both affective valence (Positive vs. Negative) and arousal (Activated vs. Deactivated).
In hierarchical analyses (LVM v7) for multiple measurement occasions controlling for respiratory parameters (respiration rate and depth), higher resting HF-HRV was associated with Deactivated Positive Affect (e.g. Serene, Calm, Relaxed) during social interactions with a significant other, β = -45, SE = 0.16, p < .05. In contrast, lower resting HF-HRV was associated with Activated Negative Affect (e.g. Upset, Tense, Angry) during interactions with a romantic partner, β = -40, SE = 0.21, p < .05. Individual item-level analyses revealed that higher resting HF-HRV was associated with Relaxed, β = -38, SE = 0.20, and Calm, β = -31, SE = 0.18, affect during interactions with a romantic partner both ps < .05. Lower resting HF-HRV was associated with Angry, β = -43, SE = 0.20, and Upset, β = -39, SE = 0.27, affect during interactions with a romantic partner both ps < .05. These findings suggest that to a degree, all PNS physiology consistently permits flexible and adaptive emotional responses may have particular implications for associations between close relationships and health.
ROLE OF THE SECONDARY PROBLEM IN PREVENTING PHYSIOLOGICAL HABITUATION TO PHOBIIC STIMULI

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Anxiety disorders may not only be characterized by the specific symptomatology (e.g., tachycardia) in response to the fearful stimulus (primary problem) but also by the tendency to negatively evaluate or judge oneself for having those symptoms (secondary problem). This study aimed at testing the hypothesis that reducing the secondary problem would also diminish the fear response to the phobic stimulus. Twenty-four phobic participants (5 men, 19 women) were exposed to the phobic target (30-sec videos) before and after undergoing either a psychotherapeutic intervention addressed to reduce the secondary problem (experimental group; n = 12) or a distraction condition (control group; n = 12). The groups did not differ in terms of the entity of the secondary problem, disgust sensitivity, and state/trait anxiety levels. The electrocardiogram was continuously recorded to derive heart rate (HR) and HR variability (HRV) measures. Affect ratings were obtained before and after each condition. Significant Group x Time interactions emerged for HR (F(1, 19) = 7.75; p = .01) and High Frequency HRV (F(1, 19) = 21.99; p = .002). Post hoc analyses showed no differences between the two groups after the first exposure, but confirmed diminished HR and increased HRV responses in the experimental group compared to controls after the second exposure. No significant effects or interactions emerged in subjectively perceived sadness, anxiety, anger, or disgust. Addressing the secondary problem has the effect of reducing the physiological but not the subjective symptoms of anxiety after phobic exposure. This discrepancy between physiological and subjective measures has often been reported in anxiety disorders and may be explained by the concept of self-representation congruence. Present findings support the hypothesized role of the secondary problem in preventing physiological habituation to anxiogenic stimuli, thus in the maintenance of the primary problem. As a clinical implication, the presence of the secondary problem should be assessed in order to determine if exposure therapy for specific phobias would benefit from the addition of cognitive intervention.

IS INFLAMMATION A PATHWAY FOR SOCIAL RELATIONSHIPS AND HEALTH? THE ASSOCIATION BETWEEN SOCIAL SUPPORT, SOCIAL INTEGRATION AND C-REACTIVE PROTEIN IN A US ADULT SAMPLE.

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Cardiovascular disease (CVD) is the leading cause of death in the United States and elevated levels of systemic c-reactive protein (CRP) have been implicated as a CVD risk factor. Both social integration and social support have been linked to CVD risk and to systemic levels of CRP. However, CRP has not been evaluated with these two social relationship domains in a single study. We assessed the independent and joint associations between social support, social integration and systemic levels of CRP using cross-sectional data from a nationally representative US survey (N=2235 participants aged 40 and over). Social support was measured by summing responses to 3 yes/no survey items (“Anyone to help with emotional support?” “Anyone to help with financial support?” “Did you need more support in the past year?” [Reverse coded]). Social integration was a sum of 3 items reflecting whether someone was married, had friends to talk to and whether they attended church. To obtain sufficient cell sizes for analysis social support and social integration scores were collapsed into low (0/1) or high (2/3) groups. Serum CRP levels were coded according to clinical guidelines (Pearson et al., 2003), i.e., high risk if CRP > 3.0 mg/l and low risk if CRP < 3.0 mg/l. CRP levels above 10.0 mg/l were excluded. Higher social support was associated with lower CRP (odds ratio [OR] = 0.63, 95% CI, 0.49-0.82) but the association was attenuated after adjustment for demographic (age, gender, race) and health (systolic blood pressure, body mass index, diabetes, and smoking) covariates (OR = 0.74, 95% CI, 0.54-1.03). Similarly, higher social integration was associated with lower CRP (OR = 0.75, 95% CI, 0.56-1.01) but was attenuated after adjustment for covariates (OR = 0.80, 95% CI, 0.59-1.09). These inverse patterns persisted in multivariate models that included both social relationship variables but the estimates were not statistically significant (social support OR = 0.74, 95% CI, 0.52-1.06; social integration OR = 0.81, 95% CI, 0.59-1.13). Ancillary analyses suggested that smoking and body mass index accounted for much of the association between social relationships and this inflammatory marker. These data provide preliminary support for an association of social relationships with CRP but also suggest that established models for inflammation may account for the association. Further evaluation using more diverse social relationship measures in population-based samples will help determine if this is a plausible mechanism for the health effects of social relationships.

THE PREDICTION OF ALCOHOL WITHDRAWAL SEVERITY SCALE (PAWSS): A NEW SCALE FOR THE PREDICTION OF MODERATE TO SEVERE ALCOHOL WITHDRAWAL SYNDROME.

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Background: To date no screening tools for alcohol withdrawal syndromes (AWS) have been validated in the ICU. Although several tools quantify the severity of AWS (e.g., CIWA), none predict subjects at risk of AWS, thus missing the opportunity for timely prophylaxis. Moreover, there are no validated tools for the prediction of severe AWS in the medically ill. Our goal was to use the published literature to help guide the creation of a tool for the prediction of alcohol withdrawal among patients at risk.

Methods: PubMed, PsychInfo, MEDLINE, and Cochrane Databases were searched. Eligibility criteria included: (i) manuscripts dealing with human subjects, age 18 years or older; (ii) manuscript directed at addressing symptoms of AWS or its predisposing factors, including case reports, naturalistic case descriptions and all types of clinical trial (e.g., randomized, single-blind, or open label studies); (iii) manuscript describing characteristics of AUD; (iv) manuscripts dealing with animal data were considered only, if they directly dealt with variables described in humans either corroborating or refuting human data). Obtained data was used to develop the Prediction of Alcohol Withdrawal Severity Scale (PAWSS), in order to assist in the identification of patients at risk for moderate to severe AWS. A pilot study was conducted including every patient, able to provide consent, admitted to the inpatient medicine unit over a 2-week period. Blind to PAWSS results, a separate group of researchers retrospectively examine the medical records for evidence of AWS. Results: The search produced 446 articles describing factors potentially associated with increased risk for AWS, increased severity of withdrawal symptoms, and potential characteristics differentiating subjects with various forms of AWS. A total of ten items were identified as correlated with moderate to severe AWS (i.e., withdrawal hallucinosis, withdrawal related seizures and delirium tremens). During the pilot study, a total of 59 subjects underwent evaluation with PAWSS. In this pilot sample the sensitivity, specificity, positive and negative predictive values of PAWSS were 100%. Discussion: The results of the literature search identified 10 items which may be correlated with risk for moderate to severe AWS. These items were assembled into a tool to assist in the identification of patients at risk. PAWSS is the first validated tool for the prediction of severe AWS in the medically ill, and its use may aid in the early identification of patients at risk for moderate-severe AWS, allowing for prophylaxis against AWS before symptoms develop.

NEUROPATHOGENESIS OF DELIRIUM: A REVIEW OF CURRENT ETIOLOGICAL THEORIES & COMMON PATHWAYS.

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Delirium is a neurobehavioral syndrome caused by dysregulation of neuronal activity secondary to systemic disturbances. Over time, a number of theories have been proposed in an attempt to explain the processes leading to the development of delirium. Each proposed theory has focused on a specific mechanism or pathologic process (e.g., dopamine excess or acetylcholine deficiency theories), observational and experiential evidence (e.g., sleep deprivation, aging), or empirical data (e.g., specific pharmacological agents’ association with post-operative delirium; intra-operative hypoxia). This paper represents a review of published literature and summarizes the top seven proposed theories and their interrelation. The hypotheses included in this literature review include the “Neuroinflammatory”, “Neuronal Aging”, “Oxidative Stress”, “Neurotransmitter Deficiency”, “Neuroendocriene”, “Diurnal Dysregulation”, and “Network Disconnectivity” hypotheses. Most of these theories are complementary, rather than competing, with many areas of intersection and reciprocal influence.
VALPROIC ACID AS AN ADJUNCT TREATMENT FOR HYPERACTIVE DELIRIUM: POSTULATED MECHANISMS OF DELIRIOLYTIC ACTION AND CASE SERIES

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Background: Delirium is the most often encountered psychiatric diagnosis in the general hospital, with incidence up to 85% in the intensive care unit (ICU) setting and significant effects on morbidity and mortality. Antipsychotics are considered first-line pharmacological treatment, but they are not FDA approved and can have significant limitations, including QTc prolongation leading to abnormal heart rhythms, extrapyramidal side effects, and paradoxical exacerbation of agitation. Valproic acid (VPA) is a potential adjunct or alternative treatment. It has significant effects on neurotransmitter systems (e.g. dopamine, glutamate, gamma-aminobutyric acid, and acetylcholine), kynurenine pathway, neuro-inflammation and oxidative stress, all implicated in the pathophysiology of delirium. These effects could be mediated through VPA’s effect on transcription, including inhibition of histone deacytelse (HDAC). Yet, data on the use of this agent in delirium is limited.

Objective: The goal of this presentation is to discuss rationale behind the use of VPA in delirium and to describe a case series of 16 episodes of hyperactive delirium treated with VPA as an adjunct medication.

Methods/Results: We identified 15 patients with 16 episodes of delirium, diagnosed according to DSM-IV-TR criteria and treated with adjunct VPA by consultation-liaison psychiatrist from 8/1/2011 through 8/31/2012. All patients had hyperactive or mixed delirium, according to the Liptzin criteria. The average age was 51.8 (range 25-87). In 13 instances, patients were in ICU. All patients were very medically ill and pharmacological treatment of delirium had been attempted in 15 of these cases with no success, prior to initiation of VPA. After initiation of VPA, 13 patients had resolution of their delirium and all patients had their agitation subsided. The average number of days from VPA initiation to delirium resolution in these 13 patients was 7.2 days (range 2 to 31 days, SD 8). After initiation of VPA, 2 patients had resolution of delirium within 2 days, 4 patients - within 3 days, 2 patients - within 4 days, 1 patient - within 5 days, and 3 patients - equal or greater than 1 day. There were no adverse outcomes directly ascribed to VPA.

Conclusions: VPA has multiple mechanisms of action that we postulate target specific neurotransmitter, oxidative, inflammatory, and transcriptional pathophysiology of delirium. When carefully chosen, VPA can be an effective and well-tolerated treatment option. Further studies are needed.
pressure pain thresholds above and beyond pain catastrophizing. In the current study, additionally, no one to date has tested whether emotion regulation ability predicts how the PCS relates to general emotion regulation ability; have found that the PCS is correlated with negative affect and anxiety, no study to brought to bear during a real or imagined pain experience" (Sullivan et al., 1995, p. 43).

Although designed to assess "the tendency to exaggerate the negative mental set phenomena, but there still is controversy regarding what the PCS actually measures. The Pain Catastrophizing Scale (PCS) has been shown to reliably predict pain thresholds and is a recognized public health epidemic. Identifying risk and protective factors is necessary to manage and prevent sleep disruption. Sleep disorder pathophysiology typically involves cognitive, i.e., worry, and physical, i.e., autonomic nervous system) hyperarousal, suggesting that stress may impact sleep in non-clinical populations. We propose a transactional model of sleep such that daytime stress regulation mitigates stress-related arousal and allows for more restorative sleep; in turn, better overnight restoration replenishes biobehavioral resources needed to manage future stressors. Dispositional mindfulness (DM) is linked to lower stress reactivity, anger and sleep disturbances, and other important mechanisms driving these associations. This study utilized experience sampling and ambulatory physiology to examine associations between DM and affective stability, state mindfulness (SM), executive functioning (EF), pre-sleep arousal (PSA), sleep quality (i.e., actigraphy), and autonomic arousal (i.e., cardiac impedance: IMP; heart rate variability: HRV). Participants (N=46; age 20–45; M=27.5) completed the Five Factor Mindfulness Questionnaire (FFMQ) before beginning two days of experience sampling and ambulatory physiology monitoring. Affect ratings (23 Likert-scale items) and SM (i.e., one item per FFMQ factor) were assessed via palm pilots (48-hour response rates: 8-22; M=13.5; SD=3.4). Within-subjects standard deviations and affect ratings were averaged to create a measure of daily affective stability. EF and PSA were assessed both nights. EF ratings included difficulties with impulsivity, cognitive control, and emotional reactivity (BRIEF, CAARS). PSA was assessed via the Pre-Sleep Arousal Scale. Higher DM predicted greater affective stability (β=−.36, p=.01), better daily EF (β=.40, p=.01), and lower PSA (β=−.30, p=.001). A significant correlation between DM and somatic symptoms was also longer significant (β=−.18, p=.17) when controlling for negative mood stability (β=−.34, p=.017) and reported EF (β=−.36, p=.01). Interestingly, components of SM but not DM predicted objective sleep measures: number of awakenings (awareness: β=−.33, p=.04; non-judgment: β=−.41, p=.01), total sleep time (non-reactivity: β=.30, p=.05), and sleep efficiency (non-judgment: β=.38, p=.01). These findings suggest that daily self-regulation may be an important mechanism by which mindfulness contributes to psychophysiological recovery, lower presleep arousal, and better overnight restoration. Results from objective measures of stress regulation, including cognitive test data and ambulatory IMP & HRV, will also be discussed.

107) Abstract 1062
PAIN CATASTROPHIZING AS A MEASURE OF EMOTION REGULATION: EVIDENCE FROM A PRESSURE PAIN STUDY
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The Pain Catastrophizing Scale (PCS) has been shown to reliably predict pain thresholds and recovery from surgery, along with a number of other pain-related phenomena, but there still is controversy regarding what the PCS actually measures. Although designed to assess "the tendency to exaggerate the negative mental set brought to bear during a real or imagined pain event" (Sullivan et al., 1995, p. 2) it may be measuring emotion regulation ability more generally. Whereas others have found that the PCS is correlated with negative affect and anxiety, no study to date has tested how the PCS relates to general emotion regulation ability; additionally, no one to date has tested whether emotion regulation ability predicts pressure pain thresholds above and beyond pain catastrophizing. In the current study, 118 pain-free undergraduates were asked to complete the PCS along with measures of emotion regulation strategies, emotional control ability, positive and negative affect, and repetitive thought. Participants’ pressure pain thresholds were also assessed. The PCS significantly correlated with emotional control (r = −.37), non-judgment (r = −.38), and total repetitive thought (r = −.23). As in previous studies PCS significantly predicted pressure pain thresholds (β = −0.21, t(165)= −2.32, p < .001), but the relationship became non-significant after including emotional control ability in the model (β = 0.15, t(115) = −1.56, p = .12). The emotional control scale (β = 0.22, t(165) = −2.43, p < .02) predicted pain thresholds better than the PCS and the effect size changed only minimally when entered simultaneously with PCS (β = 0.17, t(115) = −1.71, p = 0.09). Taken together, these findings provide preliminary support that the PCS may largely be measuring general emotion regulation ability and that emotion regulation ability is closely tied to pain sensitivity.

108) Abstract 1750
EXPERIMENTAL MANIPULATION OF A LABORATORY STRESSOR TO VARY AROUSAL: UTILITY ACROSS DEVELOPMENT
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Laboratory stress protocols that elicit psychobiological stress responses in adults are widely available, but whether these procedures, which were developed for adults, elicit comparable arousal in children is less well understood. Moreover, there are no controlled procedures available that allow experimental manipulation of stressor intensity in studies of stress reactivity in children. The aims of the present research were two-fold: first, to compare stress responses to a psychosocial laboratory stressor in children and adults across a wide age range, and second, to develop a low-stress version of a laboratory stress protocol in children. Two studies were completed to address these questions. In the first study, 77 individuals (n = 40 female) ages 7 to 25 years were recruited from a diverse community sample. All participants completed an identical, modified version of the Trier Social Stress Test (TSST-M). Saliva samples were collected before and repeatedly after the stressor to assess cortisol responses. In the second study, 166 individuals ages 7 – 8 (n = 81, n = 43 female) and 12 – 15 (n = 85, n = 44 female) completed either the standard version of the TSST-M or a parallel low stress condition retaining the objective features of the TSST-M but eliminating much of the social evaluation. Study 1 provides no indication of differences in linear or quadratic cortisol trajectories across ages, suggesting comparable cortisol trajectories across ages. Study 2 suggests that participants in the standard TSST condition had more pronounced cortisol responses than those in the low-stress condition (p < .001), and that adolescents had higher cortisol levels and more pronounced cortisol responses to the TSST-M, compared to children. Findings indicate, first, that the TSST-M may be a useful protocol to induce comparable cortisol responses in children and adults and, second, that the low-stress version of the TSST-M may be an appropriate new tool that can be used in experimental studies on stress reactivity in children.

109) Abstract 1272
EMOTIONAL EATING BEHAVIOR BUFFERS PSYCHOLOGICAL STRESS IN BLACK AND WHITE GIRLS
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Objective: Although stress reliably promotes emotional eating behavior, little is known about the potential converse effect: does emotional eating reduce stress? This study tested whether emotional eating has a buffering effect on the relationship between adverse life events and psychological stress. Methods: We tested this relationship in the NIHBI Growth and Health Study, comprising 2,379 Black and White girls aged 11–15. Cross-sectional and 3-year longitudinal analyses, we measured emotional eating as a moderator of adverse life events on two outcomes: perceived stress and subjective emotional impact of adverse live events. Results: In cross-sectional analyses, high emotional eating buffered the effect of adverse life events on both perceived stress (p = .015) and subjective emotional impact of adverse life events (p = .033) at age 19. Similarly, in longitudinal analysis, high emotional eating (age 18) buffered the effects of adverse life events (age 17) on both perceived stress (p = .017) and subjective emotional impact of adverse life events (p = .014) at age 19. These effects differed by race; whereas high emotional eating buffered perceived stress in White girls only (p = .011 cross-sectionally and p = .002 longitudinally), it buffered subjective emotional impact in Black girls only (p = .016 cross-sectionally and p = .015 longitudinally). Finally, compared to their non-agoraphobic counterparts. The cardioprotective biomarker adiponectin was significantly elevated in agoraphobic individuals. Conclusions: Our results suggest increased low-grade inflammation in agoraphobia. If these results are confirmed in longitudinal studies, such an increase in inflammatory activation might possibly link agoraphobia with an increased risk of cardiovascular disease.
110) Abstract 1243

THERAPEUTIC MECHANISMS OF CHANGE IN BREAST CANCER SUPPORT GROUPS: DOES WHAT YOU TALK ABOUT IN SESSIONS MATTER TO IMPROVEMENT IN TRAUMA SYMPTOMS AND EMOTIONAL SELF-EFFICACY?

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Purpose: The objective of this overview is to present data pertinent to therapeutic mechanisms in primary breast cancer support groups, comparing Supportive-Expressive Group Therapy (SET) with 2 Community groups. These data demonstrate how topic discussions in group therapy help women diagnosed with early stage breast cancer to improve trauma symptoms, and enhance their emotional self-efficacy and coping skills.

Methods: Using archived data from a randomized study of a 4-month weekly group intervention, (N=59) with self-report follow-ups at baseline, 4, 8, and 12 months, Supportive-Expressive therapy (SET) was compared with Community Groups for early stage (1-3) breast cancer. We coded the topics discussed in each session (94 tapes), and conducted multiple regressions with Group, specific topics, and their interactions to predict change over time in trauma symptoms (PLC), Emotional Self-Efficacy (SESES), and Fighting Spirit (MAC).

Results: Results indicated that trauma symptoms decreased over time the more women discussed “Negatively Valenced” or difficult topics, particularly in SET groups (p=.02). Emotional self-efficacy scores improved, regardless of model or wave, the more that death was discussed (p<.001). Additionally, the more women talked about “Involuntary Lifestyle Changes” the greater the emotional self-efficacy in SET and one but not the other Community Group. Lastly, regardless of condition, the more that deliberate life reordering was discussed, the more improvement in fighting spirit scores (p=.01). Conclusions: Implications include encouraging therapists to facilitate more difficult discussions about death, involuntary lifestyle changes, and deliberate life reordering within breast cancer support groups in order to improve trauma symptoms, emotional self-efficacy and fighting spirit.

111) Abstract 1177

THE GRACE (GRATITUDE RESEARCH IN ACUTE CORONARY EVENTS) TRIAL: DESIGN AND BASELINE DATA

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Background: Gratitude is a common and powerful psychological state in patients suffering acute medical events. Gratitude has been linked to physical activity and more normal autonomic function in small studies of healthy persons, and other positive constructs (e.g., optimism) have been linked to superior cardiac outcomes, but the gratitude-health link has never been explored in patients with medical illness. Methods: The GRACE (Gratitude Research in Acute Coronary Events) trial is an observational study at an urban academic medical center examining the prospective association between gratitude (measured via the Gratitude Questionnaire-6) at 2 weeks post-acute coronary syndrome (ACS) and improvement of specific outcome measures between 2 weeks and 6 months. Such outcome measures include biomarkers of cardiac prognosis (e.g., N-terminal pro-brain natriuretic peptide), adherence to health behaviors (measured by self-report and accelerometer), and measures of function and health-related quality of life. Connections between gratitude and outcome measures will be measured via linear regression and random effects models as appropriate, and the study was powered on enrollment of 150 participants. Results: Enrollment was completed at target goals. The mean age of participants was approximately 60 years, and more than three-quarters of patients were men. This was the first ACS for approximately 60% of participants. Participants’ baseline ratings were consistent with moderate adherence to health behaviors, moderate functional capacity, and ratings of health-related quality of life similar to prior studies of the GRACE. Mean baseline radiation, and patients with Q wave MI were consistent with such ratings in non medically ill populations. Conclusions: The GRACE study will explore innovative questions regarding the prospective connections between gratitude and key biological and behavioral markers of health in ACS patients.

112) Abstract 1484

REST assured: CHANGES IN SLEEP and METABOLISM FOLLOWING MINDFULNESS-BASED STRESS REDUCTION (MBSR)

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Given the known links between psychological stress, sleep disturbance, metabolic dysregulation, and cardiovascular disease, we conducted an open trial of Mindfulness-Based Stress Reduction (MBSR) for healthy but stressed adults who reported trouble sleeping (n=64, F=67%, white=84%, aged 22-64, mean Pittsburgh Sleep Quality Index [PSQI] global score = 5.39). We hypothesized that mindfulness training may improve sleep quality & quantity and buffer metabolic responses to acute emotional stress. We further predicted that individual differences in improved sleep, mindfulness, and metabolic function would be significantly correlated. Following MBSR, there were significant improvements (p<.05) in subjective sleep quality, sleep duration, sleep latency, sleep efficiency, sleep disturbance, daytime dysfunction, and use of sleep medication as measured by the PSQI. Sleep diaries revealed significant pre-post changes (p<.05) in total sleep time, sleep onset latency, sleep efficiency, and wakefulness after sleep onset (WASO). There were no significant mean changes, however, on objective measures of sleep quality and quantity and in fasting insulin. Changes in fasting of mindfulness were significantly correlated with actigraphy-derived sleep efficiency (r's = -.30 to -.42, p's<.05). Pre- and post-MBSR lab assessments showed no significant changes in baseline (fasting) or stress-induced (30-min post anger recall) levels of glucose, total cholesterol, HDL, ketones, lactate, free fatty acids, triglycerides, IL-6, or C-reactive protein. To try and identify a metabolic signature of successful responders to MBSR, we analyzed resting and stress-induced nontargeted metabolic profiles for a subsample of 8 participants with the strongest improvements in sleep quality (PSQI scores). These analyses showed that improved sleep was marked by significant changes (p<.01) in the following metabolites: beta-hydroxybutyrate, lactate, glyceral, benzox, glycine, ethanolamine, and Vitamin E. These results support the hypothesis that MBSR can improve subjective sleep quality, but may not influence objective sleep measures or standard metabolic blood chemistry in healthy volunteers. Additional research is warranted to further explore metabolic signatures that could help identify who responds best to mindfulness training in terms of improved sleep quality, with possible implications for understanding how MBSR could potentially reduce the risk of cardiometabolic disease in people with stress-related sleep disturbance.

113) Abstract 1335

PHYSIOLOGICAL RESPONSES DURING PARENT-ADOLESCENT DISCUSSIONS: ASSOCIATIONS WITH SCAFFOLDING BEHAVIORS AND RELATIONSHIP QUALITY

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Parents and adolescents commonly engage in discussions of stressful experiences. However, little is known about the features of these conversations that may have implications for health. One hundred five adolescents (ages 14-17) and their parents engaged in conversations about two challenging events, with parental contributions to the discussions coded for four scaffolding behaviors (reiterations, negations, move alongs, and new interpretations). Systolic blood pressure (SBP), diastolic blood pressure (DBP), and heart rate (HR) were measured at baseline and throughout the conversation. Parent-reported relationship quality was also assessed. Results indicate that negative scaffolding behaviors (e.g. parents negations of child utterances) were associated with increased physiological reactivity, whereas positive scaffolding behaviors (e.g. move alongs) were associated with decreased reactivity. Furthermore, relationship quality moderated several associations, such that children in higher quality parent-child relationships showed greater blood pressure reactivity to reiterations and lower reactivity to new interpretations, but those in lower quality relationships demonstrated the opposite reactivity patterns. These findings suggest that specific aspects of parent-child interactions contribute over the short term to physiological responses to these interactions in ways that may have implications for long-term health outcomes.
PROVINCE-LEVEL INCOME INEQUALITY AND HEALTH OUTCOMES IN CANADIAN ADOLESCENTS
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Greater income inequality – the gap between the rich and the poor – has been linked to individual health outcomes, particularly self-rated health and mortality in adults. Previous research in adolescents has shown inconsistent associations, which may vary based on the health outcome studied. Using a within-country design, the aim of the current study was to examine the effects of income inequality across multiple health outcomes and health behaviors. We tested both the contextual effect of provincial income inequality on adolescent health and the moderating effect of provincial income inequality on individual socioeconomic gradients in health. Participants (aged 12-17 years; N=11,899) from Cycles 4 and 7 of the National Longitudinal Survey of Children and Youth across the ten provinces in Canada were included. The reviewed measures included educational attainment, family income level, and income inequality (using the Gini index) and mean income at the province-level. Health outcomes were measured across a number of domains of adolescent health, including self-rated health, mental health, diet and exercise health behaviors, substance-related health behaviors, and physical health. Hypotheses were tested using multi-level modelling (participants nested within provinces). Results indicated a main effect of income inequality for certain health outcomes, namely injuries (β=-0.05, p<0.03), general physical symptoms (β=-0.05, p<0.05), and limiting conditions (β=-0.05, p<0.03), after controlling for provincial income, household income, and parental education. Income inequality was found to have a moderating effect on individual socioeconomic gradients, with steeper gradients observed as income inequality increased for limiting conditions (β=-0.04, p<0.01), hyperactivity/inattention (β=-0.02, p=0.04), and conduct problems (β=-0.02, p<0.05). The current study adds to the literature by examining the independent effects of income inequality on multiple domains of adolescent health. These findings suggest that income inequality may have different effects across health outcomes, which has implications for understanding socioeconomic inequalities in health during adolescence.

HIERARCHY AND HEALTH: EFFECTS OF RELATIVE STATUS, PARTNER DOMINANCE, AND EVALUATIVE THREAT ON PSYCHOBIOLOGICAL REACTIONS DURING SOCIAL INTERACTION
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Evidence for the impact of early life stress (ELS) on adult health has been accumulating, with links found to numerous outcomes (e.g., cardiovascular disease, tuition and healthcare costs). This is consistent with the ELS hypothesis that healthy individuals have better reactivity and resilience to stress than those who experienced adversity. The optimal measurement strategy is inclusive (measuring abuse, neglect, common adversities, SES, and parental warmth) but also minimizes participant burden. None of the reviewed measures fully meet this need. Researchers have compensated by using multi-level modelling (participants nested within provinces). Results indicated a main effect of income inequality for certain health outcomes, namely injuries (β=-0.05, p<0.03), general physical symptoms (β=-0.05, p<0.05), and limiting conditions (β=-0.05, p<0.03), after controlling for provincial income, household income, and parental education. Income inequality was found to have a moderating effect on individual socioeconomic gradients, with steeper gradients observed as income inequality increased for limiting conditions (β=-0.04, p<0.01), hyperactivity/inattention (β=-0.02, p=0.04), and conduct problems (β=-0.02, p<0.05). The current study adds to the literature by examining the independent effects of income inequality on multiple domains of adolescent health. These findings suggest that income inequality may have different effects across health outcomes, which has implications for understanding socioeconomic inequalities in health during adolescence.

SUBJECTIVE SOCIOECONOMIC STATUS IS ASSOCIATED WITH PRECLINICAL ATHEROSCLEROSIS
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There is a clear socioeconomic gradient in atherosclerotic cardiovascular disease (CVD). Recent evidence suggests that subjective socioeconomic status (SES) is a better predictor of cardiometabolic risk than conventional (objective) SES (e.g., education, income). This suggests that subjective SES may relate similarly to preclinical signs of atherosclerotic CVD. Accordingly, we tested the association of subjective SES with carotid artery intima-media thickness (IMT, in mm), a surrogate marker of preclinical atherosclerosis. Participants were 407 community volunteers (30-54 years; 52% female; 17% African American) who participated in either of two studies on the biological and behavioral correlates of CVD risk. Participants were free of CVD and other prevalent illness. Because IMT and SES were comparably assessed across studies, the two samples were analyzed together, controlling for study cohort. Subjective SES was measured using the MacArthur Scale of Subjective Social Status, a visual ladder on which participants indicate their perceived social standing relative to others in the USA. Objective SES was assessed by education and family income. IMT was assessed by ultrasonography and IMT values were averaged across common, bulb, and internal carotid artery segments. A 2-step hierarchical regression analysis showed that lower subjective SES was significantly associated with greater IMT after adjusting for age, sex, race and study (F = 6.33, change in R² = .01, p = .01). This association remained significant after adjusting for BMI, family income, and other objective SES measures. The association of subjective SES with IMT was still significant (β = 4.05, change in R² = .01, p = .004). In a final 3-step regression, education and family income were added in a second step with subjective SES on the third step. In this model, education and income did not account for significant variance in IMT (p > .05), but the addition of these objective SES measures attenuated the association between subjective SES and IMT (β = 1.87, p = .03). These findings support the potential utility of subjective SES in studies of CVD risk.

VALIDATION OF DRIED BLOOD SPOTS FOR CARDIOVASCULAR DISEASE BIOMARKERS
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Dried blood spot (DBS) methodology offers advantages over gold-standard venipuncture methods, although DBS validation data for cardiovascular disease (CVD) biomarkers are limited. Compared to venipuncture, the DBS method is less burdensome to participants and less expensive in terms of processing and storage.
costs. These benefits make DBS an attractive option for use in large-scale, community-based studies or with vulnerable populations. In the present study, we quantified study-specific DBS-to-serum equivalency values to establish the clinical relevance of selected DBS-derived CVD risk biomarkers, including total cholesterol (TC), high-density lipoprotein (HDL) cholesterol, and C-reactive protein (CRP). We then validated these DBS-to-serum equivalencies against gold-standard venipuncture levels for each biomarker.

We collected concurrent venipuncture serum and finger-stick DBS blood samples from 150 participants (mean age = 46.6 ± 13.83 years, 89.3% female), which were assayed in CLIA-certified and DBS laboratories, respectively. DBS-to-serum equivalency values for TC, HDL cholesterol, and CRP were determined using linear regression analyses. Venipuncture values were then regressed on the DBS-to-serum equivalencies to determine clinically-relevant scaling. Overall, bias and limits of agreement of the DBS method versus gold-standard venipuncture were assessed for each biomarker using Bland Altman plots.

Linear regression of gold-standard venipuncture values on study-specific DBS-to-venipuncture equivalency values yielded R2 values of 0.484, 0.118, and 0.666 for TC, HDL, and CRP, respectively (p<0.001). Bland Altman plot comparisons suggest minimal overall bias and good agreement for TC and HDL. For CRP, bias and agreement were good in normal ranges, although the DBS method increasingly underestimated venipuncture-derived values at higher mean values.

Using study-specific equations, raw DBS values can be successfully translated to clinically relevant serum-equivalency values. Overall, these DBS-to-serum equivalencies demonstrate strong agreement with gold-standard venipuncture values for key CVD risk biomarkers, supporting DBS as a valid and viable alternative to traditional blood draws. Given the advantages of DBS compared to venipuncture for population studies, implementation of DBS methods may reduce barriers to collecting and analyzing CVD risk biomarkers in large-scale, community-based studies.

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119) Abstract 1118

"I EAT WHEN I'M UPSET": THE EFFECT OF PRIMARY REWARD ON NEGATIVE AFFECT

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Many people cope with frustration and negative affect by indulging in behaviors that they believe may make them feel better, including eating sugary foods. These sweet foods, such as chocolate, may make people feel better in the moment because they activate reward processing brain regions (Kringelbach, 2004). Based on prior research showing that rewarding stimuli can reduce physical pain and stress reactivity, we explored whether a reward (eating sweets) has a direct effect on reducing negative affect in response to a frustrating experience. In addition, animal models suggest that there are two components to reward: wanting and liking (Berridge et al., 2009). We thus designed two experiments to test if one or both components of reward processing could lead to reductions in negative affect following a frustrating cognitive task (the Stop Signal Task, SST, which requires participants to inhibit a motor response when a signal occurs). In Study 1, participants received a reward, chocolate, (liking while completing many rounds of the SST reported significantly lower levels of negative affect compared to rounds when they did not receive a reward. However, in Study 2, when participants were shown a reward (chocolate) but told they would receive it after they completed the SST (wanting), they did not report lower levels of negative affect compared to rounds where they were not told they would receive a reward. This suggests that the liking component of reward may be a route to reduce negative affect in the face of frustration. This helps explain why people may turn to rewarding things when they are feeling distressed, including sweet foods and drugs (both known reward stimuli).

However, other things that activate reward processing may also lead to reductions in negative affect. This could have health implications as it may point to alternative treatments that sweet foods do."
tolerance to shift work (for a review, see Saksvik et al., 2010). However, it is likely that sleep quality in shift workers is also affected by the broader social context. In particular, spouses of shift workers might play a role in ameliorating the damaging effects of shift work on sleep quality. In order to examine spouses’ roles in predicting neuroticism and trait rumination were significantly associated with low sleep quality over the week. We also found evidence that spousal factors were important in predicting paramedic sleep quality. More specifically, paramedics with highly neurotic spouses reported lower sleep quality on average relative to paramedics with spouses who reported low neuroticism, even after controlling for neuroticism. Additionally, paramedics with spouses who reported low neuroticism, even after controlling for neuroticism and trait rumination were significantly related to paramedic reported sleep quality. For example, when spouses reported greater resentment before bed, highly neurotic paramedics reported lower sleep quality; however, less ruminative paramedics were not affected by spousal before bed resentment. This effect was found controlling for the previous day’s sleep quality, paramedic’s own resentment, and gender. Together, these findings underscore the importance of studying sleep within a broader social framework that incorporates dyadic factors.

123) Abstract 1058
SMOKING STATUS AND SURVIVAL IN THE WAITING FOR A NEW HEART STUDY
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Smoking increases the risk of adverse cardiac events and mortality in cardiac patients. Fortunately, quitting can significantly reduce mortality risk. In a review of 20 prospective cohort studies, quitting smoking reduced the risk of death among smokers with cardiovascular disease by 36% compared to those who continued to smoke. The importance of quitting smoking has also been recognized for heart transplant (HTx) patients. Guidelines for HTx candidacy recommend that patients should be smoke-free for at least 6 months prior to HTx. Compliance with these guidelines is important, as smoking prior to HTx has been linked to reduced rates of survival post-HTx. Very little is known about smoking among patients waiting for a HTx. We examined the association of smoking status to survival in 316 patients enrolled in the Waiting for a New Heart Study, a multisite observational study of adult (>18 years) heart failure patients (aged 53±11; 18% female) who were newly listed for HTx with Eurotransplant International Foundation between April 2005 and December 2006 at 17 hospitals. Participants were asked to report their smoking habits at time of listing. During follow-up (median=326, range 5–1849 days), there was a total of 53 (17%) deaths on the waiting list: of those who never smoked (n=76), 14% died, among former smokers (n=228), 18% died, and among the 12 patients who still reported smoking at time of listing, almost half (63%) died. Multivariate Cox regression models controlling for demographic and medical characteristics revealed that smoking at time of listing was associated with a significantly higher rate of mortality compared to never smoking (HR=3.3; p=0.03). To conclude, smoking at time of listing appears to increase risk for mortality during the waiting period. This study reinforces the actual importance of quitting smoking prior to HTx to achieve smoking cessation. Considering the fact that all deaths among current smokers occurred during the first two years on the waiting list, these efforts should start as early as possible during the clinical course of transplantation.

124) Abstract 1249
THE RELATIONSHIP BETWEEN SELF-RATED HEALTH, HEART RATE, AND HEART RATE VARIABILITY IN HEALTHY YOUNG ADULTS
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Self-rated health has been shown to be a correlate of a variety of objective measures of health including chronic conditions, cardiovascular disease, and mortality. Many researchers argue that self-rated health represents a unique dimension and indicator of health status. Resting heart rate (RHR) and heart rate variability (HRV) are two cardiovascular parameters that are similar in importance indicators of future health. For example, high RHR and low HRV have been shown to be independent predictors of congestive heart failure, autonomic neuropathy, and cardiovascular mortality. However, most of these studies have examined these relationships in older populations. Few studies have examined the relationship between self-rated health and physiological indicators of health in a healthy sample of young adults. The current study examines this association in a sample of 136 college students (mean±SD=20.7±3.5 years, 66% female). Participants were measured their current health and their health compared to others on a Likert scale (1=poor to 5=excellent), as well as overall scores on the CHIPS (Cohen-Hoberman Inventory of Physical Symptoms) scale, which measures a variety of health symptoms. RHR and HRV were measured during a five minute resting period. After adjusting for potential health-relevant covariates, measures of self-rated health were significantly correlated with both RHR and HRV. Low RHR were associated with higher health ratings generally (ß =-.197, p=.029) as well as higher health ratings compared to others (ß =-.204, p=.027). Similarly, low HRV was associated with higher CHIPS symptom reports (ß =-.209, p=.020). Results indicate that, even in a young, healthy sample, self-rated health is a significant indicator of autonomic nervous system function. These findings suggest that RHR and HRV may be part of a set of factors that underlie the basis for self-rated health, well before cardiovascular illness is present.

125) Abstract 1093
FEAR OF PAIN IMPACTS THE FREQUENCY WITH WHICH HEALTHY INDIVIDUALS ENGAGE IN PHYSICAL EXERCISE
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The Centers for Disease Control and Prevention recommends that the average adult participate in “a minimum of 30 minutes of moderate-intensity physical activity…most days of the week.” Despite this recommendation, the Surgeon General’s Report on Physical Activity: Fear of Pain Questionnaire III (McNeil & Rainwater, 1998) which yielded a total score and subscale scores for minor, severe, and medical pain; Brief Approach/Avoidance Coping Questionnaire (Finset et al., 2002); and a single item regarding the number of days in a typical week that they engage in at least 30 minutes of physical activity. Preliminary analyses suggested the need to control for age, sex, depressive symptoms, and previous injury in analyses of activity. After controlling for relevant background variables, regression analyses revealed only the fear of minor pain to be significantly related to participants’ frequency of physical activity (ß=1.91, p=.013). In support of the fear-avoidance model, the fear of minor pain mediated the relationship avoidance coping and frequency of physical activity (ß=1.71, p=.037 to .053). Furthermore, these findings suggest that the fear of pain associated with minor stimuli (e.g., biting tongue, burning finger with a match) is significantly related to the frequency with which healthy individuals participate in physical activity. Therefore, interventions to promote physical exercise among healthy individuals should consider methods for addressing their fear of pain.

126) Abstract 1232
BURNOUT AND NARCISSISM: A VIEW BEYOND JOB STRESS AND WORK-ENGAGEMENT
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Objective: Work—a frequent source of stress in our “fatigue society”—has a crucial influence on the development of burnout. Furthermore, the relationship between burnout and depression is well illustrated. The actual impact of burnout and depression is in the focus of the actual research, but other risk factors, including personality, might be equally important. For instance, previous research showed a direct link of nervousness with exhaustion, of striving for dominance with depersonalization, and of inhibition, openness and irritability with reduced personal accomplishment. We hypothesized that narcissism characterized by altered emotion regulation (i.e., increased affective resonance), is associated with higher risk of professional burnout. Methods: Study participants were 315 employees, referred for in-patient treatment to a hospital specialized for the treatment for job-stress related disorders. Burnout was assessed with the Maslach Burnout Inventory (MBI) and depression with the Beck Depression Inventory (BDI). To assess narcissism, we applied the Narcissistic Personality Inventory (NPI). The NPI-20 provides a total score as well as scores for subscales for four narcissism dimensions: “threatened self,” “classical narcissistic self,” “idealized self,” and “hypochondriacal self.” Results: There was a bivariate correlation between the total MBI score and the total NPI-20 score (r=0.392, p=0.001) but also with all NPI-20 subscores (r=0.348, r=0.216, r=0.230, r=0.174, <0.001). MBI and BDI total scores were also correlated with each other (p=0.001). Controlling for age and gender, sociodemographic status, depressive symptoms, sleep quality, and perceived stress, the total MBI score (but non of the covariates) remained to be significantly associated with the NPI-20 total score (p<0.001). Conclusions: These findings emphasize the important contribution of personality factors, especially of narcissism, beyond work-related stressors and depressive symptoms (1996) noted that related research has far reaching consequences for future research and for therapeutic interventions.

127) Abstract 1397
POOR SUBJECTIVE SLEEP QUALITY AND QUANTITY ARE LINKED TO BLUNTED CORTISOL STRESS RESPONSES IN MEN
Sarah M. Bassett, B.A., Danielle Gianferrante, M.A., Sarah Lupin, M.A., Jutta M. Wolf, PhD, Psychology, Brandeis University, Waltham, Massachusetts

Poor sleep has been consistently found to be associated with increased risk for depression. While stress has been implicated in an underlying mechanism, to date studies examining the role of stress on sleep and emotional, physiological, and psychological stress responses are lacking. However, dysfunctions in acute cortisol stress responses are a predictor of negative health outcomes and as such have been linked to depressive symptoms. Hence, the current study aimed at filling this gap in the literature.

For this, we exposed 49 undergraduate students to the Trier Social Stress Task and assessed sleep quality and quantity (PSQI), depressive symptoms (CESD), vital exhaustion (MVEES) as well as maximum cortisol stress responses based on repeated saliva sampling throughout the study protocol. All analyses controlled for BMI. Regression analyses revealed that, as expected, overall poor sleep quality as assessed by the PSQI was associated with increased depressive symptoms (β=0.53, p<.001). Further, we found that in men, lower self-reported sleep quality was linked to blunted cortisol stress responses (β=0.38, p<.001) as well as higher vital exhaustion (β=0.38, p<.001). Additionally, as males’ self-reported sleep duration decreased, so did their cortisol stress responses (β=0.43, p<.001). Importantly, blunted cortisol stress responses in this study were linked to higher depressive symptoms (β=0.29, p=.01).

In summary, our findings emphasize the importance of differentiating between objective and subjective sleep parameters when assessing physiological stress pathways as potential links between poor sleep and mental health outcomes. More specifically, only perceived poor sleep quality as well as perceived sleep deprivation (low numbers of average hours of sleep) were linked to blunted cortisol stress responses in men. Such dysfunctions have repeatedly been linked to negative health outcomes, including depression, an association confirmed in the present study. Lastly, our findings suggest gender-dependent pathways underlying sleep-related risk for depression.

128) Abstract 1068

A PILOT TRIAL OF LIGHT THERAPY FOR POST-TREATMENT CANCER-RELATED FATIGUE

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Background: Cancer-related fatigue (CRF) is one of the most prevalent and distressing symptoms experienced by individuals and is associated with approximately 33% of patients continuing to experience fatigue for months or years following treatment completion. Despite its prevalence, CRF remains relatively undertreated and poorly understood. Furthermore, treatment regimens often require complex behavior change. One approach that has been demonstrated as a safe, inexpensive, and easy-to-administer alternative is bright white light therapy. Preliminary reports suggest that light therapy may prevent the increased fatigue associated with chemotherapy. It follows that light therapy may also provide additional benefits for cancer survivors who continue to experience symptoms of fatigue after treatment completion.

Aim: To evaluate the feasibility of a one-month light therapy treatment regimen and the effects on fatigue, mood, sleep quality, and quality of life (QOL) in a sample of post-treatment cancer survivors with CRF.

Design and Methods: Participants were men and women over 18 years of age with non-metastatic cancer and treatment completion at least 3 months prior. They were required to meet the criteria for CRF as defined by the ICD-10. If eligible, participants were randomly assigned to receive either bright white light (BWL) or dim red light (DRL) treatment and completed baseline and post-treatment measures of fatigue, mood, sleep quality, and QOL. Patients and researchers were blinded to treatment allocation. The Litebox treatment devices were used every morning for 30 minutes upon awakening for 28 days.

Results: Eight participants were randomized to receive either BWL (n=4) or DRL (n=4). The majority of participants were women and ranged in age from 35 to 74 years (M=57, SD=11). The amount of time since last cancer treatment ranged from 3 months to 5.4 years (M=26, SD=26). Participants in both groups complied with the treatment protocol. Preliminary analyses suggested that participants in both the BWL and DRL treatment groups showed changes in fatigue, (F(1,6)=8.89, p=.025), d=.90, sleep quality, (F(1,6)=12.27, p=.013, d=.62, and QOL, (F(1,6)=5.76, p=.053, d=.44, from baseline to post-treatment.

Conclusions: These results indicate that the light therapy intervention is feasible and acceptable to cancer survivors with CRF. Participants in both treatment groups were compliant with the treatment protocol, adhered to the treatment regimen, and reported a reduced number of days and time. Analysis of the preliminary data suggested that both groups showed changes in some of the outcome measures; however the sample size was too small and there was insufficient power to reach conclusions about treatment efficacy. Based on the feasibility results, a larger trial is currently underway which is focusing on potential protective factors against disease development and progression. Gratitude and spirituality are two such positive psychological factors. In this study gratitude was measured using the Gratitude Questionnaire-Six Item Form (GQ6) and spirituality was measured using the Functional Assessment of Chronic Illness Therapy Well-Being Scale (FACTWBS).

October 19, 2019

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Sarah M. Bassett, B.A., Danielle Gianferrante, M.A., Sarah Lupin, M.A., Jutta M. Wolf, PhD, Psychology, Brandeis University, Waltham, Massachusetts

THE INTERACTION BETWEEN SPIRITUALITY AND GRATITUDE IS ASSOCIATED WITH LOWER ST2 IN STAGE B ASYMPTOMATIC HEART FAILURE PATIENTS

Kathleen L. Wilson, MS, Meredith A. Pang, PhD, Laura Redwine, PhD, Kelly Clineh, BA, Psychiatry, Milagros Alvarez, BS, Psychology, University of California San Diego, La Jolla, California, Navaid Iqbal, MD, Psychiatry, Veterans Administration San Diego, La Jolla, California, Fatima Iqbal, MD, Psychiatry, Veterans Administration San Diego, La Jolla, California, Brian Knight, BS, Psychiatry, Veterans Administration, La Jolla, California, Alex Wood, PhD, Psychology, University of Sterling United Kingdom, Stirling, Stirling, United Kingdom, Paul J. Mills, PhD, Psychiatry, University of California San Diego, La Jolla, California, America College of Cardiology / American Heart Association asymptomatic stage B heart failure patients are at high risk for progressing to symptomatic stage C heart failure. Positive psychological traits are emerging as potential protective factors against disease development and progression. Gratitude and spirituality are two such positive psychological factors. In this study gratitude was measured using the Gratitude Questionnaire-Six Item Form (GQ6) and spirituality was measured using the Functional Assessment of Chronic Illness Therapy Well-Being Scale (FACTWBS). The study sample included 62 patients (95% male) with a mean age of 66.5 years (SD 10.5), mean BMI of 30.0 kg/m2 (SD 4.8) and percent mean left ventricular ejection fraction (%LVEF) of 64.9 (SD 9.0). A series of multiple linear regression equations were constructed in which ST2 was predicted from age, sex, BMI, and %LVEF in one block, followed by total Q60 score, total FACTsp (SPS), FACTWBS meaning and pace subscale, GQ6Xfaith subscale, the interaction terms GQ6XSPS, GQ6Xmeaning/peace, or GQ6Xfaith in the second block. There was a significant inverse relationship between GQ6XSPS (β =.266, p=.044), GQ6Xfaith (β =.274, p=.028) and GQ6Xmeaning/pace (β =.305, p=.019) and ST2. No significant associations were found between GQ6, SPS, meaning/pace or faith individually and ST2 indicating that higher gratitude or higher spirituality alone is not enough to affect ST2 level however; the multiplicative effect of both gratitude and spirituality is. Future interventions aimed at fostering and increasing both spirituality and gratitude in patients’ lives may be a potential treatment in this population.

130) Abstract 1299

THICK HEADED MAY NOT BE THAT BAD: CORTICAL THICKNESS, BLOOD PRESSURE, AND DEPRESSION

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Age and disease degrade the structure of the brain. Automated analysis of one such feature, thickness of the cortical mantle, has recently become feasible due to solving the movements (compensation, compensation) that may be due to cardiovascular risks and suggest that both age and hypertension are related to cortical thickness. We asked whether non-hypertensive blood pressure (seated systolic BP, 93-139 mmHg) would be related to cortical thickness and if this in turn might be related to cognitive performance. A community sample of 215 middle aged (35-60 years) participants contributed structural magnetic resonance imaging images of their brains (magnetization-prepared rapid gradient echo images, MPRAI) and received a 2 hour neuropsychological examination. Neuropsychological data were reduced to unit-weighted factor scores (via principal components, varimax rotation) for verbal memory, perceptual-motor speed, mental concentration, sequential pattern detection, and verbal memory. Within-group, intercorrelation of cortical thickness was significantly, but not highly related to systolic blood pressure (r=.15, p=.03). Correlations of similar magnitude/significance were observed between cortical thickness and verbal memory (r=.15), perceptual-motor speed (r=.19), sequence recognition (r=.14) and Stroop interference (r=.23). Multiple regression testing the influence of covarying age, gender and blood pressure on these correlations. The correlations with the Stroop interference were consistently robust and significant. Other correlations were reduced to some degree though remaining significant (p<.05) or marginally significant (p<.10). Despite the joint correlation of cortical thickness with blood pressure and cognition, these results fail to suggest that blood pressure mediates the relationship of cortical thickness to cognition (or that cortical thickness mediates the relationship of blood pressure to cognition). The results do suggest that relationships between blood pressure, brain structure and cognition emerge prior to the onset of essential hypertension. Pre-hypertensive variation in blood pressure may influence the brain well prior to any effects of sustained peripheral hypertension.

131) Abstract 1809

NEUROCOGNITIVE CHANGES ASSOCIATED WITH 6 TO 9 WEEKS OF TRANSCRANIAL MAGNETIC STIMULATION IN THE TREATMENT OF MAJOR DEPRESSIVE DISORDER

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Depression is associated with neurocognitive deficits that lead to significant functional impairments and compromised quality of life. Furthermore, 30% of the depressed population is considered treatment-resistant to traditional treatment modalities leaving them with limited alternatives to treat these deficits. Within the last decade repetitive Transcranial Magnetic Stimulation (rTMS) has been a major focus of research as it has been shown to be an effective, safe, non-systemic, and non-invasive alternative for this treatment-resistant population. Furthermore, past studies investigating the neurocognitive effects associated with rTMS, have offered surfacing evidence that rTMS is not associated with adverse neurocognitive

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visits, one before any cancer treatment and the other 6 months after the completion of surgery, radiation, or chemotherapy, whichever came last. Women completed the treatment of treatment-resistant depression leads to improvements in neurocognitive test scores (i.e., Executive Functioning, Complex Attention, Cognitive Flexibility) from pre-treatment to post-treatment. The study further aimed to characterize the trajectory of neurocognitive changes that takes place during the course of treatment by examining neurocognitive score differences from pre-treatment to 2 weeks to post-treatment. Specifically, do improvements exist after 2 weeks of treatment, and, if so, do these improvements stabilize or further increase.

Results revealed significant improvements for all three neurocognitive domains from pre-test to post-test. However, although results of the present study did reveal significant pre- to post-treatment improvements in neurocognitive scores, these improvements were found to take place predominantly within the first 2 weeks of treatment, with apparent stabilization in neurocognitive performance thereafter. Further analyses revealed that neurocognitive improvements took place independent of improvement in depression scores. The present study was able to contribute to the current empirical knowledge maintaining rTMS’ safe and beneficial use in the treatment of treatment-resistant depression (TRD). This study provides further support for the use of rTMS as a viable treatment alternative provided that rTMS has been shown to preserve and facilitate cognitive functions.

132) Abstract 1658 QUALITY OF LIFE, EMOTIONAL IMPACT AND PERCEIVED BURDEN IN PEOPLE WITH DIABETES AND THEIR FAMILY MEMBERS: FRENCH DATA FROM DAWN2 STUDY
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Background: Second Diabetes, Attitudes, Wishes and Needs (DAWN2) study is an international survey carried out in 2012 and supported by Novo Nordisk, aimed at assessing potential barriers to/facilitators of active and successful management of diabetes in people with diabetes (PWD) and in families (FM) and assessing potential barriers to/facilitators of active and successful management of diabetes in people with diabetes (PWD) and in families (FM).

Objective of this part of the study: to compare psychosocial aspects of diabetes according to the type of diabetes, in PWD and FM.

Methods: In France, 500 PWD/80 type 1 (T1) (38% of whom were aged 18 to 39), and 420 type 2 (T2) (53% aged 18 to 39), including 100 non-medicated (NMT2) and 150 insulin-medicated (IMT2) were interviewed and/or filled out several online questionnaires, including the WHO-5 Well-Being Index, the WHO-Quality of Life BREF scale, the 5-item Problem Areas In Diabetes (PAID-5) and the Dawn Impact Diabetes Profile (DIDP). 120 FM (66 of insulin medicated (FMM) and 54 of non insulin medicated (FMNIM) diabetes) also answered similar online questionnaires.

Results: 9 to 13% of PWD and 8 to 13% of FM, according to patients’ clinical category, presented with an altered quality of life at WHO-QOL-BREF and 36 to 49% of PWD and 30 to 40% of FM were characterized by a depressive trend at WHO-5. Between 35 and 50% of PWD could be considered as suffering from an important diabetes-related emotional distress at PAID-5 and 59% to 65% of FM perceived the illness of their relative as a burden. The impact of diabetes was not limited to the emotional field, but affected especially relational life and leisure. There were globally few differences regarding the burden of diabetes, according to the type of the disease, excepted for relational life (33% of negative impact at DIDP for T1 vs 21% for T2; P<0.05) and leisure (58% of negative impact at DIDP for T1 vs 42% for T2; and 34% for FMIM vs 15% for FMNIM; all P<0.05) and the perception of social stigma (39% for T1 vs 16% for T2; P<0.05). The transition towards insulin therapy was perceived by 61% of NMT2 as a penalty for a poor therapeutic adherence; nevertheless, 72% of them stated they would be ready to accept such a proposal from their HCP. Only 19% among PWD declared they had been asked by their health professional how diabetes affected their life. Moreover, we also found significant group differences during the baseline period. All analyses controlled for age, BMI, and baseline anxiety (POMS).

The lower levels of cardiac parasympathetic modulation in FH+ women during the baseline period suggest that these women may be evidencing vagal withdrawal in anticipation of a stressor. Conversely, the lower levels of cardiac parasympathetic modulation found in FH+ women during the recovery period may indicate reduced inhibitory control of sympathetic arousal post-stressor. The impact of behavioral interventions to enhance parasympathetic modulation should be explored for women at familial risk for breast cancer.

135) Abstract 1149 BRIEF ACTION PLANNING: A SELF-MANAGEMENT SUPPORT AND MOTIVATIONAL INTERVIEWING TECHNIQUE FOR THE ROUTINE PRACTICE OF MEDICINE, PSYCHIATRY, AND DISEASE MANAGEMENT
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Background and Purpose: Brief Action Planning (BAP) is a highly-structured, pragmatic, evidence-based, stepped-care self-management support technique as well as an application of Motivational Interviewing (MI) that builds self-efficacy and encourages behavioral change in busy practices. This poster describes pilot performance improvement studies of BAP in practices of psychiatry, general medicine, psychology, and disease management.

The 8 core competencies of BAP begin, after patient engagement, with an early motivational probe, called “Question One” (Q1) “Is there anything you’d like to do for your health in the next week or two?” Q1 is followed by “SMART” behavioral planning, elicitation of a commitment statement, scaling for confidence, arranging for accountability, and follow-up. Presentation of behavioral menus and problem-solving skills are used when needed.

Methods: One psychiatrist, 1 psychologist, 3 internists, 1 nurse practitioner, and 13 social workers were trained to use BAP in consecutive and/or selected patients. For consecutive patients, clinicians recorded whether or not they used BAP in each consecutive patient and, if not, why not. In addition, they recorded the results of the BAP Follow-up. For use with patients who did not follow-up, clinicians kept track of the extent to which action plans were accomplished: 50% or more of the plan, part of the plan, or completion of very little or none of the plan.

Results: Overall, among the 6 practitioners participating in consecutive patient studies, between 38-62% of patients were asked Q1, ranging from a low of 33% in an inner-city, low-health literacy internal medicine practice, to a high of 62% among self-report questionnaires assessing social support, pain, and depressive symptoms, and provided a blood sample at both visits.

Results: Survivors with lower social support prior to treatment experienced higher levels of pain and depressive symptoms over time than their more socially supported counterparts. Furthermore, women with lower pretreatment social support had higher levels of IL-6 over time, and these elevations in IL-6 predicted marginally more depressive symptoms over time.

Conclusions: The results of this study suggest that social support at the time of diagnosis predicts the post-treatment development of pain, depressive symptoms, and inflammation. Consequently, early interventions targeting survivors’ social networks could improve quality of life during survivorship.

HEALTHY WOMEN AT FAMILIAL RISK FOR BREAST CANCER EVIDENCE REDUCED CARDIAC PARASYMPATHETIC MODULATION TO EXPERIMENTAL STRESS
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Healthy women with family histories of breast cancer (FH+) in even one first degree relative are at increased risk of developing the disease themselves. This familial risk cannot be attributed to currently recognized susceptibility genes. Interestingly, consistent with some preclinical findings implicating a role for sympathetic influences on cancer etiology, FH+ women have been reported to have prolonged systemic catecholamine responses following acute psychological stress. Not previously investigated is the possibility that FH+ women may also evidence reduced parasympathetic modulation as indexed by time-domain heart rate variability (HRV) indices, following acute stress.

We assessed heart rate variability under controlled laboratory conditions in healthy premenopausal volunteers (by self-report, physical exam, and blood screens), including 59 FH+ and 71 non-FH+ women. All participants signed informed consent and completed a laboratory-based experimental assessment, which included baseline (10 min), stressor (15 min), and recovery (10 min) periods. Heart rate was continuously recorded using 3-lead ECG. The stressor was the Trier Social Stress Test (TSST), a well-validated social stressor that includes speech preparation and presentation (10 min), and completing math problems orally (5 min) for a live evaluator while being videotaped.

Consistent with the study hypothesis, RMSSD and pNN50 significantly differed between the two groups (p<0.05) during the recovery period, with lower cardiac parasympathetic modulation evidenced by the FH+ group. During the speech and math tasks, there were no significant differences between the two groups on HRV indexes. However, we also found significant group differences during the baseline period. All analyses controlled for age, BMI, and baseline anxiety (POMS).

The lower levels of cardiac parasympathetic modulation in FH+ women during the baseline period suggest that these women may be evidencing vagal withdrawal in anticipation of a stressor. Conversely, the lower levels of cardiac parasympathetic modulation found in FH+ women during the recovery period may indicate reduced inhibitory control of sympathetic arousal post-stressor. The impact of behavioral interventions to enhance parasympathetic modulation should be explored for women at familial risk for breast cancer.

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medical practices in a middle-class outpatient rheumatology nurse practitioner practice. Among non-medical practices, our adolescent psychologist asked 100% of her patients Q1. Most common reasons in consecutive patient studies for not asking Q1, “lack of time,” “acuity of medical problem,” “language or literacy barriers,” or clinician “forgot” to ask. Of patients asked Q1, a very high proportion of completed action plans in short periods of time; 80% completed action plans in <10 minutes.

With respect to completion of action plans in social worker driven telephonic disease management programs, of 186 action plans made with 13 different clinicians, 73% completed 50% or more of action plans, 15% completed some, and 12% completed little or none of the action plans. These outcomes are consistent with results of other outcome studies of goal-setting in primary care.

Conclusion: BAP seems to be a pragmatic, useful, and well-accepted self-management and motivational technique for a wide variety of outpatient and disease management settings.

136) Abstract 1345

COLLEGE WOMEN'S REPORTS OF SEXUAL VICTIMIZATION AND SATISFACTION WITH A PARTNER
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Sexual victimization may lower sexual satisfaction, but this finding has not been consistent. However, most studies have not considered the impact of victimization on satisfaction when the current partner is the perpetrator. So, if then, the partner is associated with assault. Katz and Myhr (2008) found that women verbally coerced by a current partner reported lower sexual and relationship satisfaction with that partner than women who did not report coercion by a current partner. However, this latter group could have included nonvictims and women victimized by someone else.

To expand on this, sexual and relationship satisfaction were examined based on whether a woman had ever experienced any type of sexual victimization, and if so, whether she was victimized by her current partner. Current satisfaction was expected to be greatest among nonvictims, followed by victims of someone other than the current partner, and those victimized by their current partner.

College women currently in a relationship (n = 210; mean age 19.79, SD = 2.55; 77% European American) responded to the Global Measure of Sexual Satisfaction (GMSEX), Relationship Satisfaction (GMSRS), Low T association (Bryden & Cohen, 2011), and the Sexual Experiences Survey-Short Form Victimization (SES-SFV) (Koss et al., 2007). Each participant who reported sexual victimization was asked their relationship to the perpetrator(s). Participants were categorized as “nonvictims” (n = 91), “nonpartner victims” (n = 92), or “current partner victims” (n = 27).

Means for sexual satisfaction were in the expected direction for current partner victims (M = 30, SD = 13.9), nonvictims (M = 32, SD = 5.1), and nonpartner victims (M = 32, SD = 4.2), but not statistically significant, F (2, 204) = 1.83, p = .163, partial η2 = .018. For relationship satisfaction, there was a main effect, F (2, 205) = 8.52, p < .0001, partial η2 = .077. Pairwise comparisons revealed a marginal difference between nonvictims (M = 33, SD = 3.2) and nonpartner victims (M = 31, SD = 5.1), p = .055, partial η2 = .02. Current partner victims (M = 28, SD = 6.0) reported lower relationship satisfaction than nonvictims, p < .0001, partial η2 = .156, and nonpartner victims, p = .016, partial η2 = .05.

Although in the expected direction, hypotheses were not supported for sexual satisfaction. A larger sample of current partner victims may be important to elucidate these potential associations. Current partner victims reported lower relationship satisfaction than the other groups. Sexual aggression by a partner may have a greater impact on relationship than on sexual satisfaction.

137) Abstract 1170

THE EFFECT OF SOCIAL EXCLUSION ON CARDIOVASCULAR RESPONSIVENESS TO A SOCIALLY EVALUATIVE STRESSOR
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It has been well documented that social exclusion is associated with increased anxiety and cardiovascular reactivity. However, it is unclear whether psychosocial factors, such as social exclusion, exaggerate this response. Individuals who are primed to feel socially vulnerable may experience greater increases in cardiovascular (blood pressure, heart rate) responses and report more state anxiety in response to social exclusion. One potential means of priming social vulnerability is through inducing feelings of social exclusion in participants using the cyberball paradigm technique known as Cyberball. During this task, participants are led to believe that they are passing a ball over the internet with other players (who are actually computer generating, unbeknownst to the participant). Those in the socially excluded condition receive far fewer ball tosses. The current study sought to extend the literature on the psychophysiological effects of socially evaluative stressors by examining the effect of Cyberball induced social exclusion on cardiovascular (CV) responsiveness to the Trier Social Stress Task (TSST) in 79 college students. Participants were randomly assigned to one of four experimental conditions (Cyberball-exclusion/TSST, Cyberball-exclusion/control task, Cyberball-inclusion/TSST, Cyberball-inclusion/control task). Participants completed the Cyberball task and either completed the TSST or word search puzzles (control task). CV measures were assessed immediately before and after each task. A final assessment of CV measures was conducted following a 15 minute recovery period.

There was a significant interaction between TSST and Cyberball condition, such that Cyberball-excluded participants had higher levels of both systolic blood pressure reactivity (F = 5.78, p < .05) and heart rate reactivity (F = 4.52, p < .05) in response to the TSST than those in all other conditions. These findings suggest that individuals who feel socially excluded may be particularly vulnerable in social situations in which they will be evaluated. To the best of our knowledge, this is the first study to assess the effect of experimentally induced social exclusion on cardiovascular reactivity in response to a socially evaluative stressor. Future research should expand on the external validity of these findings by replicating this study in individuals from underrepresented groups.

138) Abstract 1074

TESTOSTERONE AND ACUTE STRESS ARE ASSOCIATED WITH FIBRINOGEN AND VON WILLEBRAND FACTOR IN AFRICAN MEN: THE SABPA STUDY
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Background: Low testosterone, acute and chronic stress and hypercoagulation are all associated with hypertension and hypertension-related diseases. The interaction between these factors and future risk for coronary artery disease in Africans has not been fully elucidated. In this study, associations of testosterone, acute cardiovascular and coagulation stress responses with fibrinogen and von Willebrand factor in African and Caucasian men in a South African cohort were investigated. Methods: Cardiovacular variables were studied by means of beat-to-beat and ambulatory blood pressure monitoring. Fasting serum, salivary testosterone and citrate coagulation markers were obtained from venous blood samples. Acute mental stress responses were evoked with the Stroop test. Results: The African group demonstrated a higher cardiovascular risk compared to Caucasian men with elevated blood pressure, low-grade inflammation, chronic hyperglycemia (HbA1c), lower testosterone levels, and elevated von Willebrand factor (VWF) and fibrinogen levels. Blunted testosterone acute mental stress responses were demonstrated in African males. In multiple regression analyses, higher circulating levels of fibrinogen and VWF in Africans with a low testosterone environment (0.24 – 0.28; p < 0.01), but only circulating fibrinogen in Caucasians. Regarding endothelial function, a low testosterone environment and a profile of augmented ±-adrenergic acute mental stress responses (diastolic BP, D-Dimer and testosterone) were associated with circulating VWF levels in Africans (Adj R2 0.24; p< 0.05). Conclusions: An interdependence between acute mental stress, salivary testosterone, D-dimer and vascular responses existed in African males. The coagulation system in African men with chronic stress reactivity is blunted compared to African males. Further research should expand on the external validity of these findings by replicating this study in individuals from other populations.

139) Abstract 1350

CARDIOVASCULAR REACTIVITY TO MENTAL STRESS IS ASSOCIATED WITH MORTALITY IN PATIENTS WITH CHRONIC HEART FAILURE
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Objective: To examine whether chronic mental stress-related factors are associated with mortality in patients with heart failure. Pathophysiological mechanisms explaining this link may include the cardiovascular response patterns to acute mental stress. The current study examined whether blood pressure and heart rate responses to acute mental stress predicted mortality in patients with chronic heart failure.

Methods – Patients with heart failure (N=100; 26% female, mean age 65±12 years) underwent a public speech task, during which heart rate (HR), diastolic (DBP) and systolic (SBP) blood pressure were recorded. Their all cause mortality status was assessed after a median follow-up time of 4.8 years. Heart rate reactivity was recoded into high, low, and negative responsiveness based on the 25th (bpm ≤0) and 75th (≥6 bpm) percentile. Blood pressure reactivity was recoded in high (≥12.1 mmHg), medium (2.3-12.1 mmHg) and low (<2.3 mmHg) responsiveness based on the 25th and 75th percentile. The following covariates were used to add the Cox proportional hazards regression for blood pressure: gender, left ventricular ejection fraction, use of ACE/ARB medication, and presence of implanted devices.

Results – At follow-up, 31 patients had died (31%), of whom 15 from cardiac causes. Results from the Cox proportional hazards regression showed that low DBP reactivity (<3 mmHg; hazard ratio=3.1, 95%CI=1.3-7.9, p=0.02) was significantly associated with an increased risk of all-cause mortality in HF independent of included covariates. High DBP reactivity (>12.1 mmHg; hazard ratio=2.5, 95%CI=0.995-6.3, p=0.051) and low HR reactivity (between 0.5-6 bpm; hazard ratio=2.3, 95%CI=0.9-6.2, p=0.09) were also independently associated with an increased risk of all-cause mortality at trend level. No significant associations were found for SBP reactivity.

Conclusion – Low HR and DBP reactivity to acute mental stress were independently associated with all-cause mortality in patients with chronic HF, as was high DBP reactivity. The observed blunted autonomic and hemodynamic response to mental stress is in accordance with findings on physical stress reactivity. These results call for replication in larger studies that also should examine whether mental stress

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reactivity is a mediator in the relation between psychological risk factors and adverse cardiac outcomes.

Figure: D8P reactivity and cumulative all-cause mortality/hazard

140) Abstract 1142
ASSOCIATION OF BLOOD COAGULATION ACTIVATION IN ACUTE MYOCARDIAL INFARCTION PATIENTS AND POSTSTRAUMATIC STRESS LEVELS AFTER 3 MONTHS
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Objectives: Between 10-20% of patients may develop posttraumatic stress disorder (PTSD) in response to the traumatic experience of acute myocardial infarction (MI). Posttraumatic stress has been shown to be predictive of poor cardiovascular prognosis. Several biological risk factors for the development of PTSD symptoms in post-MI patients have been identified. This study explores whether physiological markers of stress during MI are associated with posttraumatic stress 3 months later. We hypothesize that greater coagulation activation within 24 hours after MI is associated with greater posttraumatic stress after 3 months.

Design and Methods: We examined 32 patients with acute MI (84.4% men, mean age±SD = 59.5±9.5) within 48 hours after having reached stable hemodynamic conditions and 3 months later. Only patients with considerable MI-related distress were included (those scoring on numeric rating scales, range 0-10, with at least 5 for chest pain plus at least 5 for fear of dying and/or helplessness). Coagulation activation was measured through levels of D-dimer, indicating fibrin formation, within 48 hours of acute MI. To assess posttraumatic stress after 3 months the German version of the Clinician-Administered PTSD Scale (CAPS) was applied.

Results: Correlation analysis showed that higher levels of D-dimer were associated with higher scores of posttraumatic stress after 3 months. We found a significant correlation between sum scores of the CAPS (i.e., total symptoms of PTSD) and D-dimer levels (r=0.42, p=0.02).

Conclusions: The data suggest that higher levels of coagulation in patients with MI-relevant distress are associated with greater posttraumatic stress 3 months after the cardiac event. Further studies are needed to explore the underlying mechanisms of this association.

141) Abstract 1143
DIFFERENCES IN PHYSIOLOGICAL STRESS REACTION TO ACUTE MYOCARDIAL INFARCTION DEPENDING ON THE CONTEXT OF HOSPITAL REFERRALS
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Objectives: There is substantial evidence that acute stress results in increase of endocrine and immunological parameters. It is acknowledged that acute myocardial infarction can be experienced as a very distressful event. Context of hospital referrals seems to influence the stress perception of patients and therefore the physiological stress reaction. We hypothesized that patients referred to hospital by ambulance show higher endocrine and immunological activation within 24 hours after myocardial infarction than patients referred to hospital by means other than by ambulance.

Design and Methods: We examined 49 patients with acute myocardial infarction (85.7% men, mean age±SD = 59.5±10.2) within 48 hours after having reached stable circulatory conditions. Only patients with considerable MI-related distress were included (those scoring on numeric rating scales, range 0-10, with at least 5 for chest pain plus at least 5 for fear of dying and/or helplessness). Blood cortisol was measured as marker of endocrine stress reaction. To assess the immunological stress reaction leukocyte levels were analyzed.

Results: Analyses of variance (ANOVA) showed a significant difference in the levels of leukocytes but not cortisol between patients who were referred to hospital by ambulance and those who were not. We found a significant between-group difference in leukocyte levels (F(1,48)=7.50; p=0.009). Though there was no significant between-group difference found in cortisol levels.

Conclusions: The data suggests that patients who referred to hospital by ambulance differ significantly in leukocyte levels from patients who were not. No difference was found in blood cortisol levels. The findings concur with the concepts of stress leukocytosis and elevated white blood cell count to be a predictor of poor outcome in coronary heart disease patients.

142) Abstract 1296
EXPLICITLY AND IMPLICITLY MEASURED SELF ESTEEM IN THE TREATMENT OF MAJOR DEPRESSION - EVIDENCE FOR THE PROTECTIVE ROLE OF IMPLICIT PROCESSES
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Little is known concerning the change of explicit and implicit self esteem in the course of depression. Usually explicit self esteem is reduced in depressed individuals, whereas studies on implicitly measured self esteem show no consistent results. Some findings point to the fact that the measurement of implicit self esteem mirrors specific processes of self esteem compensation in a sense where self esteem is threatened. Against this background we hypothesized that the permanent threat to an individual's self during depression leads to an ongoing process of implicit self esteem compensation. This mechanism will decrease in the course of recovery from depression. 45 inpatients with a diagnosis of major depression were included in our study. Participants underwent eight weeks of integrative treatment in the Department of Psychosomatic Medicine at Bonn University Hospital, Germany. Psychopathology and explicit self esteem were assessed by the Hospital Anxiety and Depression Scale (HADS-D) and the Rosenberg Self Esteem Scale (RSES), respectively. Implicit self esteem was measured by the Implicit Association Test (IAT) as well as the Name Letter Test (NLT). Results showed a successful treatment of depression with significantly declining depression scores and a significant increase of explicit self esteem scores. In keeping with our hypothesis, both measures of implicit self esteem decreased, indicating reduced processes of implicit self esteem compensation. Our findings underline the importance of implicit processes of self esteem compensation in the course of depression. Study findings are discussed with regard to psychological assumptions underlying the role of automatic defense mechanisms in situations of threatened self esteem.

143) Abstract 1255
A TALE OF TWO MECHANISMS: A META-ANALYSIS OF THE AUTONOMIC BASIS OF CARDIOVASCULAR STRESS REACTIVITY
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To determine the contributions of the sympathetic and parasympathetic systems to cardiovascular stress reactivity, a meta-analysis was undertaken. The original literature search yielded 26,761 manuscripts; 203 were of sufficient quality and included in our study. Participants underwent eight weeks of integrative treatment in the Department of Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, NRW, Germany, Market Research, (R)evolution Institute for Market Research, Bonn, NRW, Germany, Psychosomatic Medicine and Psychotherapy, Alexandra Kleiman, M Sc., Anna Sarah Koch, M.Sc., Department of Psychosomatic Medicine and Psychotherapy, Ingo Wegener, PhD, Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, NRW, Germany. A-48
144) Abstract 1293

PSYCHOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS DISTINGUISHING PERSISTENT OROFACIAL PAIN CONDITIONS

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The present study compared patients from each of three major diagnostic categories of chronic orofacial pain, intracapsular disorders, muscular disorders, and neuropathic disorders, on measures of psychological and physiological functioning. Data were obtained from 103 patients recruited from an orofacial pain center in the United States between 2008 and 2012. Of this sample, 47.0% of patients received diagnoses of muscular disorders, 32.6% received intracapsular diagnoses, and 20.4% received neuropathic diagnoses. After controlling for average level of pain, results demonstrated significant differences among diagnostic groups on psychological measures including perceived disability, fatigue, affective distress, perceived social support, general psychological distress, and satisfaction with life (all p values < .01). Additionally, significant group differences were found for measures of sleep (p < .001) and systolic blood pressure (p < .01). There were no differences between groups in pain duration (p = .594). These results support the hypothesis that psychological and physiological differences exist between patients with different classes of orofacial pain diagnoses. These findings suggest that health providers should be aware of the varying levels of risk for comorbid conditions based on type of diagnosis and take these differences into account when developing treatment plans.

145) Abstract 1247

HIGHER ALLOSTATIC LOAD IN EARLY PREGNANCY IS ASSOCIATED WITH CHRONIC STRESSORS AND POORER SLEEP QUALITY

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Background: Allostatic load (AL) is the cumulative impact of chronic stress that is associated with adverse health outcomes. Higher AL may also be associated with adverse pregnancy outcomes. We previously developed a novel model of AL to objectively measure AL in early pregnancy. We hypothesized that AL is associated with poorer sleep quality and subjective measures of acute and chronic stress.

Methods: Women were from a community-dwelling study population who enrolled at less than 15 weeks gestation and had available plasma samples. We excluded women who later miscarried. We divided nine components among three domains of cardiovascular, metabolic, and inflammatory function and calculated AL as the sum of the proportion of components designated high risk for each domain. We used Spearman rank correlations to examine the association of AL to age, income, the prenatal distress questionnaire, the inventory of depressive symptoms (IDS), and the Pittsburgh sleep quality index (PSQI). The Wilcoxon-rank sum test was used to compare AL in blacks vs. non-blacks and in college-educated women vs. non-college-educated. We used the prenatal distress questionnaire and IDS as measures of acute stress and race and socioeconomic status, captured by education and income, as measures of chronic stress. We used the PSQI as both a measure of disordered sleep and of chronic stress.

Results: We identified 103 eligible participants with a mean age of 29.8 +/- 5.0 years, 17.5% black, and gestational age 12.2 +/- 1.1 weeks. AL was positively correlated with the PSQI (r = 0.23, p = 0.018). There was no association with age (r = -0.006, p = 0.96), income (r = -0.085, p = 0.39), prenatal distress (r = 0.031, p = 0.77), or IDS (r = 0.028, p = 0.78). Black women had borderline higher AL than non-black women (0.14 vs. 0.63 vs. 0.66 +/- 0.48, p = 0.054), and college-educated women had lower AL compared to those without a college diploma (0.57 +/- 0.43 vs. 0.81 +/- 0.55, p = 0.045).

Conclusion: Higher AL measured in early pregnancy is associated with poorer sleep quality, less education, and black race. These relationships are consistent with previous associations between AL and these chronic stressors observed in non-pregnant populations. This association was not observed with measures of acute stress. AL may be a valuable tool for capturing the physiologic impact of chronic stress on women in early pregnancy.

146) Abstract 1274

DIFFERENT DOMAINS OF ACCULTURATION AND CULTURAL RETENTION AMONG U.S. HISPANICS/LATINOS IN RELATION TO CARDIOVASCULAR RISK FACTORS: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL)

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At the Family Health Patterns Project (FHPP) in Oklahoma City, OK, which included Hispanic/Latino participants, we examined the relationships between acculturation and cardiovascular risk factors. We used the Acculturation Scale administered to participants of the Hispanic Community Health Study/Study of Latinos (n = 15825, 60.1% female, 18 to 74 years old) were modeled within a latent variable framework to investigate different domains of both Non-Hispanic/Latino (English language use and non-Hispanic/Latino social affiliations) and Hispanic/Latino (Spanish language use and Hispanic/Latino social affiliations) cultural orientations (fit indices suggested good fit to the data) in relation to traditional cardiovascular risk factors (waist circumference, body mass index, hypertension, HDL cholesterol, LDL cholesterol, triglycerides, and diabetes). Analyses adjusted for age, gender, Hispanic/Latino background, education, income, and health insurance coverage, as well as the use of antihypertensive, lipid-lowering, or glucose-lowering medication in corresponding outcome models. In the Non-Hispanic/Latino cultural orientation domains, greater English language use was associated with larger waist circumference (β = 0.230, p < 0.001) and higher body mass index (β = 0.922, p < 0.001), yet with lower LDL cholesterol (β = −0.189, p = 0.013) and higher HDL cholesterol (β = 0.625, p = 0.022). Reporting greater Non-Hispanic/Latino social affiliations was also associated with higher HDL cholesterol (β = 0.737, p = 0.016). In the Hispanic/Latino cultural orientation domains, greater Spanish language use was associated with smaller waist circumference (β = −2.49, p < 0.001) and lower body mass index (β = −0.945, p = 0.001), yet with lower HDL cholesterol (β = −1.37, p = 0.012). Reporting greater Hispanic/Latino social affiliations was also associated with lower LDL cholesterol (β = −4.20, p = 0.027) and higher triglyceride levels (β = 0.866, p = 0.006). No associations between cultural orientations and hypertension or diabetes were observed. Thus, while Non-Hispanic/Latino cultural orientation was associated with less favorable adiposity outcomes, it was related to better lipid profiles. Conversely, while Hispanic/Latino cultural orientation was related to better adiposity outcomes, it was associated with worse lipid profiles. Further investigation of the mechanisms underlying these findings is needed to better understand how the acculturation process influences the cardiometabolic health of Hispanics/Latinos living in the U.S.

147) Abstract 1150

EARLY LIFE ADVERSITY ALTERS VAGAL REGULATION OF THE HEART IN RELATION TO HEART RATE STRESS REACTIVITY AND PSYCHOPATHIC TENDENCIES: STUDIES FROM THE OKLAHOMA FAMILY HEALTH PATTERNS PROJECT

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Objective: Early life adversity (ELA) may have a long-term impact on autonomic regulation, psychological traits, and cognition. We compared Low, Medium and High ELA groups on vagal control of the heart relative to psychological traits, stress reactivity, and cognitive function.

Methods: 220 young adults (23.9 yr., 60% females) were interviewed for physical and sexual abuse, exposure to violence, and separation from parents before age 15 and were placed into Low (0 events, N = 109), Medium (1 event, N = 75) and High (2 or more events, N = 36) ELA groups. They completed the Psychopathic Personality Inventory (PPI), underwent a psychosocial stressor and cognitive and behavioral testing. Resting heart rate variability (HRV) was measured as an index of vagal control of the heart.

Results: HR responses to mental stress were larger in persons with greater resting HRV, but only in low and medium ELA groups (r = 0.23 and 0.28, ps < 0.18) and not in the high ELA group (r = 0.14, p = 0.44). Lower levels of HRV were seen in persons with high PPI scores, but only in persons exposed to high levels of ELA (r = −0.50, p = 0.002), with no relationship in low and medium groups (r > 0.10). No HRV relationships were seen with cognitive performance, behavioral measures in any ELA group.

Conclusion: Early life stress can modify cardiac vagal regulation in relation to psychopathic traits and stress reactivity in adulthood.
148) Abstract 1217

IMPLICIT AGGRESSIVENESS AS A PREDICTOR OF IMPULSIVE AGGRESSIVE BEHAVIOR
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TRAJEKTORY CLASSES OF DEPRESSIVE SYMPTOMS FOLLOWING CARDIAC EVENTS
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150) Abstract 1283

TRAJECTORY CLASSES OF DEPRESSIVE SYMPTOMS FOLLOWING CARDIAC EVENTS
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151) Abstract 1679

PSYCHOLOGICAL IMPACT OF TUMOR SCREENING IN SDHX MUTATION CARRIERS RECRUITED IN A 3 YEAR NATIONAL PROTOCOL
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Background: Paraganglioma and pheochromocytoma are genetically determined in 40% cases. SDHx-related hereditary paraganglioma predisposes to precocious, multiple and malignant tumors. A positive genetic test in index cases (history of paraganglioma) or relatives allows tumor screening and early surgery of diagnosed tumors.

PGL-EVA is a French multicenter prospective study primarily designed to assess the diagnostic performance of different biological and radiological investigations for detecting tumors in SDHX mutation carriers, which included a three years period of follow-up.

Methods: Depression (BDI), stress due to genetic test (IES-R) and state-anxiety were assessed at baseline in 197 subjects. Depression and state-anxiety were assessed again after radiological and biological exams, and then once a year for three years.

Results: At baseline, depression and stress due to a positive genetic test were higher in index cases than in relatives (respectively p=0.023 and p=0.013) after tumor screening, depression and anxiety decreased (respectively p=0.003 and p=0.006).

73 patients filled out final questionnaires at 36 months. In this group, final score of depression was significantly associated with baseline score (p=0.001), without any significant change. Depression scores of index cases tended to be higher than those of relatives throughout the follow-up. Women's depression scores were higher than men's without any change during follow-up.

Final anxiety scores were significantly associated with baseline scores (p<0.001), without any significant change. Women, anxiety scores decreased between baseline and 36 months (p=0.03). The evolution of depression and anxiety scores was neither associated with the screening of new tumors, nor with the status of index cases vs relatives. Anxiety score evolution was negatively associated with baseline trait-anxiety and stress due to genetic result.

Conclusions: Tumor screening in genetically predisposed subjects does not lead to worsening emotional disturbances after three years of follow-up. On the contrary, a decrease of anxiety is observed in the more sensitive group of subjects at baseline (60<T≤70) or severe symptoms (T>70). Predictor variables included medical, social and psychological (e.g. coping scales) details from the baseline questionnaire. Complete data was available from 235 patients. Baseline classes were used to analyze further progression of depressive symptoms. Though the crude prevalence of depressive symptoms was almost identical over 12 months, more than 30 percent of patients experienced a change in depression class during this time. Four distinct trajectory classes representing 82% of the total sample were considered. (s. table 1): No depression at all time points (28%), stable mild to moderate or severe depressive symptoms (35%), worsening symptoms (10%), and transient depressive responses that had remitted by 3 months and did not recur at 12 months (9%). Predictors for worsening symptoms vs. no depression were depression at onset and little trust in doctors; predictors for the transient response group vs. persistent depression were female gender, CABG and low depressive coping. These results are important for identifying patients suitable for depression treatment (vs. watchful waiting) as well as for the timing of depression interventions.

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when compared to at-risk participants and controls. It is possible that more severe and a stronger relationship between cortisol reactivity and mood across the TSST, depressed participants had a weaker relationship between diurnal cortisol and mood, without this relationship. However, when mood was assessed at time of sampling, reactivity to daily stress, but depression status did not distinguish those with and
there appears to be a strong association between cortisol secretion and mood at time of sampling, nor label use were associated.

Conclusions: Parents with greater cortisol reactivity at baseline had children with lower percent body fat, but parents using labels more often to guide purchasing and consumption. Instructions had higher total cholesterol. Nutrient label comprehension and use was not related to parents’ own biomarkers. Although nutrient label use is reportedly associated with improved diet, our results suggest the role on biomarkers is minimal. Whether label comprehension or use is related to health literacy levels or cardiovascular health beliefs should be further assessed and additional research on the availability of nutritional labels and its relation to health is needed.

BIOPSYCHOSOCIAL STRESS SENSITIVITY AND RISK FOR DEPRESSION

Individuals characterized as sensitive to stress have particular biological and psychosocial characteristics that place them at greater risk for onset of depression following stressful life events. Elevated diurnal cortisol secretion and cortisol reactivity may combine with elevated negative mood reactivity to natrualistic and laboratory stressors to create biopsychosocial stress sensitivity that confers risk for depression. Currently depressed (N=15), at risk (high negative affect/low positive affect: N = 20), and never depressed (N = 22) undergraduate students at UCLA were selected on the basis of the trait Positive and Negative Affect Schedule and the Structured Clinical Interview for DSM-IV.

Participants completed saliva collection for five days, four samples a day (waking, 30 minutes, 8 and 11 hours), and five samples were collected across the Trier Social Stress Test (TSST). Participants also completed online daily mood and stress reporting for two weeks at bedtime. Two level HLM analyses were conducted. A flatter slope of diurnal cortisol secretion was associated with increased negative mood reactivity to daily stress (B = -.274 (0.133), t = -.2065, p = .0039). However, this pattern did not differ by group. The depressed group had a stronger relationship between mood at time of sampling and cortisol reactivity to the TSST when compared to at-risk and control participants (control: B = -.262 (0.123), t = -2.13, p = .033; at-risk: B = .231 (0.123), t = 2.22, p = .027), and a weaker relationship between cortisol secretion and mood at time of diurnal cortisol sampling (control: B = -.262 (0.123), t = -2.13, p = .033; at-risk: B = .231 (0.123), t = 2.22, p = .027). There appears to be a strong association between cortisol secretion and mood reactivity to daily stress, but depression status did not distinguish those with and without this relationship. However, when mood was assessed at time of sampling, depressed participants had a weaker relationship between diurnal cortisol and mood, and a stronger relationship between cortisol reactivity and mood across the TSST, when compared to at-risk participants and controls. It is possible that more severe stress such as the TSST, and mood assessment at time of sampling, is needed to capture differences in biopsychosocial stress sensitivity.

TAL CHI INTERVENTION MAY LEAD TO IMPROVED COGNITIVE FUNCTION ASSOCIATED WITH REDUCED DEPRESSION SYMPTOMS IN HEART FAILURE PATIENTS

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Individuals with heart failure (HF) have elevated risk of cognitive impairment, with 70% or more scoring below clinical cut-points on cognitive screening tests. In addition, almost a third of HF patients exhibit clinical levels of depression symptoms, which are also related to moderate cognitive deficits. Combined, reduced cerebral blood flow associated with HF and elevated depression symptoms may put HF patients at an even greater risk for cognitive impairment. This may be important information, since even mild cognitive decrements are often a precursor to further cognitive impairment and increase dementia risk, especially among individuals with vascular pathology. Meanwhile, exercise programs including Tai Chi are beneficial in HF patients with a range of depression symptom levels. However, it is unknown whether reductions in depression symptoms associated with Tai Chi are related to improved cognitive function.

The present study sought to examine the relationships among Tai Chi practice, depression and cognitive function. Methods: Forty HF patients (mean age=66.4 +/- 10.8, and left ventricular ejection fraction (LVEF%) = 46.0 +/- 13.9) were randomly assigned to 16-weeks of Tai Chi, Resistance Band (RB) training or Standard of Care (SOC). The Montreal Cognitive Assessment (MoCA) (mean = 23.5 +/- 4.1) and the Beck Depression Inventory (BDI) (mean = 10.2 +/- 6.8) were administered to all participants before and after the 16-week intervention period. Results: A repeated measures ANOVA controlling for LVEF% and age revealed a group X time interaction for scores on the MoCA (F = 3.89, p = .032, partial et2 = .21), with individuals in the Tai Chi group and the RB group demonstrating greater improvement in overall MoCA scores compared with the SOC group who showed a decline in MoCA scores. Multiple regression analyses controlling for LVEF% and age revealed that changes in MoCA were significantly negatively related to alterations in BDI (change R2 = .113, t = -2.69, p = .011). Conclusions: Our findings provide the initial evidence of the efficacy of Tai Chi practice as an additional potential exercise option for improving neuropsychological functioning in heart failure patients.

CORTISOL DIURNAL INDEX STABILITY PREDICTS CHANGES IN METABOLIC SYNDROME SYMPTOMS OVER 2 YEARS IN ADOLESCENT GIRLS

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Altered diurnal cortisol output is hypothesized to increase vulnerability to the metabolic syndrome (MetS), a constellation of abnormalities that include hypertension, insulin resistance, dyslipidemia, and central adiposity. There have been few rigorous tests of this hypothesis using multiple assessments of cortisol, different indices of diurnal output, and prospective analyses of MetS change. Purpose: To assess whether diurnal cortisol output over 2 years is related to MetS change. Methods: Diurnal cortisol was assessed in 115 adolescent girls over 2 days at baseline, 1 and 2 years later. Saliva samples were collected at wake, 30 min, 1, 4, 9, and 14 hours post-wake (CAR); cortisol awakening response (CAR) was the increase in cortisol between wake and 30 min post-wake; the diurnal cortisol slope (slope) was the regression line from cortisol onto hours, excluding the 30-min sample. CAR and slope were quantified over time in two ways: 1) Average CAR and slope were calculated by taking the mean across assessments; 2) CAR and slope stability over the 2 years of assessment was determined by averaging the cortisol index within visit then using group-based trajectory modeling to classify participants as having stable or unstable CARs and slopes across visits. MetS components were assessed at baseline and study end: blood pressure (systolic and diastolic), fasting blood sample (HDL, triglycerides, and glucose), and waist circumference. MetS scores were calculated by z scoring each component, reverse scoring HDL, and averaging. Confounders (age, ethnicity, oral contraceptive use, SES and physical activity) were also assessed. Results: Linear regression was used to assess whether average diurnal cortisol indices were related to MetS scores. Neither average CAR, β = .05, p = .61, average slope, β = .002, p = .98, nor their interaction, β = -.12, p = .17, predicted MetS scores at study end, controlling for confounders. A 2x2 ANOVA was used to assess whether diurnal index stable vs. unstable trajectory group was related to MetS scores. A marginal main effect of slope trajectory group, F(1, 112) = 3.2, p = .08, and a significant main effect of CAR trajectory group, F(1, 112) = 4.1, p = .05, and interaction between CAR and slope trajectory group, F(1, 112) = 4.8, p = .03, emerged. Having unstable CAR or slope was associated with higher MetS scores at study end. In addition, an additive effect was observed for having both unstable slopes and CARs, independent of confounders. Conclusion: Having both unstable CARs and slope was associated with increased MetS over 2 years of follow-up. Further research is needed to identify the mechanisms underlying these effects; higher-level disruption of circadian signaling is one possibility that should be explored.
African Americans may respond to an event more negatively several of the relations between participants' race-based causal attributions and their cognitive appraisals (i.e., the extent to which the event was bothersome) mediated results indicate that the African American women who were more likely to offer race additional emotional data and have their physiological activity monitored. On day 2, the participants returned to the lab to provide additional emotional data and have their physiological activity monitored. The participants also indicated the extent to which they experienced the event as being race-related (i.e., race-based causal attributions) and stressful. Our preliminary results indicate that the African American women who were more likely to offer race as explanation for the event experienced more anger, tension, and depressive affect and greater pain intensity, disability, and catastrophizing (i.e., the extent to which the event was bothersome) mediated several of the relations between participants’ race-based causal attributions and their responses. Ultimately, African Americans may respond to an event more negatively if it is experienced as being race-related than if it is not experienced as being race-related. Moreover, the study findings suggest that the processes that explicate the link between racial discrimination experiences and its consequences are complex. Finally, it is important that researchers examine how African Americans psychologically experience racial discrimination if they are to fully understand its impact in African Americans’ lives.

FEAR AVOIDANCE IN PEDIATRIC INFLAMMATORY BOWEL DISEASE AND FUNCTIONAL ABDOMINAL PAIN
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BACKGROUND: During episodes of acute pain, children may learn to fear pain and avoid activities. Although the initial pain trigger may resolve, these learned behaviors may persist and cause chronic pain and disability. The fear-avoidance model of pain posits that catastrophizing cognitions and fear of pain lead to activity avoidance, depression, and, over time, perpetuation of pain-related disability. We tested predictions from this model in two gastrointestinal disorders associated with abdominal pain: Inflammatory Bowel Disease (IBD) and Functional Abdominal Pain (FAP). IBD is characterized by inflammation alternated with periods of remission. Pain can persist after inflammation has subsided. FAP is a brain-gut nervous system disorder in which no disease pathology explains the pain. We hypothesize that the fear-avoidance model would predict increased pain and disability in children with FAP compared with IBD. METHODS: Participants included 129 children ages 8-18 (49.6% girls, 86% Caucasian, mean age 11.8) with IBD in remission and 200 children with FAP (72.5% girls, 89% Caucasian, mean age 11.2) who completed measures of pain intensity, disability, depression, and catastrophizing. Models were tested with path analysis.

RESULTS: Based on the fear-avoidance model, we tested whether catastrophizing in the presence of pain predicts pain threat, pain threat in turn is associated with depression and disability, and disability is associated with increased pain intensity. This model was not supported in IBD (Chi2=60.69; p<.000): but was in FAP (Chi2=1.00; Chi2=60.05; p=.02). The following effects were found which were all significant: (1) Pain severity was associated with increased catastrophizing (β=0.01; p<.05). (2) Catastrophizing was positively associated with pain threat (β=0.67; p<.05), (3) higher levels of pain threat predicted higher levels of both depression (β=31; p<.05) and disability (β=34; p<.05). (4) and finally, increased disability was associated with greater pain severity (β=0.77; p<.05). CONCLUSIONS: Fear-avoidance model was well supported in pain in children with FAP but not IBD in remission, although the cross-sectional nature of our data prevents a true causal analysis. Alternative models need to be examined to test the role of psychological factors in IBD patients.

HEALTH SERVICES USE BY FIRST-TIME EXPECTANT DADS WITH AND WITHOUT DEPRESSION
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METHODS: We conducted a prospective study aimed at examining depressive symptoms and health services utilization in men over the first postnatal year. Study participants were recruited during the third trimester of pregnancy (study entry). The Edinburgh Depression Scale (EDS) was used to assess depressed mood in men and their partners; the recommended cut-off score of 10 and more was used to indicate elevated depressive symptoms. Associations between levels of depressive symptoms in men and their partners, demographics, state anxiety, and use of services were analyzed by stepwise multiple logistic regression.

RESULTS: A total of 469 men (mean age = 34.0 years, ± 5.1 years) participated, of whom 61 (13%) exhibited elevated levels of depressive symptoms during their partner’s third trimester of pregnancy. In the prior 12 months, 30 (6.4%) men visited a family doctor, 19 (4.1%) sought psychological/psychiatric help, and 13 (2.8%) visited complementary medicine practitioners. Significantly more depressed men used physician or complementary medicine services compared to non-depressed men (22.3% vs. 7.4%, p<.0001). Significantly more non-depressed men wanted to speak to a health care provider compared to depressed men (89.2% vs. 70.5%, p<.001). Barriers to getting help included: didn’t get it to (34), too busy (25), decided not to go (23), too costly (18), felt it would be inadequate (16), didn’t know where to go (13), long wait time (11), provider not available (9), too much responsibility (6), dislike of doctors (5). Predictors of medical or complementary medicine service use were state anxiety (OR=1.06, 95%CI=1.03 -1.10), and baseline partner depression (OR=1.10, 95%CI=1.01-1.19).

CONCLUSIONS: While 13% of expectant fathers experienced elevated depressive symptoms during their partners pregnancy, only 23% sought help and 70.5% were reluctant to seek help. These findings highlight the importance of including fathers in depression screening and early prevention programs.

CONTROL BELIEFS BUFFER THE NEGATIVE EFFECTS OF LOW EDUCATION ON INTERLEUKIN-6 LEVELS
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Lower educational attainment is associated with an increased risk of poor health and heightened mortality risk over the life course. However, since not all individuals with low education experience these negative effects, the current study examined whether “control beliefs” would moderate the relationship between educational attainment and Interleukin-6 (IL-6) levels. Approximately 1,000 participants from the Survey of Midlife in the U.S. (MIDUS) biomarkers subproject provided data on demographics, control beliefs, health factors and fasting serum IL-6 levels (2005-2009). Control beliefs were measured with a 12 item-questionnaire that operationalized control as the subjective expectations regarding one’s ability to exert influence over life circumstances and outcomes in the surrounding environment. A series of linear regression models with logged IL-6 as the outcome were estimated with an educationXcontrol interaction entered as the main predictor of interest. Models were adjusted for age, race, education level, depression (β = 0.84, range = 35-86), sex (57% female), race (93% Caucasian), and parental education levels. Adjustment for other health relevant factors included medication use, alcohol use, smoking status, waist circumference, and self-rated health. Results indicated, net of demographic and health related factors, lower education levels predicted an increase of IL-6 levels (β = -0.06; p < .05). In a second step, the educationXcontrol interaction emerged as a significant predictor (β = 0.07; p < .05) of IL-6 levels. At higher education levels, control beliefs did not influence level of IL-6. However, at lower levels of education, level of control was consequential with higher control beliefs resulting in lower levels of IL-6. Findings support the notion that endorsing stronger control beliefs is one possibility of preventing the negative effects of educational disadvantage from getting under the skin and leading to poorer health. Such information is useful in determining how psychological variables can alter physiological processes for more adaptive functioning across the life course.

DARK CHOCOLATE INTAKE BUFFERS ENDOCRINE STRESS REACTIVITY ON THE LEVEL OF THE ADRENAL GLAND
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Background: To explore mechanisms underlying beneficial effects of flavonoid-rich dark chocolate consumption on cardiovascular health, we investigated the effect of acute intake of dark chocolate on endocrine stress reactivity in men visiting our laboratory.

Methods: Healthy men aged between 20 and 50 years (mean±SD: 25±5) were assigned to a single intake of either 50 g of flavonoid-rich dark chocolate (N=31) or 50 g of identically looking flavonoid-free placebo chocolate (N=34). Two hours after chocolate ingestion, both groups underwent an acute standardized psychosocial stress task combining public speaking and mental arithmetic. We measured the stress...
COP between the two groups. There was no difference in LF/HF, a measure of cardiac autonomic function. Medical records of participants were reviewed, and no differences in HRV with mental arithmetic and forehead cold pressor (COP) test. Heart rates, blood pressures, and HRV (GE Marquette ®) were measured at baseline and during MST in both groups. Wilcoxon paired samples test was used for HRV comparisons.

Results: Mean age, BMI, HR, BP and cardiovascular reactivity (systolic BP X HR) protocol included 4 min anger recall task, 4 min mental arithmetic, and 3 min emotional mental stressor, anger recall, there was a significant increase in LF (p=0.003) and decrease in HF (p=0.04) power in women with MCD compared to controls.

Conclusions: Women with MCD respond to an emotional mental stressor, anger recall, with increased sympathetic and decreased parasympathetic activity compared to reference controls. The observed cardiac autonomic pattern of relatively greater emotionality triggered cardiac sympathetic nerve stimulation implicates the cardiac autonomic nervous system as a potential mechanistic pathway for MCD in the absence of obstructive CAD. These findings may have implications for understanding and treatment of emotional stress triggered cardiac events in women.

Cardiac Autonomic Function in Response to Emotional Mental Stress in Women with Microvascular Coronary Dysfunction

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Background: Women with angiina and myocardial ischaemia in the absence of obstructive coronary artery disease (CAD) display microvascular coronary dysfunction (MCD) at relatively low heart rates during emotional stress. We evaluated cardiac autonomic function, measured by heart rate variability (HRV), during acute mental stress testing (MST) in women with MCD vs. reference controls.

Methods: Women with MCD diagnosed by invasive coronary reactivity testing (N=16) and reference matched (age, BMI) controls who had no cardiac risk factors and normal exercise stress test (N=8) underwent MST. The standardized MST protocol included 4 min anger recall task, 4 min mental arithmetic, and 3 min forehead cold pressor (COP) test. Heart rates, blood pressures, and HRV (GE Marquette ®) were measured at baseline and during MST in both groups. Wilcoxon rank sum test was used for HRV comparisons.

Results: Mean age, BMI, HR, BP and cardiovascular reactivity (systolic BP X HR) changes to M3 in both groups were similar between the two groups. During the emotional mental stressor, anger recall, there was a significant increase in LF (p=0.003) and decrease in HF (p=0.04) power in women with MCD compared to healthy women (Table). There was no difference in HRV with mental arithmetic and COP between the two groups. There was no difference in LF/HF, a measure of sympathovagal balance, at baseline or during M3 between the two groups.

Conclusions: Women with MCD respond to an emotional mental stressor, anger recall, with increased sympathetic and decreased parasympathetic activity compared to reference controls. The observed cardiac autonomic pattern of relatively greater emotionality triggered cardiac sympathetic nerve stimulation implicates the cardiac autonomic nervous system as a potential mechanistic pathway for MCD in the absence of obstructive CAD. These findings may have implications for understanding and treatment of emotional stress triggered cardiac events in women.

Measurement of Allostatic Load in Adults Aged 34-84 in the Midlife in the United States Study

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Background: Allostatic load (AL) theory postulates repeated adaptation to challenge or failure to shut off stress response systems leads to cumulative wear and tear across multiple biological systems. This suggests a common correlation among biological systems. Recent work has tested AL theory using a second-order factor analysis of biomarkers in middle-aged adults. We aimed to test whether a second-order factor model of biomarkers fit the data from the Midlife in the United States (MIDUS) II study and examine whether the factor structure is consistent across adulthood.

Methods: A subset of participants with biomarker data (N=1254) were included from MIDUS II. Confirmatory factor analysis was used to estimate a second-order AL factor indicated by seven biological systems—sympathetic nervous system, parasympathetic nervous system, hypothalamic-pituitary-adrenal axis, inflammation, cardiovascular, metabolic glucose, and metabolic lipids—from 23 biomarkers. We compared the following models: single factor—all biomarkers loading directly on AL; correlated factors—biomarkers loading on each biological system with all systems correlated; second-order factor—biomarkers loading on each biological system, which then load on a second-order AL factor. Multiple group analysis was used to test whether the second-order AL factor was invariant across age groups (45, 45 to 60, >60 years). Medications known to impact biomarkers and sex were controlled in all models.

Results: The single factor model fitted poorly, but the correlated factors and second-order factor models fit the data adequately (see table). For the second-order factor, number of factors (configural) and factor loadings (metric), but not means (scalar) were invariant across age groups.

Conclusions: Consistent with the theory of allostatic load, a common second order factor model accounted for the relations among diverse biomarkers. In addition, the number of factors and factor loadings were invariant across the age range in our sample.

Work Stress and Hair Cortisol Levels Among Workers in a Bangladeshi Ready-Made Garment Factory

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Background: Psychological stress is widespread and is associated with a broad range of adverse health outcomes. Activation of the hypothalamic-pituitary-adrenal axis, as indicated by its end product cortisol, is one of the key physiological pathways linking stress to ill health. However, evidence on the associations of stressful work conditions with cortisol is inconsistent. Further, most research stems from Western countries with possibly limited generalizability to other regions of the world. We therefore set out to explore associations of work stress with long-term integrated cortisol levels in hair in a ready-made garment (RMG) factory in Dhaka, Bangladesh.

Methods: In 2012, 175 workers participated in our study. A validated questionnaire was administered to measure three component of work stress: work-related demands (WD) (4 items), interpersonal resources (IR) (5 items) and work-related values (VV) (3 items). Hair cortisol concentrations (HCC) were analyzed by liquid chromatography-mass spectrometry. Multivariate linear regression was used to estimate associations of hair cortisol with the three work stress components.

Results: The mean HCC was 3.37 pg/mg (SD 2.94 pg/mg). A significant association was observed between VV and HCC (beta= 0.187; p= 0.031). Post-hoc analyses revealed that this association could largely be attributed to one particular item on "promotion prospects", which implies that the perception of good promotion prospects was associated with higher HCC. WD and IR scores showed no significant associations with HCC.

Discussion: The finding of elevated HCC with high promotion prospects may seem contra-intuitive in light of the evidence from Western work settings. We speculate that this observation may highlight a culture-specific association: i.e., being promoted in the RMG industry of Bangladesh requires exceptional loyalty to the management and readiness to penalize coworkers, and may represent a stressful experience to those who judge their promotion prospects as good.

Measurement of Allostatic Load in Adults Aged 34-84 in the Midlife in the United States Study

Discussion: The finding of elevated HCC with high promotion prospects may seem contra-intuitive in light of the evidence from Western work settings. We speculate that this observation may highlight a culture-specific association: i.e., being promoted in the RMG industry of Bangladesh requires exceptional loyalty to the management and readiness to penalize coworkers, and may represent a stressful experience to those who judge their promotion prospects as good.

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GRIMACE & BEAR IT: DOES FACIAL GRIMACING REDUCE PERCEIVED PAIN AND PHYSIOLOGICAL RESPONSES TO NEEDLE INJECTION?
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Individuals frequently grimace (i.e., an expression of disgust, disapproval) during painful experiences, however, little to nothing is known as to whether this natural response is beneficial in some way. In the current study, individuals (N = 101, 52% male, 87% white, mean age = 19) were randomized to hold chopsticks in their mouths in such a way that a grimace or a neutral (control) expression was created. Individuals were told a cover story that this was a multi-tasking study to prevent emotion-related expectancy effects. Participants then held the correct facial expressions while they received a saline solution injection via a standard-sized 25 gauge needle (i.e., what is used in flu vaccination). Heart rate (HR) and skin conductance (SC) were recorded throughout the study as were pain and stress reports. Results revealed that individuals in the grimace condition had lower SC both during and following injection (F = 5.26 and 6.13 respectively, ps < .05) as compared to the neutral control condition. The grimacing condition also had marginally lower HR during injection (F = 2.89, p < .1), and significantly lower HR during recovery (F = 4.74, p < .05). This matched onto lower evaluations of stress and pain during the needle injection in the grimace group versus the control (both ps < .05). These findings indicate that a simple facial expression manipulation may reduce the aversiveness of a needle injection experience with both psychological and physiological benefits. It also suggests that natural grimacing during painful experiences may be adaptive.

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INTRANASAL OXYTOCIN ADMINISTRATION LOWERS REPORTS OF ACUTE PAIN RELATIVE TO A PLACEBO
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Given that oxytocin might represent a novel, safe, and effective analgesic for acutely painful procedures, the effect of intranasal administration on acute pain sensitivity was examined using a placebo-controlled, double-blind, within-subjects crossover design. Thirty-seven (18 male) pain-free young adults underwent two laboratory sessions separated by one week. Each session consisted of baseline, administration, second baseline, pain, and recovery phases, completed in a fixed order. Participants were given an intranasal administration of 40U OT or placebo during the administration phase. Blood pressure (BP), and heart rate (HR) were measured at one minute intervals throughout each phase. Pain was induced by submerging the non-dominant hand in cold (2°C) water until the pain became unbearable, to a maximum of 5-minutes. Pain threshold, intensity, unpleasantness, and short-form McGill Pain Questionnaire-2 (SF-MPQ-2) pain descriptors were rated immediately following pain testing. Mood was assessed using visual analogue scales after baseline, second baseline, and pain phases. The second laboratory session was identical to the first with the exception that a different nasal spray was administered.

Participants reported lower pain intensity, F(1, 35) = 4.26, p < .05, np2 = .11, pain unpleasantness, F(1, 35) = 4.92, p < .05, np2 = .12 and SF-MPQ-2 pain descriptors, F(1, 35) = 5.02, p < .05, np2 = .13, and higher pain threshold, F(1, 35) = 4.55, p < .05, np2 = .12, following oxytocin administration relative to placebo. There was a nasal spray by phase interaction on HR, F(3, 33) = 4.49, p < .05, np2 = .11. Pain-related increase in HR was attenuated by oxytocin nasal spray. Systolic and diastolic BP increased during pain testing but were unaffected by nasal spray. Mood was not affected by oxytocin.

Better understanding the role of oxytocin in the experience of pain may highlight novel mechanisms associated with analgesia. Further, laboratory studies of oxytocin and pain have important implications for the management of pain in real-life situations. If proven therapeutic in clinical settings, oxytocin may represent a relatively inexpensive form of pharmacotherapy for pain management with little potential for addiction.

166) Abstract 1325
SLEEP DISORDER AS A MEDIATOR OF THE ASSOCIATION BETWEEN ACUTE CORONARY SYNDROME-INDUCED POSTTRAUMATIC STRESS DISORDER AND ANERGIA (LACK OF ENERGY)
Jonathan A. Shaffer, PhD, Medicine, Mathew S. Maurer, MD, Cardiology, Carmela Alcantara, PhD, Elena Brondolo, BS, Donald Edmondson, PhD, MPH, Medicine, Columbia University Medical Center, New York, NY

Background: Anergia, or lack of energy, is a commonly occurring syndrome in patients with acute coronary syndrome (ACS), and may be associated with risk for recurrent cardiovascular events and mortality. ACS-induced posttraumatic stress disorder (PTSD) is also common and associated with increased risk of cardiovascular disease, yet the association between PTSD and anergia has not been examined.

Methods: ACS-induced probable PTSD was assessed 1-month post-ACS by screening 287 adults using the Impact of Events Scale—Revised (IES-R), and defined as an IES-R score ≥ 35. Anergia status (anergic versus non-anergic) was assessed during hospitalization for ACS and at 1-month post-ACS using seven items related to energy levels from a validated questionnaire. Probable sleep disorder at 1 month was assessed using the Pittsburgh Sleep Quality Index (PSQI), and defined as a PSQI score > 5. Multivariable logistic regression models were used to determine whether ACS-induced probable PTSD was associated with 1-month anergia status, independent of baseline anergia status, age, sex, depression, cardiovascular risk, number of comorbidities, and bodily pain. The Sobel test was used to test whether probable sleep disorder mediated this association.

Results: Anergia was present in 21.2% of participants, probable PTSD in 1.2%, and probable sleep disorder in 35.5%. ACS-induced probable PTSD was significantly associated with 1-month anergia status (adjusted odds ratio [OR] = 5.54, p = 0.03). Probable sleep disorder was also significantly associated with anergia status (adjusted OR = 3.03, p = 0.002), and the indirect effect of PTSD symptoms on anergia through sleep was statistically significant (p = 0.01). Once sleep was entered into the model, the association of probable PTSD with anergia was no longer significant (adjusted OR = 3.36, p = 0.12), though still large.

Conclusion: ACS-induced PTSD is associated with anergia status, and this association appears to be due in part to sleep problems associated with PTSD or ACS.
72nd AMERICAN PSYCHOSOMATIC SOCIETY ANNUAL MEETING ABSTRACTS – FRIDAY, MARCH 14, 2014

Friday, March 14 from 10:30 to 11:45 am

Symposium 1470

Strengthening the Boundaries of Sleep in Psychosomatic Medicine: Evidence of Mechanisms and Opportunities for Health

Martica Hall, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, CA, Arie A. Prather, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, UCLA, Los Angeles, PA, Christopher E. Kline, PhD, Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, TX, Daniel Taylor, PhD, Psychology, University of North Texas, Denton, U.S., Daniel J. Buysse, MD, Psychiatry, University of Pittsburgh, Pittsburgh, PA

This symposium on sleep in psychosomatic medicine is framed around the theme of the 2014 meeting: mechanisms of disease to models of health. Four new studies will highlight sleep as a biobehavioral mechanism essential to health and functioning. Each study is focused on a different dimension of sleep, from subjective sleep quality, to sleep duration, to symptoms of insomnia, to insomnia as a disorder. These studies also illustrate the breadth of the sleep-health relationship. The first two papers will describe cross-sectional associations among sleep quality and sleep duration with cellular and systemic indices of aging and health, as measured by telomere length and allostatic load. The second two papers will present data linking insomnia with functional indices of health, as measured by cardiorespiratory fitness and vaccine response. Once these data have been presented, an internationally-recognized sleep researcher, attending his first APS meeting, will integrate and discuss these data in the context of a new model of sleep health. The discussion will highlight features of the sleep health model that are especially relevant to APS, including opportunities for optimizing sleep and, in turn, optimizing health and functioning.

Individual Abstract Number: 1473

POORER SLEEP QUALITY IS ASSOCIATED WITH SHORTER CD8+ T LYMPHOCYTE TELOMERE LENGTH IN A SAMPLE OF OBSESE MEN

Arie A. Prather, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Blake Garfein, PhD, Patricia Moran, PhD, Jennifer Daubenmier, PhD, Michael Acree, PhD, Medicine, Osher Center for Integrative Medicine, UCSF, San Francisco, CA, Peter Bacchetti, PhD, Epidemiology & Biostatistics, Jue Lin, PhD, Elizabeth Blackburn, PhD, Biochemistry & Biophysics, Elissa S. Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Frederick M. Hecht, MD, Medicine, Other Center for Integrative Medicine, UCSF, San Francisco, CA

Sleep disturbance is associated with increased rates of chronic medical conditions observed at high rates among obese individuals. Shortened telomere length, a marker of biological aging, may serve as potential biological pathway. While preliminary evidence links poor sleep and shorter telomere length in whole blood, little is known about how sleep is related to telomere attrition in specific immune cell types. In this study, we examined the associations of global sleep quality, as measured by the Pittsburgh Sleep Quality Index, and diary-based sleep duration with measures of telomere length in peripheral blood mononuclear cells (PBMCs) and immune cell subsets sorted by flow cytometry, including CD4+, CD8+, and CD19+ cells, in a sample of 87 obese participants (BMI=35.4 (SD=3.6); aged 48.0 (SD=12.5) years; 81.6% women). Higher PSQI global sleep quality scores are indicative of poorer overall sleep quality. Diary-based sleep duration was not significantly related to telomere length in PBMCs or any immune cell subset. In contrast, adjusting for age, there were non-significant associations between poorer PSQI global sleep quality and shorter telomere length in PBMCs (β = -0.17, p = 0.12), CD4+ (β = -0.18, p = 0.09), CD19+ (β = -0.13, p = 0.24), with a statistically significant association in CD8+ cells (β = -0.26, p = 0.01). This linear association between poorer global sleep quality and shorter CD8+ telomere length remained significant after adjusting for age, gender, BMI, sleep apnea risk, perceived stress, and depressive symptoms (R²=0.08; B= -0.30, p=0.002). These findings provide intriguing early evidence that sleep may influence obesity-related chronic disease risk in part via accelerated telomere attrition in CD8+ T lymphocytes.

Individual Abstract Number: 1579

SLEEP DURATION AND ALLOSTATIC LOAD: FINDINGS FROM THE MIDLIFE DEVELOPMENT IN THE UNITED STATES (MIDUS) STUDY

Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, UCLA, Los Angeles, CA, Michael R. Irwin, M.D., Cousins Center for Psychoneuroimmunology, UC-Los Angeles, Los Angeles, CA, Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, UCLA, Los Angeles, CA, Carolyn S. Merkiel, Ph.D., Teresa Stenotey, PhD, Gilani, UCLA, Los Angeles, CA

Allostatic load, the concept of ‘wear and tear’ and functional indices of health, are considered to be elevated in chronic disease and is responsible for accelerated aging, impaired function, and death. This is measured by the cumulative effects of the stress response across regulatory systems, and is grounded in the belief that a multisystem perspective allows for the varied routes through which disease develops. This paper will discuss cumulative effects across biological regulatory systems using a multisystem perspective, termed allostatic load, which itself is a powerful predictor of morbidity and mortality outcomes. Present cross-sectional analyses include 1,195 participants (56.7% female; 77.1% white; age (M(SD)=54.0(11.8)) from MIDUS who took part in the Biomarker Substudy. Allostatic load was computed from 22 biomarkers representing sympathetic nervous system activity, parasympathetic nervous system activity, heart rate, insulin resistance, central axis activity, cardiovascular regulation, inflammation, lipid metabolism, glucose metabolism, and adiposity. Self-reported average sleep duration per night was categorized as dummy variables referencing normal sleepers: short sleepers (<5 hrs), below normal (5 to <6.5 hrs), normal (6.5 to <8.5 hrs), and long sleepers (≥8.5 hrs). A linear regression model, adjusting for age, gender, race, education, income, BMI, and comorbid chronic conditions, revealed significant differences in allostatic load for the 3 sleep duration categories compared to normal sleep duration. As compared to the normal sleepers, only short and long sleepers had significantly elevated allostatic load scores, (B(SE)=46.13, p<.001; (B(SE)=21.11, p<.05). Adjusted mean allostatic load was as follows: short sleepers (M(SE)=2.61.13), below normal sleepers (M(SE)=15.07), normal sleepers (M(SE)=2.06), and long sleepers (M(SE)=2.31.11). These results support the theory that inadequate sleep leads to wear and tear, i.e. allostatic load, witnessed by shifts in regulatory set points across systems of the body including cardiovascular, autonomic, endocrine, immune, and metabolic systems. In addition, the findings suggest that long sleepers also have similarly elevated levels of allostatic load.

Individual Abstract Number: 1831

SLEEP INITIATION COMPLAINTS ARE ASSOCIATED WITH LOWER CARDIORESPIRATORY FITNESS AMONG POSTMENOPAUSAL WOMEN

Christopher E. Kline, PhD, Martica H. Hall, PhD, Daniel J. Buysse, MD, Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA, Conrad P. Earnest, PhD, Health, University of Bath, Bath, Somerset, UK, Steven N. Blair, PED, Exercise Science, University of South Carolina, Columbia, SC, Timothy S. Church, MD, PhD, MPH, Preventive Medicine, Pennington Biomedical Research Center, Baton Rouge, LA

Purpose: Cardiorespiratory fitness (CRF) is a strong independent predictor of cardiovascular risk and is influenced by habitual physical activity as well as genetic factors. Although poor sleep is associated with lower levels of physical activity, little is known about the relationship between sleep quality and CRF. Of the few studies that have examined this association, significant heterogeneity in physical activity often existed within the sample, which could confound the relationship between sleep and CRF. The purpose of this study was to examine the relationship between sleep quality and cardiorespiratory fitness in a sample of sedentary postmenopausal women. Methods: 390 overweight and sedentary postmenopausal women (age: 57.5±5.1) completed a maximal exercise test on a cycle ergometer. Sleep was assessed with 6 items from the Medical Outcomes Study Sleep Scale, with 2 questions each focused on difficulties with sleep initiation, sleep maintenance, and daytime sleepiness. A composite Sleep Problems Index assessed global sleep quality. CRF was assessed with a maximal exercise test on a cycle ergometer; peak relative maximal oxygen consumption (VO2peak) served as the primary CRF measure. Only tests with objective determination of maximal exertion (maximal respiratory exchange ratio ≥1.05) were included in analyses. All analyses adjusted for age, race/ethnicity, BMI, marital status, pedometer-assessed physical activity, and sleep medication use. Results: Global sleep quality was not associated with CRF (β=−.07, p=.10). However, sleep initiation complaints were similarly elevated levels of CRF (β=−.12, p=.008). Specifically, women who reported a sleep latency ≥30 min and difficulty falling asleep lost ~10% of VO2peak. Conclusions: Self-reported difficulty initiating sleep is an important correlate of low CRF. Because of the robust relationship between CRF and cardiovascular health, CRF may be a mechanism that partially explains the relationship between sleep quality and CRF. These studies also illustrate the breadth of the sleep-health relationship. The first two papers will present data linking insomnia with functional indices of health, as measured by cardiorespiratory fitness and vaccine response. Once these data have been presented, an internationally-recognized sleep researcher, attending his first APS meeting, will integrate and discuss these data in the context of a new model of sleep health. The discussion will highlight features of the sleep health model that are especially relevant to APS, including opportunities for optimizing sleep and, in turn, optimizing health and functioning.

Individual Abstract Number: 1696

INSOMNIA AS A RISK FACTOR FOR DECREASED ANTIBODY RESPONSE TO THE INFLUENZA VACCINE

Daniel Taylor, Ph.D., Kinesiology, S. Kelly, Ph.D., Psychology, University of North Texas, Denton, TX, Marian L. Kohut, Ph.D., Kinesiology, Iowa State University, Ames, IA, Kai-Sheng Song, Ph.D., Mathematics, University of North Texas, Denton, TX

The current study examined if insomnia was a risk factor for lower influenza vaccine antibody responses in a healthy young adult population by comparing people with insomnia (PWI, N=31) to people without insomnia (PWOI, N=74), over two years (2011 [PWI=31, PWOI = 34] and 2012 [PWI=34, PWOI = 40]). The H1 N1 strain was used, repeated measures were performed. ELISA IgG and IgG1 antibody levels increased from pre- to post-vaccine across all strains and years (p<.001). There were significant between group differences (p = .017), with the PWI group having lower antibody levels at both pre- and post-vaccine than the PWOI group. In 2011, PWI had lower IgG antibody levels of H3N2 and H1N1 (both ps < .018) and a trend for B IgG (p = .062). In 2012, PWI again had lower antibody levels of H3N2 IgG (p<.031) with B IgG also reaching significance.
Individual Abstract Number: 1571

Children exposed to early adversity are at risk of developing mental health problems. First, we describe results of analyses that assessed the relationship between cumulative childhood adversity and mental health at age 7 years as the standardized sum of parent- and teacher-completed Behavior Assessment System for Children scores, standardized for age and gender. We used logistic regression models to assess the relationship between cumulative childhood adversity and mental health problems, controlling for other risk factors such as low socioeconomic status, social support, home environment, housing, and acculturation. We found that children exposed to early adversity were at increased risk of developing mental health problems, even after controlling for other risk factors. Our findings highlight the importance of early intervention and support for children exposed to adverse childhood experiences.
mental health moderated by other ANS profiles. Thus, children exposed early to adversity who show a dampened SNS response and PNS withdrawal during challenge are at heightened risk for externalizing behavior problems and at relatively low risk for internalizing behavior problems at age 7 years.

Individual Abstract Number: 1443

BLUNTED DIURNAL CORTISOL MEDIATES THE ASSOCIATION BETWEEN MALTREATMENT RISK AND EXTERNALIZING BEHAVIOR: RESULTS FROM AN EARLY PARENTING INTERVENTION

Kristin Bernard, Ph.D., Psychology, Stony Brook University, Stony Brook, NY, UD; Mary Dozier, Ph.D., Psychology, University of Delaware, Newark, DE; Jordan Zwerling, BS, Psychology, Stony Brook University, Stony Brook, NY

Early adversity is associated with increased risk of externalizing behavior problems. Given evidence that (a) the HPA axis becomes dysregulated following maltreatment, and (b) HPA axis dysregulation (i.e., blunted diurnal cortisol pattern) is associated with externalizing behavior, the present study examined whether cortisol dysregulation mediates the association between maltreatment risk and externalizing behavior problems. Participants included 53 "high-risk" children identified as infants following involvement with Child Protective Services, and 41 "low-risk" comparison children. We assessed diurnal cortisol production and parent-reported externalizing behavior when children were 5 years old. Using MPlus 6.0, we tested a model including risk group (predictor), diurnal cortisol pattern (i.e., slope across the day; mediator), externalizing behavior (outcome), and child age (covariate). The model demonstrated good fit: X2/df = 1.27, RMSEA = .05, CFI = .93. High-risk status was associated with more blunted cortisol slopes (ß = 0.63, p < .001) and higher externalizing behavior (ß = 0.59, p = 0.002). More blunted cortisol was associated with higher externalizing behavior (ß = 0.69, p = 0.013). When cortisol slope was included as a mediator, the effect of risk status on externalizing behavior was not significant (ß = 0.05, p = 0.87). The indirect (i.e., mediating) effect of risk on externalizing behavior through cortisol slope was significant (ß = 0.61, p < .017).

We also examined the effects of an early parenting intervention on children’s diurnal cortisol patterns. Attachment and Biobehavioral Catch-up (ABC) aims to increase synchronous interactions. In a randomized clinical trial, mothers of high-risk infants participated in the ABC intervention (n = 27) or a control intervention (n = 26). We previously showed that ABC infants had more typical diurnal cortisol patterns (higher wake-up cortisol, steeper decline across day), relative to control infants. In the present study, we found these effects were maintained to age 5, with ABC children showing more normative wake-up cortisol levels than control children. These findings suggest that the impact of early adversity on child externalizing behaviors may be mediated by disruptions to HPA functioning and that maternal sensitivity may buffer these HPA effects.

Friday, March 14 from 10:30 to 11:45 am
Paper Session: Diabetes

Abstract 1511

EARLY AGE OF ONSET OF TYPE 1 DIABETES IS ASSOCIATED WITH INCREASED FUNCTIONAL BRAIN CONNECTIVITY

John P. Ryan, PhD, Howard J. Alzioni, MD, PhD, Psychiatry, Trevor J. Orchard, MD, Epidemiology, Medicine and Pediatrics, Caterina Rosano, MD, MPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA

Type 1 diabetes (T1D) often has a childhood age of onset and results in end organ damage in the central nervous system. Though many studies have suggested that an early age of onset is associated with better microvascular outcomes, it is currently unknown how age of onset relates to functional brain networks later in life. Accordingly, we tested for differences in resting state functional connectivity between individuals with earlier and later age of onset. Participants were from a subsample of the Pittsburgh Epidemiology of Diabetes Complications cohort of childhood onset (<17years) T1D and included 44 adults divided into two groups based on age of onset before or after 8 years of age (early and late age of onset, respectively). Participants were matched for sex and age (24 men, mean age 43.4 years). Resting state functional magnetic imaging data was collected and a mean connectivity value was calculated for eight resting state networks. A multivariate analysis of variance was conducted to test for group differences in network connectivity. Overall, participants with early age of onset had stronger network connectivity relative to those with late age of onset (F (8, 35) = 3.13, p < .01). Post-hoc examination of differences in network strength revealed two networks with significant between-group differences: the dorsal default mode network (F (1, 42) = 9.89, padj < .05) and the right executive control network (F (1, 42) = 12.69, padj < .01). In both networks, early age of onset was associated with stronger network connectivity. Additional studies are needed to understand the longitudinal and cognitive implications of stronger connectivity among individuals who develop T1D before age 8.
diabetes. We examined the relation between depressive symptoms in adolescence and diabetes in young adults in the National Longitudinal Study of Adolescent Health. Adolescents (N=13066) completed the CES-D-20 during wave 1 (1994-1995, mean age 16) and the CES-D-10 during follow-up (2007-2008, mean age 29). High depressive symptomatology was characterized by at least six or more items for the CES-D-20 and 11 or above for CES-D-10, according to established guidelines. Diabetes was identified thirteen years after baseline (2007-2008) based on either: i) HbA1C>=6.5%; or ii) fasting plasma glucose >=126 mg/dl; iii) non-fasting plasma glucose >=200 mg/dl; iv) participant self-report healthcare provider diagnosed DM with or without insulin or hypoglycemic medication use. Obesity was defined as BMI>=30 based on measured height and weight, smoking status, physical activity and alcohol use were assessed based on self-report during the wave 4 follow-up visit. The prevalence of DM in young adulthood was 7%. In adolescence 8% of men and 15% of women had high depressive symptomatology, in adulthood this prevalence rose to 13% of men and 19% of women. In models adjusting for demographic factors, women were at increased risk of developing DM if they experienced high depressive symptomatology during adolescence only (OR 1.6 95%CI 1.0, 2.6), in adulthood only (OR 1.7 95%CI 1.2, 2.4) or jointly during adolescence and adulthood (OR 1.9 95%CI 1.1, 2.5), these associations remained after adjusting for obesity, physical activity, alcohol use and smoking status. No significant associations were noted among men. There appear to be sex differences in the relationship between depressive symptomatology and odds of DM development in young adulthood and the timing of depression onset (adolescence or young adulthood) does not appear to influence the magnitude of association.

Abstract 1260
ATYPICAL MAJOR DEPRESSION IS MORE STRONGLY ASSOCIATED WITH DIABETES PREVALENCE THREE YEARS LATER THAN NONATYPICAL DEPRESSION AND DYSTHYMIA: NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS (NESARC)
Tasneem Khambaty, M.S., Jesse C. Stewart, Ph.D., Psychology, Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis, IN
Although prospective studies suggest that depression is associated with an increased risk of type 2 diabetes, few studies have compared the utility of different types of depressive disorders in predicting diabetes incidence. Thus, we investigated the associations of atypical major depressive disorder (MDD; cases with both reverse vegetative symptoms of hyperinsomnia and hyperphagia), nonatypical MDD (the remaining MDD cases), and dysthyemic disorder with 12-month diabetes prevalence three years later. Participants were 27,405 adults (mean age = 46 years, 55% female, 41% non-White) who took part in Waves 1 (2001–2002) and 2 (2004–2005) of the NESARC study. Individuals with cardiovascular or liver disease at Wave 1 and women who were pregnant at Wave 1 or 2 were excluded from analyses. Data from the structured Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS–IV), administered at Wave 1 to assess lifetime history of DSM-IV mental disorders, was used to compute a 4-level depression variable: no depression history (n=22,718), lifetime atypical MDD (n=888), lifetime non-atypical MDD (n=3,572), and lifetime dysthymic disorder (n=227). At Wave 2, participants who reported being diagnosed with diabetes in the past 12-months by a physician were coded as diabetes cases (n=2,306). Logistic regression models, adjusted for age, sex, race/ethnicity, education, hypertension, cholesterol, and the NESARC sample design, revealed that atypical MDD (OR=1.64, 95% CI 1.36-1.98, p<0.001) but not nonatypical MDD (OR=1.00, 95% CI: 0.90-1.11, p=.99) or dysthyemic disorder (OR=0.94, 95% CI: 0.75-1.18, p=.60) was associated with 12-month diabetes prevalence at Wave 2. Atypical MDD was more strongly related to diabetes prevalence than nonatypical MDD (p<0.001) and dysthymia (p<0.001). Moreover, atypical MDD remained associated with diabetes prevalence even after further adjusting for Wave 1 body mass index (OR=1.21, 95% CI: 1.04-1.42, p<0.01), smoking status (OR=1.87, 95% CI: 1.65-2.12, p<0.001), alcohol use (OR=1.85, 95% CI: 1.64-2.09, p<0.001), physical activity (OR=1.85, 95% CI: 1.64-2.09, p<0.001), and depression treatment (OR=1.77, 95% CI: 1.53-2.04, p<0.001). Results from this large, nationally representative sample raise the possibility that adults with atypical MDD observed in recent studies.

Friday, March 14 from 10:30 to 11:45 am
Symposium 1076
The Brain-Gut Dialogue: New Evidence, New Interventions
Susan Leventstein, MD, internist, Aventino Medical Group, Rome, RM, Italy, NC, Douglas A. Drossman, MD, Medicine and Psychiatry - Gastroenterology, University of North Carolina, Chapel Hill, RM, Vlaams-Brabant, Lukas Van Oudenhove, MD, PhD, Clinical & Experimental Medicine, University of Leuven, Leuven, Belgium, IL, Laurie Keefer, PhD, Gastroenterology and Hepatology, Northwestern University Feinberg School of Medicine, Chicago, IL
Interactions between the brain and the gastrointestinal tract are generally thought to run from the mind to the gut and to be important chiefly in the “functional” conditions, irritable bowel syndrome and functional dyspepsia. Recent evidence, however, is reestablishing the importance of psychological factors in “organic” conditions such as ulcers and inflammatory bowel disease; physiological phenomena and therapies are proving crucial to the irritable bowel syndrome; and mind-gut interactions are turning out to be bidirectional. This symposium presents some of the cutting-edge research that has been updating the biopsychosocial model of gastrointestinal disease.

The first speaker describes brain imaging and clinical studies untangling the complex mechanisms of chronic gastrointestinal pain and giving a theoretical underpinning to the use of centrally-acting pharmaceutical agents in treating both “functional” and “organic” conditions. The second speaker presents new prospective epidemiological data about an old disease, peptic ulcer – psychological stress, now widely thought to be irrelevant, turns out to be an important etiological factor even when the two currently-accepted “causes” of ulcer, Helicobacter pylori and non-steroidal antiinflammatory drugs, are taken into account. A third speaker documents the bidirectionality of brain-gut interactions with research demonstrating an influence of food in general and specific nutrients in particular on emotions and other psychological processes. The final speaker illustrates the successes that have been achieved using behavior-oriented interventions, focussing on her own work with hypnotherapy in inflammatory bowel disease and cognitive-behavioral therapy in irritable bowel syndrome. In summary, this symposium overtures common conditions showing the mind-body interactions remain important in organic gastrointestinal disease despite major biomedical advances, that the line between functional and organic is ever more blurred, that biopsychosocial concepts have been advancing therapy, and that the highway between the mind and the gastrointestinal tract runs both ways.

Individual Abstract Number: 1135
THE ROLE OF THE CENTRAL NERVOUS SYSTEM IN CHRONIC GASTROINTESTINAL PAIN AND ITS TREATMENT
Douglas A. Drossman, MD, Medicine and Psychiatry - Gastroenterology, University of North Carolina, Chapel Hill, NC
A challenge within medicine is to understand and care for patients with chronic gastrointestinal (GI) pain. New scientific knowledge indicates that pain symptoms and patient behaviors result from the interactions between brain and gut: the Brain-Gut Axis. The relative contribution of these areas vary depending on the nature of the disorder, the chronicity of the pain and the unique Biospsychosocial features of the individual afflicted. While GI pain may have peripheral, i.e., structural disease or bowel related dysfunction (motility disturbances, visceral hypersensitivity, disruption of mucosal integrity and altered bacterial flora), as pain becomes more severe and constant, there is greater disruption of central nervous system (CNS) regulatory pathways (altered neurotransmission, increased afferent signaling, increased circulatory cortical activity, neurodegeneration) and this correlates with greater psychosocial disturbance. Brain imaging and related studies supporting the pathophysiological basis for the brain gut axis in the regulation of chronic GI pain will be discussed. Treatment involves: 1) Use of good interviewing skills to enhance the patient-physician relationship, 2) Use of new pharmacological tools targeted to improve gastrointestinal functioning, 3) elimination of opioid analogues, and 4) application of centrally targeted psychotropic and behavioral treatments to reduce pain and improve psychological co-morbidities. This presentation will address
A-59

STRESS AND PEP TIC UL CER IN THE AGE OF HELICOBACTER PYLORI

Susan Levenstein, MD, internist, Aventino Medical Group, Rome, RM, Italy; Steffen Rosenstock, Dr.Med.Sc., Section for Gastroenterology, Hvidovre Hospital, University of Copenhagen, Hvidovre, none, Denmark; Torben Joergensen, Dr.Med.Sc., Rikke K. Jacobsen, MSc, Centre for Prevention & Health, The Capital Region of Denmark, Glostrup, none, Denmark

Peptic ulcer, once the classic psychosomatic disease, is now thought to have two causes: Helicobacter pylori (HP) and non-steroidal antiinflammatory drugs (NSAIDs). The literature suggesting a role for psychological stress is marred by methodological weaknesses, and changes in ulcer epidemiology and medical practice make valid research increasingly difficult to perform.

A population-based sample of 3379 ulcer-free Danish adults had potential risk factors assessed in 1982. Incident ulcer was determined as of 1993-4 and confirmed by review of radiological or endoscopic reports. Confirmed gastric or duodenal ulcers were diagnosed in 76 subjects. A 0-10 point composite Stress Index comprising life stressors and perceived distress was predictive of incident ulcer—a score in the upper tertile carried an adjusted odds ratio of 2.2 (95% Confidence Interval [CI] 1.2 to 3.9, P=0.01) and a population attributable fraction of 29.6%. The per-point odds ratio for the Stress Index (1.19 per point, 95% CI 1.09 to 1.31, P=0.001) was unaffected by adjustment for HP, lower after adjustment for socioeconomic status (1.17, 95% CI 1.07-1.29), and still lower after further adjustment for smoking, NSAID use, and lack of exercise (1.11, 95% CI 1.01 to 1.23). The effect of stress was similar in subjects who were HP seropositive, HP seronegative, and negative for both HP and NSAIDs. On multivariate analysis, stress, socioeconomic status, smoking, HP, and NSAIDs were independent predictors of ulcer (Table). This population-based cohort study accounting for all major confounders, mediators, and co-causes showed that psychological stress increases the risk of subsequent peptic ulcer. The association is partially mediated by the influence of stress on ulcer patients investigate potential contributory psychosocial factors.

Individual Abstract Number: 1077

WHERE'S THE COMFORT IN COMFORT FOODS? THE INFLUENCE OF NUTRIENT SIGNALS ON AFFECTIVE AND COGNITIVE FUNCTION

Lukas Van Oudenhove, MD, PhD, Clinical & Experimental Medicine, University of Leuven, Leuven, Vlaams-Brabant, Belgium

Food in general and fatty foods in particular have obtained intrinsic reward value throughout evolution. This reward value results from an interaction between extraceptive signals from different sensory modalities, interoceptive hunger/satiety signals from the gastrointestinal tract to the brain and the modulatory influences of ongoing affective and cognitive processes in the brain. Further evidence linking food to emotional states from folk psychology (‘comfort foods’) as well as epidemiological studies showing high comorbidity rates between disorders of food intake, including obesity, and mood disorders such as depression. This state-of-the-art presentation will give an overview of the potential mechanisms underlying the link between foods and emotion. First, the role of extraceptive sensory signals will be discussed, including visual (anticipatory reward), smell and taste (consummatory reward), as well as the encoding of reward value in the (ventral) striatum and subjective “food pleasantness” in the cingulate and orbitofrontal cortex. Differences between lean and obese subjects will be highlighted. Second, recent novel studies elucidating the mechanisms of purely interoceptive fatty-acid induced signalling from the gastrointestinal tract to the brain, including the role of gut peptides, will be presented. These studies have demonstrated that such subliminal interoceptive stimuli influence the subjective (that is, mood ratings) as well as neural responses to negative emotion induction (Van Oudenhove et al, JCI 2011), suggesting that the effect of foods on mood may even occur independently from their extraceptive sensory properties. Finally, a series of recent studies suggesting effects of different nutrients (different types of fat, fructose versus glucose) on cognitive functions in general and executive function in particular will be presented, including recent functional brain imaging work showing differences between brain responses to subliminal intragastric administration of fructose and glucose.

Individual Abstract Number: 1079

THE IMPACT OF BEHAVIORAL INTERVENTIONS ON GASTROINTESTINAL DISEASES

Laurie Keefee, PhD, Gastroenterology and Hepatology, Northwestern University Feinberg School of Medicine, Chicago, IL

Background: There is strong evidence for gut-directed hypnotherapy (HYP) and cognitive-behavior therapy (CBT) in irritable bowel syndrome (IBS). These interventions succeed because they address centrally-mediated symptom processes—catastrophizing, symptom awareness and autonomic arousal. Research also suggests that these interventions can be translated to “organic” GI disorders, including inflammatory bowel disease (IBD). We will demonstrate the potential for behavioral therapies across the spectrum of GI diseases in the context of the Irritable Bowel Syndrome Outcome Study (IBSOS) and the Ulcerative Colitis Relapse Prevention Trial (UCRPT).

Study 1: IBSOS is an ongoing, NIH-funded trial of brief (4 session) CBT for IBS. This protocol was developed by Lackner and colleagues in response to research showing that IBS patients have better outcomes when CBT is delivered rapidly. Skills targeted in brief CBT map directly onto processes driving persistent symptoms including catastrophizing, worry and stress responsivity. The trial has 2 control arms—education/support and standard CBT. 320 participants have been enrolled. While results will not yet be available, we will discuss the relevancy of this research for the future of IBS management.

Study 2: UCRPT is a recently completed NIH-funded clinical trial of HYP for quiescent ulcerative colitis (UC). 54 patients were randomized to 7 sessions of HYP (n = 26) or attention control (CON; n = 29) and followed for 1 year to determine the impact of hypnotherapy on remission status/days to relapse. Hypnotherapy targeted factors influencing relapse rate—immune function, heightened symptom awareness and stress. ANOVA comparing HYP and CON subjects on number of days to clinical relapse favored the HYP condition [F = 4.8 (1, 48), P = 0.03] by 78 days. Chi-square comparing the groups on proportion maintaining remission at 1 year was also significant [X^2(1) = 3.9, P = 0.04] – 68% of HYP vs 40% CON maintained remission for 1 year.

Conclusion: Behavioral therapies show promise across a range of gastrointestinal diseases by targeting underlying disease processes, including cognitive-affective dysregulation, stress and immune function.

Friday, March 14 from 1:00 to 2:00 pm

Symposium 1509

Using Neuroimaging to Advance New Models of Mindfulness, Stress, and Health

J. David Creswell, Ph.D., Psychology and the Center for the Neural Basis of Cognition, Carnegie Mellon University, Pittsburgh, PA; VA, Kirk W. Brown, PhD, Psychology, Virginia Commonwealth University, Richmond, NC, Fadel Zeidan, PhD, Medicine, Wake Forest University, Winston-Salem, PA

Over the last fifteen years there has been a dramatic increase in public and research interest in mindfulness and its effects on health. Initial studies suggest that mindfulness (and related meditation training interventions) may have health protective effects in a broad range of stress-related health conditions, yet evidence-based models of how mindfulness impacts health are needed. This symposium brings together three researchers who are developing new neuro-behavioral models
of mindfulness, which advance our understanding of how mindfulness impacts the brain and physical health. Brown will describe new research (using EEG) showing how dispositional mindfulness facilitates emotion regulation by both altering early attention to threatening cues and one's cognitive appraisals of cues. Zeidan will describe how brief mindfulness meditation training reduces pain responses compared to well-matched placebo conditioning interventions, and the underlying neural mechanisms for these effects (using perfusion MRI). Creswell will describe how dispositional mindfulness and meditation training alter stress-related resting state functional connectivity of the amygdala (using BOLD fMRI). Collectively, this research offers new insights into how mindfulness impacts brain function in ways that foster pain relief, stress reduction, and health.

Individual Abstract Number: 1684

**WHY DOES MINDFULNESS PROMOTE MORE BENIGN RESPONSES TO EMOTIONAL THREAT? TEMPORALLY SENSITIVE TESTS OF AN ATTN DEPRESSION HYPOTHESIS**

Kirk W. Brown, PhD, Jordan Quaglia, MA, Robert Goodman, MA, Psychology, Virginia Commonwealth University, Richmond, VA

Successful emotion regulation can dampen stress responses, themselves important to mental and physical health outcomes. Mindfulness has predicted more benign emotional and behavioral responses to stress-relevant stimuli, but the processes explaining this have been unclear. I will describe two studies testing candidate processes arising from viewing mindfulness as a present-focused attention to events and experiences with minimal evaluative appraisal (e.g., Leary et al., 2006). Drawing upon Gross’ (1998) model of emotion regulation, I posit that mindfulness operates as a form of early attention deployment expressed in receptive attentiveness to, and dampened appraisals of, social and nonsocial unpleasant emotional stimuli. Using event-related potentials (ERPs) to capture neural markers of early attention to, and dampened appraisals of, social and nonsocial emotional stimuli, reflecting diminished cognitive appraisals. These studies suggest that mindful individuals’ more benign emotional and behavioral responses to threat may help explain previous studies may be rooted in a distinctive early attention deployment toward provocative stimuli, potentially offering an efficient means to regulate emotions in stress-relevant situations.

**DISPOSITIONAL MINDFULNESS AND CHANGES WITH MINDFULNESS TRAINING**

Adrienne Taren, MD, Neuroscience, Peter Gianaros, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Recent well-controlled studies indicate that mindfulness training interventions reduce stress and improve stress-related and disease outcomes (e.g., HIV- pathogenesis, chronic inflammation, depression), but the neural pathways for these stress reduction effects are unknown. The use of resting state functional connectivity analysis provides one approach for evaluating whether mindfulness can change task-independent neural network dynamics, which may offer clues about underlying functional neuroplasticity. This talk will describe two studies evaluating whether dispositional mindfulness (Study 1) and mindfulness meditation training (Study 2) alter resting state functional connectivity of the amygdala, a region known to correlate stress processing and physiological stress responses. An initial discovery cross-sectional neuroimaging study in a large sample of community adults (N=130) (Study 1) shows that perceived stress is associated with greater amygdala-cingulate cortex (ACC) resting state functional connectivity, whereas dispositional mindfulness is associated with reduced stress-related right amygdala-subgenual ACC connectivity. Study 2 rigorously evaluates this right amygdala-subgenual ACC resting state functional connectivity account in a randomized controlled trial of 3-day intensive mindfulness meditation training in stressed unemployed job-seeking community adults (N=42). I will first describe our approach for comparing 3-day mindfulness meditation training with a well-matched 3-day intensive relaxation training program without a mindfulness component, and then provide evidence demonstrating that mindfulness meditation training (relative to relaxation training) reduces resting state amygdala-subgenual ACC connectivity. Collectively, this work provides an initial indication that the capacity to be more attentive and receptive of one’s present moment experience (with a measure of dispositional mindfulness or via mindfulness meditation training) may promote functional neuroplastic changes, offering a novel resting state functional connectivity amygdala-ACC pathway for stress reduction effects.

**AMYGDALA FUNCTIONAL CONNECTIVITY CO-VARIATES WITH DISTINCT BRAIN MECHANISMS FROM PLACEBO ANALGESIA?**

Fadel Zeidan, PhD, Medicine, Nicole Emerson, MA, Susan Farris, MA, Neurobiology of Addiction, Wake Forest University, Winston-Salem, NC, Jenna Ray, MA, Psychology, UNC-Charlotte, Charlotte, NC, John McHaffie, PhD, Robert Coghill, PhD, Neurobiology and Anatomy, Wake Forest University, Winston-Salem, NC

Pain is a multidimensional experience that involves sensory, cognitive and affective mechanisms. The constellation of interactions between these factors makes the treatment of clinical pain challenging and often a financial burden. Mindfulness meditation has been shown to reduce clinical pain and at the same time is cost-effective. Unfortunately, these benefits have largely been demonstrated in those with extensive meditation training. The utility of mindfulness meditation may prove most attractive if it is found to reduce pain after brief training and if we can identify the specific pain relieving mechanisms associated with mindfulness meditation. We have postulated that meditation-related pain relief can be simply related to attentional characteristics, expectations of pain relief, and conditioning processes reflective of placebo analgesia. In this talk, I will present neuroimaging findings employing a perfusion based MRI technique to delineate the neural mechanisms supporting meditation-related pain relief brief after mental [four days (20m/d) training (study 1) and when compared to placebo conditioning intervention (study 2). In our first study (n=15), we found that meditation dramatically reduced pain intensity and pain unpleasantness ratings. Meditation-related pain relief was associated with reductions in somatosensory brain activity and thalamic deactivation. Furthermore, brain regions involved in placebo analgesia, such as the rostral anterior cingulate cortex and orbitofrontal cortex, were also related to meditation-related pain relief. Initial psychophysical results from our second study (n=60) reveal that meditation was significantly more effective at reducing pain ratings than when compared to placebo conditions. These findings demonstrate that brief meditation training can significantly reduce behavioral and neural responses to pain. This presentation will address the non-specific factors in meditation-related pain relief by disentangling its underlying neural mechanisms from those involving placebo analgesia.

Individual Abstract Number: 1722

**DOES MINDFULNESS MEDIATION-RELATED PAIN RELIEF ENGAGE DISTINCT Brain MECHANISMS FROM PLACEBO ANALGESIA?**

Kirk W. Brown, PhD, Jordan Quaglia, MA, Robert Goodman, MA, Psychology, Virginia Commonwealth University, Richmond, VA

One of the most recent and potentially important discoveries in depression research is the link between meaning and depression. Meaning is defined as a sense of purpose in life and a belief that life is worth living. Depression, on the other hand, is a mood disorder characterized by a persistent feeling of sadness or loss of interest in activities. The two conditions are often co-occurring, and the presence of meaning can have a significant impact on the course and outcomes of depression. Meaning and depression are not independent variables, but rather they are part of a larger system of interrelated factors. Understanding the relationship between meaning and depression can help us better understand the nature and course of depression, and ultimately develop more effective treatments. In this talk, I will present recent research from our lab that examines the relationship between meaning and depression. The research suggests that meaning and depression are related in a complex and interactive way. Meaning can be a protective factor against depression, while depression can lead to a loss of meaning. The research also highlights the importance of understanding the context in which meaning and depression co-occur, as this can have implications for treatment. Overall, the research suggests that meaning is a critical factor in understanding and treating depression.
in which they believed they were going to be socially evaluated by another. They also reported that their beliefs about social evaluation may vary as a function of ethnicity, gender, and social context.

The findings suggest that negative cognitions and race-related appraisals of threat may play a role in the development of chronic health disparities among African American women. Future research should explore the role of these mechanisms in explaining the heightened risk of illness and mortality among African American women with lower levels of education and income.
**Abstract 1450**

**TARGETED REJECTION LIFE EVENTS UNIQUELY PREDICT DOWNREGULATION OF ANTI-INFLAMMATORY SIGNALING MOLECULES AND INCREASED SYMPTOM SEVERITY IN YOUTH WITH ASTHMA**

Michael I. M. Murphy, M.A., Psychology, Northwestern University, Evanston, IL, George M. Slavich, Ph.D., Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, CA, Edith Chen, Ph.D., Gregory E. Miller, Ph.D., Psychology, Northwestern University, Evanston, IL.

Asthma is a chronic respiratory disorder that affects over seven million children (CDC, 2012). Evidence suggests that family dysfunction is prospectively associated with worsening of asthma symptoms (e.g., Chen, Chin, Strunk, & Miller, 2007; Kaugers, Klinnert, & Bender, 2004; Wright et al., 2004). Some research indicates that family stressors engender changes in children’s immune systems that exacerbate airway inflammation and contribute to asthma symptoms (Chen et al., 2007). In this study, we examined connections between family dysfunction and eosinophil activity. Eosinophils are centrally involved in the late-phase response to allergens and the chronic airway inflammation that underlies everyday asthma symptoms. When eosinophils are activated, they release eosinophil cationic protein (ECP), which contributes to airway inflammation, irritability, and asthma symptoms (Venge, 2004). We examined the role of family dysfunction in changes in eosinophil counts, ECP, and asthma symptoms in a longitudinal study of children with asthma (Mage = 12.6, SD = 2.6). Families participated in three lab visits across a two-year period. At baseline and one year later, parents completed the 12-item General Functioning Scale of the Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). At all lab visits, we collected peripheral blood to measure eosinophil counts (by automated Complete Blood Count) and ECP levels (by immunoassay on the ImmunoCAP system). Following each laboratory visit, participants were asked to record their asthma symptoms for two weeks. We examined the role of baseline and following year family dysfunction, as well as the interaction of these assessments (controlling for participant demographics and asthma medical variables) in the prediction of eosinophil activity and symptom severity two years later. To the extent that families were consistently high in dysfunction across the first two assessments, children showed larger increases in eosinophil counts, ECP levels, and symptom reports. These findings suggest that chronic family dysfunction may shape eosinophil activity in children with asthma, contributing over time to persistence in inflammation and difficulties with breathing.

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**Abstract 1333**

**CUMULATIVE FAMILY DYSFUNCTION, ESOINVILIPOL ACTIVITY, AND SYMPTOMS IN CHILDREN WITH ASTHMA**

Katherine B. Ehrlich, Ph.D., Gregory E. Miller, Ph.D., Edith Chen, Ph.D., Psychology, Northwestern University, Evanston, IL.

Asthma is a chronic respiratory disorder that affects over seven million children (CDC, 2012). Evidence suggests that family dysfunction is prospectively associated with worsening of asthma symptoms (e.g., Chen, Chin, Strunk, & Miller, 2007; Kaugers, Klinnert, & Bender, 2004; Wright et al., 2004). Some research indicates that family stressors engender changes in children’s immune systems that exacerbate airway inflammation and contribute to asthma symptoms (Chen et al., 2007). In this study, we examined connections between family dysfunction and eosinophil activity. Eosinophils are centrally involved in the late-phase response to allergens and the chronic airway inflammation that underlies everyday asthma symptoms. When eosinophils are activated, they release eosinophil cationic protein (ECP), which contributes to airway inflammation, irritability, and asthma symptoms (Venge, 2004). We examined the role of family dysfunction in changes in eosinophil counts, ECP, and asthma symptoms in a longitudinal study of children with asthma (Mage = 12.6, SD = 2.6). Families participated in three lab visits across a two-year period. At baseline and one year later, parents completed the 12-item General Functioning Scale of the Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). At all lab visits, we collected peripheral blood to measure eosinophil counts (by automated Complete Blood Count) and ECP levels (by immunoassay on the ImmunoCAP system). Following each laboratory visit, participants were asked to record their asthma symptoms for two weeks. We examined the role of baseline and following year family dysfunction, as well as the interaction of these assessments (controlling for participant demographics and asthma medical variables) in the prediction of eosinophil activity and symptom severity two years later. To the extent that families were consistently high in dysfunction across the first two assessments, children showed larger increases in eosinophil counts, ECP levels, and symptom reports. These findings suggest that chronic family dysfunction may shape eosinophil activity in children with asthma, contributing over time to persistence in inflammation and difficulties with breathing.

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**Abstract 1450**

**TARGETED REJECTION LIFE EVENTS UNIQUELY PREDICT DOWNREGULATION OF ANTI-INFLAMMATORY SIGNALING MOLECULES AND INCREASED SYMPTOM SEVERITY IN YOUTH WITH ASTHMA**

Michael I. M. Murphy, M.A., Psychology, Northwestern University, Evanston, IL, George M. Slavich, Ph.D., Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, CA, Edith Chen, Ph.D., Gregory E. Miller, Ph.D., Psychology, Northwestern University, Evanston, IL.

Objective: Recent experimental research has led some theorists to propose “stressor specific” models of stress and health, wherein certain types of life stress are thought to be especially detrimental to health, given their specific psychosocial characteristics. However, it is unclear whether specific stressors confer greater risk for health outcomes compared to similarly severe, contextually different events. One particularly noxious stressor is targeted rejection (TR), which involves the active, intentional rejection of a person by another person or group. Past research has shown that TR upregulates inflammatory signaling in healthy youth. These effects are especially pronounced in persons high in subjective social status (SSS), suggesting that some stressful situations may increase risk more for high- versus low-status individuals. However, it is unknown whether TR affects actual disease processes more strongly than other types of stress, and how SSS shapes these outcomes.

Methods: To address these issues, we followed 121 youth with asthma for 2 years. Participants reported on SSS at study entry. In addition, every 6 months we assessed the occurrence of stressful life events occurring including TR, and measured mRNA in leukocytes via qPCR for the asthma signaling molecules GRα, GRβ, and β2-AR. Following each visit, participants reported daily on asthma symptoms for 2 weeks. Results: Multilevel modeling revealed that participants had lower levels of mRNA for GRα (d = -.42, p < .01), GRβ (d = -.53, p < .001), and β2-AR (d = -.51, p = .006) at times when TR had occurred compared to visits when TR had not occurred, and individuals higher in SSS showed the sharpest decreases in GRα (d = -.59, p < .004), GRβ (d = -.75, p < .001), and β2-AR (d = -.64, p < .001). Finally, at visits following TR, high SSS participants reported increased asthma symptoms (d = .47, p = .008). In contrast, other major stressful life events were not related to any outcomes. Conclusions: These data suggest that the effects of major life events are more deleterious for asthma than other similarly severe, but contextually different life events. The data also highlight some possible mechanisms through which these effects might occur.
YOUTH EXPRESSIONS OF POSITIVE EFFECT IN DAILY LIFE MEDIATE THE ASSOCIATION BETWEEN MENTAL RESPONSIVENESS AND IMPROVED INFLAMMATION STATUS IN YOUTH WITH ASTHMA

Erin T. Tobin, MA, Psychology, Wayne State University, Detroit, MI, Derek Wildman, PhD, Center for Molecular Medicine & Genetics, Wayne State University School of Medicine, Detroit, MI, Heidi Kane, PhD, Psychology, Wayne State University, Detroit, MI, Wayne Pierantoni, MD, Allergy, Asthma, & Immunology, Gross Pointe Allergy & Asthma Center, Eastpointe, MI, Elizabeth Secord, MD, Allergy, Asthma, and Immunology, Children’s Hospital of Michigan, Detroit, MI, Richard B. Slatcher, PhD, Psychology, Wayne State University, Detroit, MI

Stressful family environments early in life have clear negative effects on physical health. However, much less is known about the health effects of positive aspects of families, particularly in the context of everyday life. Here we examined the association between maternal responsiveness and inflammation among youth with asthma and identify youth expressions of positive effect as a potential mediator of these effects. Forty-one youth diagnosed with asthma aged 10-17 wore a naturalistic event-sampling device called the Electronically Activated Recorder (EAR) for 4 days to assess maternal responsiveness and youth expressions of positive affect in daily life. Participants wore the EAR continuously from the time they woke up until bedtime and recordings captured 50 seconds of sound every nine minutes. Trained coders rated youth EAR files for expressions of maternal responsiveness, including maternal warmth, support, and expressions of pride toward the child. Coders also rated positive affect displayed by the youth, including expressions of happiness, interest, excitement, and pride. Peripheral blood draws were conducted and PBMC’s were isolated, cultured, and assayed to determine stimulated levels of IL-5, IL-13, and IFN-γ. Results demonstrated that greater maternal warmth (r = .32, p < .05) and greater expression of positive affect by youth (r = .44, p < .01) were significantly associated with a decreased inflammatory profile (composite of IL-5, IL-13, and IFN-γ). Further, the relationship between the maternal warmth and decreased inflammation was mediated by expressions of positive affect by youth in daily life (p < .05), even when adjusting for youth age and gender. These results highlight the importance of positive family interactions for youth health and provide evidence for a mechanism through which parenting can influence inflammatory processes in children and adolescents.

ASTHMA PHENOTYPES AND THEIR ASSOCIATION WITH THE ASTHMA-OBSTITY RELATIONSHIP

Simon L. Bacon, PhD, Montreal Behavioural Medicine Centre, Concordia University & HSCM, Montreal, Quebec, Canada, Catherine Lemiere, MD, Medicine, Ariane Jacob, BA, Montreal Behavioural Medicine Centre, Karim Maghni, PhD, Research Centre, Kim L. Lavoie, PhD, Montreal Behavioural Medicine Centre, HSCM, Montreal, Quebec, Canada

There is currently a debate within the world of pneumology about the nature of the association between obesity and asthma. Cluster analyses have suggested 2 obesity-asthma phenotypes: (1) early-onset allergic asthma complicated by obesity, associated with the atopy, high serum IgE, and severe airflow limitations; and (2) late-onset asthma developing in the context of obesity, associated with being a woman, low serum IgE, and less eosinophilic inflammation (Dixon, 2012). However, these analyses did not include important psychological factors and asthma triggers, and were drawn from cross-sectional samples. A total of 57 asthma clinic patients provided information at both baseline and a 2 year follow-up. A variety of medical, sociodemographic, behavioural, and psychological data were collected at both time points, with a standard cluster analysis conducted with all available appropriate data. The analysis identified 3 clusters: Phenotype 1 (19%) – Better asthma control at 2 years, high atopy, longer asthma duration, poorer lung function, lower doses of ICS, moderate rates of anxiety disorders, higher probability of stress and lower probability of exercise as a trigger; Phenotype 2 (32%) – Worse control at 2 years, high atopy, shorter asthma duration, better lung function, lower doses of ICS, high proportion of women, moderate initial BMI, lowest levels of weight gain, lower rates of mood disorders, moderate rates of anxiety disorders, higher probability of stress and lower probability of exercise as a trigger; and Phenotype 3 (49%) – Worse control at 2 years, high atopy, shorter asthma duration, better lung function, lower doses of ICS, high proportion of women, moderate initial BMI, lowest levels of weight gain, moderate rates of mood disorders, higher rates of anxiety disorders, lower rates of smoking and exercise and reflex as triggers, but high probability of stress as a trigger. Phenotypes 2 and 3 are somewhat consistent with Dixon’s classifications. However, it is notable that the inclusion of expanded longitudinal data including behavioral/psychological factors enhanced the process, generating a potential 3rd phenotype.

DEPRESSIVE SYMPTOM SEVERITY AND WEIGHT LOSS BEHAVIORS: DATA FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) 2005-2010

Elizabeth A. Vrany, BA, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN, Misty Hawkins, PhD, Psychology, Kent State University, Kent, OH, Jesse C. Stewart, PhD, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN

Although depression is a predictor of future obesity, the mechanisms underlying this association have yet to be elucidated. One potential mechanism that has received limited attention is ineffective weight loss behaviors. Accordingly, the aim of this project was to examine the relationship between depressive symptom severity and specific weight loss behaviors among adults who have attempted to lose weight. Participants were 10,607 adults (mean age = 45 years, 49% female, 53% non-white) who participated in the 2005-2010 waves of NHANES, a cross-sectional epidemiologic study of a large sample representative of the US population. Those with chronic conditions (cardiovascular disease, diabetes, emphysema, chronic bronchitis, kidney disease, liver disease, and HIV), a body mass index suggestive of anorexia nervosa (≤ 17.5), or a current pregnancy were excluded. Depressive symptom severity was measured using the total score (converted to z-scores) of the Patient Health Questionnaire-9 (PHQ-9). Weight loss variables were obtained from the NHANES Weight History Questionnaire, which assesses whether weight loss was attempted in the past year and, if so, which weight loss behaviors were used. Logistic regression models, adjusted for demographic factors, the NHANES sampling design, and body mass index, revealed that PHQ-9 total was not associated with the likelihood of making a weight loss attempt in the past year (OR=1.05, CI95=0.98-1.11). However, among the 3,630 adults who attempted to lose weight, PHQ-9 total was associated with a greater likelihood of eating diet foods (OR=1.87, CI95=1.06-1.33), skipping meals (OR=1.17, CI95=1.04-1.31), taking prescription diet pills (OR=1.27, CI95=1.04-1.54), taking non-prescription supplements (OR=1.29, CI95=1.25-1.49), and seeking help from a doctor (OR=1.32, CI95=1.03-1.70), as well as a decreased likelihood of exercising (OR=0.83, CI95=0.75-0.92) and seeking help from a personal trainer (OR=0.72, CI95=0.55-0.93) in an attempt to lose weight. Table 1 also presents trends and nonsignificant results. Our findings suggest that adults with elevated depressive symptoms make weight loss attempts at a similar rate as nondepressed persons; however, they tend to employ weight loss strategies of limited or unknown effectiveness (e.g., skipping meals) and to avoid strategies known to help maintain weight loss (e.g., exercise). This pattern of weight loss behaviors may be one mechanism that explains the excess risk of obesity of depressed individuals.

Table 1. Logistic regression models examining the association between depressive symptom severity and weight loss behaviors

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean PHQ-9</th>
<th>Tendency (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10,067</td>
<td>4.5</td>
<td>1.05 (0.98-1.11)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Eating diet foods</td>
<td>3,630</td>
<td>1.87</td>
<td>1.06-1.33</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Skipping meals</td>
<td>3,630</td>
<td>1.17</td>
<td>1.04-1.31</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Taking prescription diet pills</td>
<td>3,630</td>
<td>1.27</td>
<td>1.04-1.54</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Taking non-prescription supplements</td>
<td>3,630</td>
<td>1.29</td>
<td>1.25-1.49</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Seeking help from a doctor</td>
<td>3,630</td>
<td>1.32</td>
<td>1.03-1.70</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Seeking help from a personal trainer</td>
<td>3,630</td>
<td>0.72</td>
<td>0.55-0.93</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Note: Adjusted for age, sex, race/ethnicity, the NHANES sampling design, and body mass index.
A-64

Abstract 1059
EVALUATION OF TELEMOVE: A TELEHEALTH WEIGHT REDUCTION INTERVENTION FOR VETERANS WITH OBESITY

Jane A. Skoyen, M.A., Thomas Rutledge, Ph.D., Psychiatry, University of California, San Diego, San Diego, CA, Julie A. Wiese, M.S.N., Department of Veteran Affairs, VA San Diego, San Diego, CA, Gina N. Woods, M.D., Department of Medicine, University of California, San Diego, San Diego, CA

Purpose: Overweight and obesity are highly prevalent among the general population in the US and are present among US Veterans at comparable or higher levels. Despite the success of existing weight reduction programs at the VA, research points out that only a small percentage of eligible Veterans become involved in such programs. The purpose of this study was to increase accessibility of weight reduction services for Veterans with overweight and obesity, we tested a novel telehealth intervention that can be used in Veterans’ homes. The main purpose of this study is to examine the efficacy of this intervention.

Methods: Between September, 2010 and August, 2012 we prospectively followed 171 Veterans with obesity participating in a telehealth treatment using home-based technology (TeleMOVE). Participants’ age ranged from 25 to 72 years (M = 50.96, SD = 11.69), 21.6% of the participants were female, BMI at baseline ranged from 28.18 to 55.73 (M = 38.61, SD = 5.34). We obtained measures of height and weight during an in-person intake class and collected weight data following one (90 days) and two (180 days) cycles of treatment, as well as at six months follow-up. We used a series of ANOVAs to assess weight change over time.

Results: Seventy-two percent of participants completed one cycle of TeleMOVE, and 41.5% completed two cycles. Participation in one cycle resulted in significant weight loss (M = 8.6 lbs, SD = 9.9). Those who participated in two cycles lost significantly more weight (M = 11.68 lbs, SD = 12.53) than those who only participated in one cycle (M = 5.23 lbs, SD = 8.23), but the difference was not significant. Yet, the difference in weight loss was significant for both BMI (M = -10.52, SD = 10.32). At 6-month follow-up, weight regain was significantly lower among those who participated in two cycles (M = 2.9 lbs, SD = 16.26; n.s.) than one cycle (M = 7.8 lbs, SD = 9.21).

TeleMOVE is an effective intervention that allows Veterans to use weight-reduction services in their homes. Participation in consecutive cycles of this program significantly improves weight maintenance over time.

Friday, March 14 from 2:15 to 3:45 pm
Symposium 1309
Stretching the Boundaries: from Mind Wandering to Perseverative Cognition

Cristina Ottaviani, PhD, Psychology, Sapienza University of Rome, Rome, Italy, Sarah N. Garfinkel, PhD, Psychiatry, Brighton and Sussex Medical School, Falmer, East Sussex, UK, East Sussex, Sarah Garfinkel, PhD, Psychiatry, Brighton and Sussex Medical School, Falmer, United Kingdom, OH, Brandon Gillie, M.A., Psychology, The Ohio State University, Columbus, Zuid-Holland, Bart Verhulst, PhD, Clinical Psychology, Leiden University - Institute of Psychology, Leiden, The Netherlands, Karl-Jürgen Bär, MD, Psychiatry and Psychotherapy, University of Jena, Jena, Germany.

Mind wandering (MW) can be persistent and therefore has been conceptualized as a form of repetitive thinking. While all people commonly engage in MW, other forms of repetitive thinking, such as rumination and worry have been more linked to a clinical perspective and associated with mood and anxiety disorders, respectively. Since these constructs have emerged in distinct research domains, they have rarely been considered together or directly compared. The symposium highlights some of the most intriguing approaches at understanding the benefits and harms of MW from a behavioral, subjective, and psychophysiological perspective both in the lab and naturally. Among the contributions are: longitudinal data on the long-term consequences on MW and perseverative cognition on health and well-being (Ottaviani & Couvyerdjian), the brain correlates of past, future, and present-oriented internal thoughts and their link to affective symptomology (Garfinkel, Evans, & Critchley); how individual differences in heart rate variability at rest influence thought suppression success (Gillie, Vasey, & Thayer); the role of implicit affect in daily cortisol responses (Verkuil, Brosschot, Mossink, & Burger); and the neural basis of rumination in depressed patients (Baer, Schachtzabel, & Wagner). Taken together, this work illustrates how MW plays a vital role in healthy cognition but loses its functionality whenever the system is “locked in” to a particular pattern.

Individual Abstract Number: 1312
COGNITIVE RIGIDITY IS MEDIATED BY AUTONOMIC INFLEXIBILITY: THE MIND WANDERING-PERSEVERATIVE COGNITION CONTINUUM HYPOTHESIS

Cristina Ottaviani, PhD, Alessandro Couvyerdjian, PhD, Psychology, Sapienza University of Rome, Rome, Italy.

Since the Mind Wandering (MW) and Perseverative Cognition (PC) constructs emerged as distinct research constructs, they have been considered together or directly compared. In a previous laboratory study, we provided preliminary evidence that MW and PC lie on a continuum where flexibility plays a key role in determining if the process is maladaptive in terms of health and wellbeing. The aim of the present study was to replicate those findings in a more ecological setting during everyday life. To this end, we conducted a large scale study (n = 40) to collect 24-hour ecological momentary assessments with concomitant heart rate (HR) and HR
variability (HRV) measurement, one year apart. Random effects models (ps < .005) showed that MW is a more flexible process compared to PC both cognitively (lower levels of self-rated intrusiveness and interference with ongoing activities), emotionally (lower levels of anxiety and sadness), and physiologically (higher HRV). Low-MW participants provided higher positive and lower negative correlations of MW and PC at time 0 and time 1 (ps < .001). When both MW and PC were examined, only PC resulted a significant predictor of somatization tendencies (B = .35, p < .05), sleep problems (B = .29, p < .05), and 24-hour HR (B = .27, p < .05) one year later, controlling for biobehavioral variables. In sum, PC results associated with poor health outcomes and a lack of adaptive variability in behavioral, affective, and cognitive (and innately driven) negative biasing the way one views the world, it is always good to let our mind wander, and suggest that MW fails to serve its adaptive function, and turns into a risk factor for health only whenever it gets stuck in an inflexible pattern.

Individual Abstract Number: 1421

PAST, FUTURE, GOOD, BAD: THE NEURAL NETWORKS SUPPORTING CONTENT IN SELF-GENERATED THOUGHT

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Off-task thinking is common, resource demanding and linked to negative perseverative worry and rumination. Interregional connectivity with brain networks during these states may provide insight into neurological and psychiatric disorders. We undertook an fMRI study to characterise discrete brain networks associated with the content of self-initiated off-task thinking. Findings were also related to affective symptomatology. In 2-minute “directed resting state” blocks, participants were prompted to direct their thoughts towards positive or negative scenarios in the past and, and to focus on the present. An independent component analysis (using GIFT toolbox for MATLAB) differentiated networks implicated in each condition, applying the ‘present’ condition as baseline. During past positive thought, activity was correlated across a network that included precuneus and lateral parietal cortex. Past negative events engaged a left-lateralized fronto-parietal network. Future events were less well differentiated from present, although negative events engaged a medial prefrontal –centred network. In regression analyses, both affective depression and anxiety accounted for variance within networks that incorporated MTG, brainstem, thalamus and temporal poles. Anxiety symptoms selectively influenced the connectivity across a network incorporating bilateral insula and brainstem (an anterior cluster incorporating ventral tegmental area and a posterior cluster encompassing the parabrachial nucleus), irrespective of temporal focus or valence. In contrast, depressive symptoms selectively predicted the engagement of this network with past positive thoughts. Thus commonalities were observed in network engagement during mind-wandering as a function of valence, temporal focus and affective symptomatology. Our results point to content-dependent differentiation of off-task thinking, wherein anxious and depressive symptoms shape activation of specific networks. These observations suggest mechanisms through which flexible off-task thinking may become maladaptive and develop toward negative perseverative cognitions that further contribute to the pathogenesis of affective symptoms.

Individual Abstract Number: 1420

INDIVIDUAL DIFFERENCES IN RESTING HEART RATE VARIABILITY MODERATE THOUGHT SUPPRESSION SUCCESS

Brandon Gillie, M.A., Michael Vassey, PhD, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, OH

One hallmark of psychological health is the ability to control the experience of unwanted and intrusive thoughts. Individual differences in heart rate variability (HRV) at rest are thought to represent one’s capacity to regulate one’s thoughts, feelings, and behaviors. However, it remains unclear whether HRV promotes control over unwanted thoughts. To address this issue, a standard thought suppression paradigm was employed. Participants (N = 135) were asked to record the occurrence of a personally relevant intrusive thought over three monitoring periods. After each period, participants reported their level of distress and efforts to suppress the thought. Among those instructed to suppress, higher levels of HRV were associated with greater declines in intrusions during the suppression period; no such relationship was found among those assigned to a free thought control condition. In turn, successful thought suppression promoted lower levels of distress and fewer intrusions during the final monitoring period. An interaction between baseline levels of HRV and suppression effort suggested that low HRV individuals who put forth greater suppression effort suggested that low HRV individuals who put forth greater effort to suppress were more likely to experience increases in intrusions (i.e., an immediate enhancement effect) relative to those with high HRV. These findings broaden the relationship between cognitive control and HRV and have implications for the role of self-control in disorders related to intrusive thoughts such as depression, anxiety, and PTSD.

Individual Abstract Number: 1496

MORE THAN MEETS THE MINDED: WORRIES AND IMPLICIT AFFECT ARE ASSOCIATED WITH CORTISOL IN DAILY LIFE

Bart Verkuij, PhD, Clinical Psychology, Jos F. Brosschot, PhD, Health, Medical and Neuro Psychology, Joran C. I. Mossink, BSc, Andreas M. Burger, BSc, Clinical Psychology, Leiden University - Institute of Psychology, Leiden, Zuid-Holland, The Netherlands

Stress and worries can negatively influence our somatic health. One presumed pathway linking worries to adverse somatic health is an operant HPA-axis, usually indicated by elevated cortisol levels. Only a few studies examined the association between worrying and cortisol levels in daily life and research has traditionally focused on consciously reported negative feelings and thoughts. As the majority of information processing occurs without consciousness and people may not be aware of everything that goes on in their minds, stress physiology might also be influenced by affective processes that people are not aware of; i.e. implicit affect. In an 24-hour ambulatory study we examined whether cortisol levels were associated with worries, and with implicit negative affect using the Implicit Positive and Negative Affect Test. During waking hours, this worries, implicit and explicit affective states were recorded each hour using smartphones in 55 participants. Saliva samples were collected at three fixed times during the day, as well as upon waking and 30 minutes thereafter (cortisol awakening response). Multilevel analyses on daytime cortisol levels revealed that worry (B = .21, p < .05) but not stress was associated with cortisol levels and increased levels of cortisol during the day. Additionally, implicitly negative (B = .11, p < .05) and positive implicit affect (B = .09, p < .05) were significantly related to cortisol levels. Prior-day implicit negative affect, but not current-day implicit affect was associated with the cortisol awakening response (r(46) = -.26, p < .05). Participants demonstrating higher levels of implicit negative affect (especially sadness) during the first day, had a stronger cortisol rise upon awakening at the next day. Contrary to previous research, no associations between explicit affect and cortisol were apparent. Current results suggest that the traditional focus on consciously reported feelings is limited, and that implicit measures can add to our understanding of how stress and emotions contribute to daily physiological activity and, in the long-term, health problems.

Individual Abstract Number: 1414

THE NEURAL BASIS OF ENHANCED SELF-FOCUS ATTENTION IN PATIENTS WITH MAJOR DEPRESSION

Karina I. Hofer, MD, Psychotherapy, University of Jena, Jena, Germany, Claudia Schachtzabel, Diplom, Gerit Wagner, PhD, Psychotherapy, University of Jena, Jena, Germany

A key feature of Major Depressive Disorder (MDD) is a persistent pondering on negative thoughts and feelings (rumination). It interferes with effective problem solving leading to deficits in cognitive control processes. We previously identified brain networks consisting of the posterior (PCC) and rostral anterior cingulate cortex (rACC) as well as ventromedial prefrontal cortex (VMPC), which was related to the self-referential processing (SRP) in healthy controls. In the present study we investigated neural correlates of enhanced self-referential processing in MDD patients. We hypothesized stronger BOLD signal in the rACC/VMPC during processing of negative self-referential stimuli in patients with MDD. 20 patients meeting DSM-IV criteria for MDD and 20 matched controls were included. Negative, positive and neutral self-referential stimuli and the Stroop task were presented. Subjects were asked to judge the self-referential statements as to whether they properly described the participants themselves. We observed a significant between-group difference in the judgments of the negative and positive, but not of the neutral self-referential statements. Patients showed a slower overall performance in the Stroop task compared to healthy controls. Regarding brain activation we observed significantly higher rACC/VMPC activation in controls during negative compared to neutral SRP stimuli, which was not detected in patients. We further observed a significant interaction in the amygdala, hippocampus and putamen, indicating a higher BOLD signal in these regions in patients than controls during neutral compared to the negative SRP condition. We did not observe relative hyperactivity in the rACC/VMPC which is considered to play a major role in the psychopathology of MDD. This might be based on the inability of depressed patients to flexibly up- and down-regulate the activity in this region as observed in controls. Patients may exhibit chronic hyperactivity. These in turn interfere with concurrent cognitive control processes leading to a decrease in activation in the fronto-cingulate brain regions.

Friday, March 14 from 2:15 to 3:45 pm

Paper Session: Adverse Childhood Experiences

Abstract 1837

ADVERSE CHILDHOOD EXPERIENCES AND PREDICTED LONG-TERM CARDIOVASCULAR DISEASE RISK

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Adverse childhood experiences (ACEs) have been associated with cardiovascular disease (CVD) in adulthood. However, most prior research has relied on self-reported diagnoses of CVD and assessed a narrow range of adverse experiences. This study examined a broad range of ACEs in childhood and adolescence in relation to predicted long-term CVD risk in young adulthood and further examined whether the relationship differs by sex and race/ethnicity. Subjects (N=14,059) who participated in the National Longitudinal Study of Adolescent Health and who had valid sampling weights and non-missing CVD risk factor data were included (49% female, 68% white, 15% black, 12% Hispanic, 5% other). An ACEs index was
created as a sum of 12 items measuring dating violence, other adolescent interpersonal violence, 4 forms of child maltreatment, homelessness, household poverty, neighborhood poverty, and parental disability, incarceration, and death. All ACEs were reported between waves 1 (1994-95, mean age 15) and 3 (2001-02, mean age 22) except parental incarceration which was assessed at wave 4 (2008-09, mean age 29). The ACEs score ranged from 0 to 9 (mean = 1.8, 95% CI: 1.7, 1.9) and was truncated for analyses at 4 or more experiences. CVD risk factors (body mass index, smoking, diabetes, systolic blood pressure, and use of antihypertensive medication) were assessed during an in-home interview and exam at wave 4. We calculated the 30-year risk for development of CVD using a Framingham-based prediction model (mean risk ≥ 13%, 95% CI: 12.5 to 13.6). Differences in CVD risk score by individual ACE item were examined with weighted bivariate t-tests. Differences in 30-year CVD risk by ACEs score were examined with a weighted linear model adjusted for age, sex and race/ethnicity. Differences in the relationship by sex and race/ethnicity were tested with multiplicative terms. Overall, 78% reported at least 1 ACE (29% reported 1, 22% reported 2, 13% reported 3, 14% reported 4+). All ACEs were individually associated with an increased risk of CVD with differences ranging from 0.8% to 3.1% (all p-values < 0.05 except for parental death which had a p-value of 0.07). In the adjusted linear model, a one point increase on the ACEs scale was associated with a 0.6% (95% CI: 0.5 to 0.8) increase in 30-year CVD risk. A graded response was observed (Figure 1). The association did not vary by sex or race/ethnicity. ACEs have implications for cardiovascular health well in advance of actual disease. Improved psychosocial screening and longer-term CVD risk assessment are needed to mitigate the chronic health effects of early adverse exposures.

Figure 1. Mean 30-year Risk for Cardiovascular Disease by Number of Adverse Childhood Experiences (ACEs), N=14,059.

Abstract 1024
ADVERSE CHILDHOOD EXPERIENCES ARE ASSOCIATED WITH DETRIMENTAL HEMODYNAMICS AND ELEVATED CIRCULATING ENDOTHELIN-1 IN ADOLESCENTS AND YOUNG ADULTS.
Shuyong Su, Ph.D., Xiaoling Wang, MD, PhD, Gaston K. Kapuku, Ph.D., Pediatrics, Georgia Regents University, Augusta, GA, Frank A. Treiber, PhD, Technology Applications Center for Healthful Lifestyles, Medical University of South Carolina, Charleston, SC, David M. Pollock, PhD, Medicine, Gregory A. Harshfield, PhD, Pediatrics, W. Vaughn McCall, MD, Psychiatry & Health Behavior, Jennifer S. Pollock, PhD, Medicine, Georgia Regents University, Augusta, GA

Growing evidence suggests that adverse childhood experiences (ACEs) increase the risks for coronary heart disease and hypertension in mid and late adulthood. We previously reported that early life stress induces a hyper-reactive endothelin (ET)-dependent cardiovascular phenotype in a rat model. In the present study, we evaluated whether exposure to ACEs leads to greater peripheral resistance, arterial stiffness, blood pressure, or elevated circulating ET-1 levels in humans. The ACE exposure was assessed by adapting questions used in the ACE study, which consists of 28 items divided into 3 categories and 10 subscales, including childhood abuse (emotional, physical and sexual), neglect (emotional and physical), and growing up with a criminal household member, and parental marital discord). The ACE score (the number of 10 ACE subscales reported) was used to assess the cumulative effect of multiple ACEs, by classifying respondents into three groups: no exposure (0 ACEs, n=67), mild (1 ACE, n=62), and moderate/severe (≥2 ACEs, n=92) exposure. In 221 healthy adolescents and young adults (mean age: 21; age range: 13-29), we found a graded association of ACE exposure with plasma ET-1 levels, of which on average 18% and 24% were higher in subjects with 1 ACE, and 2 ACEs than in those with no ACEs (P<0.001). The subjects with moderate/severe exposure to ACEs had significantly higher total peripheral resistance index (12%), diastolic blood pressure (5%) and pulse wave velocity (9%) compared with those who were not exposed. These associations were independent of age, race, gender, body mass index and childhood socioeconomic status. Our results indicate that early life stress promotes cardiovascular disease risk, specifically detrimental vascular and cardiogenic function, detectable in very young adulthood.

Figure. Average levels of plasma ET-1, SBP, DBP, CO index, TPR index and radial PWV according to ACE exposures (0, 1, and ≥2). The error bars indicate the standard error. P and pa were p values with and without adjustment for age, sex, race, BMI and father’s education, respectively.

Abstract 1703
CHILDHOOD SELF-DISCIPLINE AND PHYSIOLOGICAL DYSREGULATION IN MIDLIFE
Michael Daly, PhD, Behavioural Science Centre, Stirling Management School, University of Stirling, Stirling, Stirlingshire, United Kingdom

Childhood self-discipline emerges early, is malleable, and could contribute substantially to a healthy life. The present study examined associations between self-discipline at ages 7 and 11 and physiological dysregulation in middle age. Participants were 4,441 British men and women born in March 1958 who took part in the National Child Development Study. Self-discipline was gauged using a 13-item teacher-rated scale from the Bristol Social Adjustment Guide assessing concentration (e.g. ‘cannot attend or concentrate for long’), perseverance (e.g. ‘can never stick at anything long’), restlessness and impulsive behaviour (e.g. ‘constantly needs petty correction’). Blood plasma samples and anthropometric data were collected and analysed using standard procedures at age 45. An overall physiological dysregulation index was derived from a set of 12 biological variables: systolic and diastolic blood pressure, HDL cholesterol, triglycerides, body mass index, waist/hip ratio, C-reactive protein, fibrinogen, von Willebrand factor, glycosylated hemoglobin, tissue plasminogen activator, and peak flow (Cronbach’s α = .76). Higher levels of self-discipline were significantly associated with lower physiological dysregulation (B = -0.072, SE = 0.017; β = -0.07; t = 4.29, p < .001), after controlling for sex, intelligence at age 11, and socioeconomic status at birth. This association was relatively unaffected by further adjustment for a large set of childhood controls (B = -0.067, SE = 0.017; β = -0.06; t = 4.00, p < .001) including parental characteristics (e.g. age, mother’s education), family difficulties (e.g. housing, financial), aspects of the home environment (e.g. region, crowding), conditions at birth (e.g. birth weight, breast feeding), physician assessed medical conditions (e.g. asthma, emotional maladjustment, diabetes) and relative weight at age 7. By adjusting for a broad set of important covariates in a large-scale representative cohort these analyses provide robust evidence that childhood self-discipline is associated with better health effects that cannot be attributed to other psychological factors like intelligence or emotional problems or to initial health or environmental conditions.

Abstract 1212
ADOLESCENT INTERNALIZING SYMPTOMS AND NEGATIVE LIFE EVENTS: THE SENSITIZING EFFECTS OF EARLY LIFE STRESS AND CORTISOL.
Paula L. Ruttle, Ph.D., Jeffrey M. Armstrong, M.S., Marjorie H. Klein, Ph.D., Ned H. Kalin, M.D., Marilyn J. Essex, Ph.D., Psychiatry, University of Wisconsin-Madison, Madison, WI

Although adolescence is marked by increased negative life events and internalizing problems, few studies investigate this association as a transactional process. Moreover, while there are considerable individual differences in the degree to which these phenomena are linked, little is known about the origins of such differential stress sensitivity. Using a two-level hierarchical linear model, the present study examines two potential factors - early life stress (ELS) exposure and early adolescent longitudinal afternoon cortisol levels - as predictors of later adolescent stress sensitivity, indexed by the covariation of internalizing symptoms with negative life events across high school. ELS was assessed by maternal reports of stress across infancy and longitudinal afternoon cortisol was assessed at ages 11, 13, and 15 years and composite measures were created. Life events and internalizing symptoms were assessed at ages 15, 17, and 18 years. Results revealed that internalizing symptoms and negative life events were concurrently associated within each individual (B = .027, t = 3.57, p < .01), such that, across high school, when individuals experienced a greater number of negative life events, they displayed increased internalizing symptoms and vice versa. Examination of moderating factors revealed that covariation was tightest in adolescents who experienced higher levels of ELS (B = .014, t = 2.01, p = .045) and those with lower longitudinal afternoon cortisol levels, respectively.
cortisol levels ($B=-2.418, t=-3.18, p=.002$). Interestingly, adolescents with higher afternoon cortisol levels were more likely to demonstrate elevated levels of internalizing problems in both the presence and absence of negative life events. See Figure 1. Results support and expand upon the stress sensitization hypothesis and highlight the importance of utilizing a multilevel approach, including both environmental and physiological measures of stress, when examining mechanisms that predispose adolescents to internalizing symptoms.

Abstract 1713

CHILDHOOD TRAUMA AND BODY MASS INDEX, DEPRESSION, SMOKING AND CHRONIC DISEASES AMONG HISPANICS/LATINOS IN THE US: RESULTS FROM THE HCHS/SOL-SOCIOCULTURAL

ANCILLARY STUDY

Maria M. Llabre, PhD, William Arguelles, PhD, Psychology, University of Miami, Coral Gables, FL, Linda Gallo, PhD, Psychology, San Diego State, San Diego, CA, Frank Penedo, PhD, Medical Social Sciences, Northwestern University, Chicago, IL, Neil S. Schneiderman, PhD, Psychology, University of Miami, Coral Gables, FL

Adverse childhood experiences (ACE), such as physical or psychological abuse or living in a dysfunctional household, have been shown to affect a variety of medical, psychological, and behavioral conditions in adulthood, including obesity, smoking, depression, and heart disease. The Hispanic Community Health Study/Study of Latinos (HCHS/SOL) included a 10-item measure of ACE (adverse events experienced before the age of 18) as part of a Sociocultural Ancillary Study ($n=5,280$, 62% female, 18 to 74 years old). We examined the prevalence of ACE and whether previously reported associations between ACE and body mass index, depressive symptoms (CESD-10), and self-reported presence of several diseases are replicated in Hispanics/Latinos. The mean total ACE was 2.45 (SD=2.33). With respect to individual items, the prevalence of ACE ranged from 7% to 45% for males and 10.5% to 46% for females and also varied as a function of Hispanic background. In linear regression, total ACE was positively associated with CESD-10 [F(1&4606) = 361.33, $p<.001$] and body mass index [F(1&4662) = 10.76, $p<.001$], controlling for age, sex, income, and background. In logistic regression, each additional ACE experienced before the age of 18) as part of a Sociocultural Ancillary Study ($n=5,280$, 62% female, 18 to 74 years old). We examined the prevalence of ACE and whether previously reported associations between ACE and body mass index, depressive symptoms (CESD-10), and self-reported presence of several diseases are replicated in Hispanics/Latinos. The mean total ACE was 2.45 (SD=2.33). With respect to individual items, the prevalence of ACE ranged from 7% to 45% for males and 10.5% to 46% for females and also varied as a function of Hispanic background. In linear regression, total ACE was positively associated with CESD-10 [F(1&4606) = 361.33, $p<.001$] and body mass index [F(1&4662) = 10.76, $p<.001$], controlling for age, sex, income, and background. In logistic regression, each additional ACE

Abstract 1627

IDENTIFYING THE CAUSE OF PHYSICAL HEALTH DISPARITIES BETWEEN SEXUAL MINORITIES AND HETEROSEXUALS: CHILDHOOD VICTIMIZATION

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There is substantial evidence illustrating the existence of physical health disparities between sexual minorities and heterosexuals. Much of the literature has shown that sexual minorities confer greater health risks than their heterosexual counterparts. Recently, there has been a stronger push by researchers and policy makers alike to identify the causes of these disparities to create effective intervention strategies to minimize these disparities in physical health. Some of these disparities may be due to the increased likelihood for sexual minorities to engage in negative health behaviors like smoking and drinking, or the higher prevalence rates of childhood victimization among sexual minorities compared to heterosexuals. Both factors have been shown to directly link to physical health. For instance, some studies have demonstrated the negative consequences of prior trauma experiences on the immune system, cardiovascular health, and digestive system. It is hypothesized that the higher prevalence rates of negative health behaviors and rates of childhood victimization among lesbian, gay, and bisexual (LGB) individuals will account for the physical health disparities between LGBs and heterosexuals.

Through a Web survey, 1120 U.S. participants provided self-report physician-diagnosis of various health problems ranging from cardiovascular, endocrine, and respiratory ailments. They also filled out the Adverse Childhood Events (ACE) scale and a bullying inventory to assess for childhood victimization experiences, and indicated their smoking and drinking habits as markers of negative health patterns. Controlling for important demographic characteristics (age, weight) in a Poisson regression, LGBs were at 34% increased incidence of developing a serious health condition compared to heterosexuals ($p<.01$). In particular, LGBs were 60% more likely to develop endocrine disorders ($p<.01$). Including negative health behaviors (i.e., smoking, heavy drinking) into the model partially explained the physical health disparities. However, including ACE and bullying into the model fully explained the physical health disparities between LGBs and heterosexuals. These findings suggest that the differences in childhood experiences between sexual minorities and heterosexuals may be a key factor in explaining the health disparities between these two groups.

Friday, March 14 from 2:15 to 3:45 pm

Paper Session: Sleep

Abstract 1754

POOR SLEEP AS A PATHOPHYSIOLOGICAL PATHWAY UNDERLYING THE ASSOCIATION BETWEEN STRESS AND CORTISOL IN YOUTH

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Poor sleep may be a potential pathway underlying the association between stress and cortisol. Recent evidence suggests that stress leads to poor sleep, which, in turn, disrupts the diurnal cortisol profile. However, existing findings are largely limited to adults. The present study examines whether poor sleep mediates the relationship between stress and diurnal cortisol in youth. Youth, aged 8-18 years ($N=220$, Mage=12.62), were recruited for the Healthy Heart Project at Concordia University. Youth completed the Perceived Stress Scale (daily hassles) and Stressful Life Events Schedule. Youth-reported bed and wake times were used to derive sleep duration. Youth-reported sleep quality and Pediatric Daytime Sleepiness Scale and parent-reported Child Sleep Habits Questionnaire were used to derive sleep quality. Youth provided six saliva samples over two days to derive cortisol indices (bedtime, maximum, AUCAG, AUCLI, AUCTG, slope max). Regression analyses controlled for age, sex, puberty, wake time, and parent education. First, greater daily hassles were related to higher maximum cortisol ($β=0.18$), AUCAG ($β=0.16$), AUCLI ($β=0.14$), and steeper slope max ($β=0.15$); greater stressful events were related to higher AUCLI ($β=0.11$) and AUCTG ($β=0.11$). Second, both greater daily hassles and stressful events were related to shorter sleep duration ($β=-0.14$; $β=-0.11$ respectively) and poorer sleep quality ($β=-0.56$; $β=-0.22$ respectively). Third, poorer sleep quality was related to higher bedtime cortisol ($β=0.13$) and AUCTG ($β=0.21$). Using bootstrapping analyses, sleep quality mediated the relation between daily hassles and AUCLI ($R^2=0.10$, 95% BCI [0.09, 0.15]); the relation between stressful events and AUCTG ($R^2=0.11$, 95% BCI [0.40, 3.82]). These mediation models remained significant even after adjusting for sleep duration. Overall, poor sleep, beyond duration, mediated the relation between stress and diurnal cortisol in youth. This suggests that total cortisol concentration, but not specific timepoints of the diurnal cortisol profile, is affected by stress through sleep. This also suggests that the relation between stress and cortisol is driven by the quality, but not quantity, of sleep. Future studies should test this association longitudinally and using polysomnography for more precise measures of sleep quality (e.g., sleep efficiency, sleep stages) to establish causal pathways.

Abstract 1757

FATIGUE, CORTISOL AWAKENING AND SALIVARY ALPHA-AMYLASE RESPONSE IN HEALTHY YOUNG ADULTS: EVIDENCE FROM AN ACUTE SLEEP RESTRICTION MANIPULATION

Eanna D. O’Leary, H. Dip. Psych, School of Psychology, Centre for Research on Occupational and Life Stress (CROLS), Galway, Galway, Ireland, Siobhan Howard, PhD, Department of Psychology, Mary Immaculate College-University of Limerick, Limerick, Ireland, Jack E. James, PhD, Department of Psychology, Reykjavik University, Reykjavik University, Reykjavik, Iceland

Despite compelling epidemiological evidence identifying sleep loss as a risk factor for adverse health outcomes, including cardiovascular health, the mechanisms by which reduced sleep may influence ill-health remain equivocal, but may be related to persistent alterations in physiological stress responding. While salivary cortisol reflects the activation of the hypothalamus-pituitary-adrenal system, the emerging interest in salivary alpha-amylase (sAA), as a marker of sympathetic-adrenal-medullary activity, is appealing as it facilitates simultaneous investigation of activity within the two major neuroendocrine stress systems, in ecologically valid settings. To examine the effect of sleep restriction on fatigue, and salivary biomarkers of neuroendocrine stress function, 128 young adults completed a laboratory based...
social stressor, providing SAA saliva samples pre- and post- stressor presentation, following acute sleep restriction, receiving just 40% of their usual sleep or following a full night’s rest. Waking saliva samples were further examined in the home setting to determine the cortisol awakening response (CAR) following three sleep phases; (a) rested in a fully rested state, (b) sleep deprived for 6 hours, and (c) rested following an exercise stress test in selected cardiac rehabilitation patients, and greater insomnia severity was associated with increased resting heart rate. These findings are consistent with the hyperarousal theory of insomnia and suggest that impaired parasympathetic modulation is present among individuals reporting difficulty falling asleep but not those with other insomnia symptoms. Future research should assess whether sleep improvements in insomnia symptoms result in better autonomic regulation of heart rate.

Abstract 1522

NAP BEHAVIOR AND NIGHTTIME SLEEP: ASSOCIATION WITH DEPRESSIVE SYMPTOMS IN THE MIDUS II BIOMARKER STUDY
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Individuals suffering from major depression often report sleep disturbances such as insomnia or hypomnia. Increased napping has been associated with such nighttime (NT) sleep disturbances and is thought to contribute to depression or depressive symptoms. However, so far, studies assessing links between sleep and depression focused on either nighttime or nap sleep. Hence, the current study aimed at examining sleep and nap behavior in parallel to assess potential nighttime and nap sleep interaction effects on depressive symptom severity. To assess this question, we utilized the Midlife Development in the U.S. (MIDUS) II Biomarker study and analyzed N=237 participants (54%±11.9 yrs., 98 males, BMI: 31.6±7.3) with complete self-report sleep diary information and mental health questionnaire (CES-D) who napped at least once during the one week of sleep assessment (average NT sleep length: 366±62.5 min; number of naps: 2.7±1.7, average nap length: 34.4±20 min). Napping frequency was reveal that napping more frequently was associated with higher depressive symptoms (beta=0.14; p=0.04). However, including nighttime sleep duration eliminated this association (nap frequency: beta=-0.51; p=0.21; interaction: beta=-0.64; p=0.12) and instead indicated the importance of nighttime sleep (beta=0.26; p=0.03). Conversely, the total time spent napping over the course of the study week itself did not contribute to CES-D scores (beta=0.10;p=13). However, we found an interaction effect with nighttime sleep duration, such that in individuals with low average nighttime sleep duration, increasing nap sleep reduced depressive symptoms, while in individuals with high average nighttime sleep duration, more nap sleep was linked to increased depressive symptoms (beta=-0.71; p=0.05). In summary, as expected, we found that higher napping frequency was related to decreased depression. Interestingly, the number of naps taken during the week itself did not add to this effect. Instead, the total amount of additional sleep obtained through napping moderated the effect of nighttime sleep duration on depressive symptoms, suggesting that while compensating for nighttime sleep loss with higher nap sleep duration may be benign, supplementing sufficient nighttime sleep with additional daytime sleep may contribute to increased depressive symptomatology.

Abstract 1623

THE INFLUENCE OF SUPPORTIVE SOCIAL NETWORKS ON STRESS AND SLEEP OUTCOMES
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Social support has been linked to positive health outcomes. One pathway by which this association may be realized is via sleep. Getting adequate sleep is essential for optimal daytime functioning and has implications for both physical and mental health. There are several reasons to believe that social support may influence sleep outcomes. An increased sense of belonging or connectedness may act as a buffer from the negative psychological and physiological effects of stress, as well as promote a consistent and consolidated sleep-wake schedule. Although certain relationships (e.g., married versus unmarried) have been tied to sleep disturbances, less is known about the association between the quality of one’s overall social network and sleep. In the present study, we examine how the amount of supportive relationships in an individual’s social network is associated with sleep outcomes. The sample consisted of 194 adults, 51% female and 49% male, 25-49 years old, and recruited from an ongoing social intervention study. Participants completed a packet of questionnaires including demographic variables (e.g., age, ethnicity, occupation, education), the Dyadic Adjustment Scale (DAS, to assess marital adjustment), the Social Relationship Index (SRI, to assess number and relationship quality of social network members), the Perceived Stress Scale (PSS, to assess general feelings of stress), and select items from the Pittsburg Sleep Quality Index (PSQI, to assess sleep quality). While controlling for marital adjustment, regression analyses revealed that individuals who reported greater numbers of supportive relationships in their social network had better subjective sleep quality, $\beta = 0.04, t(198) = 2.27, p = 0.02$, took less time to fall asleep at night, $\beta = -0.85, t(195) = -2.32, p = 0.02$, and lost less sleep during the night, $\beta = -0.1, t(196) = -2.20, p = 0.03$. Sobel tests also revealed that perceived stress significantly mediated each of these effects, $p < 0.01$. These findings supplement the current literature on the benefits of positive social relationships. There is evidence to suggest that quality of support networks can influence sleep outcomes, which may affect overall health. Evidence for the stress-buffering model is also demonstrated as perceived stress mediated the association between number of supportive relationships and sleep outcomes.
NUMBER OF STRESSFUL LIFE EVENTS IS A STRONGER PREDICTOR OF INCIDENT CARDIOVASCULAR DISEASE AMONG ADULTS WITH VERSUS WITHOUT A LIFETIME DEPRESSIVE DISORDER: NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS (NESARC)

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Even though stressful life events (SLE) and depression may act together to contribute to cardiovascular disease (CVD), these emerging CVD risk factors have been mainly explored in isolation. We hypothesized that depression would potentiate the deleterious effect of SLE on incident CVD. This is plausible, given evidence suggesting that depressed individuals exhibit exaggerated hypothalamic-pituitary-adrenal axis, autonomic, and inflammatory responses to stress, which in turn could promote atherosclerosis. We examined data from 28,455 adults (mean age = 45 years, 58% female, 42% non-white) with no evidence of baseline CVD who participated in Waves 1 (2001-2002) and 2 (2004-2005) of NESARC. At Wave 1, lifetime depressive disorder (LDD; DSM-IV major depressive disorder and/or dysthymia) and SLE (12 questions assessing past-year stressors in the health-related, social, job and legal domains) were assessed by the Alcohol Use Disorder and Associated Disabilities Interview Schedule IV. A continuous SLE variable (number of past-year stressors experienced: 0, 1, 2, 3, 4, 5, or 6+) and dichotomous LDD variable were computed. At Wave 2, adults who reported any physician diagnosis of arteriosclerosis, angina pectoris, myocardial infarction, or stroke within the past year were coded as having incident CVD (n = 1,223). A logistic regression model adjusted for demographics (age, sex, race/ethnicity, education, NESARC sampling design) and CVD risk factors (hypertension, hypercholesterolemia, diabetes, tobacco use, body mass index) revealed that both LDD (OR = 1.36, 95% CI: 1.20-1.54, p < .001) and SLE (OR = 1.13, 95% CI: 1.09-1.16, p < .001) were independent predictors of incident CVD. As hypothesized, an LDD x SLE interaction was detected (p < .001). Stratified follow-up analyses indicated that SLE was a stronger predictor of incident CVD among adults with LDD (OR = 1.18, 95% CI: 1.11-1.28, p < .001) compared to those without LDD (OR = 1.09, 95% CI: 1.06-1.13, p < .001, n = 4,885) compared to those without LDD (OR = 1.09, 95% CI: 1.06-1.13, p < .001, n = 23,570). The present findings suggest SLE may be a stronger risk factor for CVD among adults with versus without a history of clinical depression, possibly due to exaggerated physiologic responses to stress.

ABSTRACT 1316

ABUSE AND SUBCLINICAL CARDIOVASCULAR DISEASE AMONG MIDLIFE WOMEN: FINDINGS FROM THE STUDY OF WOMEN'S HEALTH ACROSS THE NATION

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Background. Some evidence suggests that early life abuse, particularly sexual abuse, may contribute to cardiovascular disease (CVD) risk among women. However, this relationship has largely been addressed using self-reported measures of CVD. Subclinical CVD indices, such as carotid intima media thickness (IMT), are useful for indexing the development of disease before frank disease is evident. We tested whether a history of abuse was related to higher carotid IMT among midlife women without clinical CVD.

Methods. The Study of Women’s Health Across the Nation (SWAN) is a longitudinal cohort study of midlife women transitioning through the menopause. 1402 Caucasian, African American, Hispanic, and Chinese SWAN participants completed measures of childhood and adult physical and sexual abuse, underwent a blood draw, completed physical measures, and underwent a carotid artery ultrasound at SWAN study visit 12. Associations between abuse and IMT were tested in linear regression models adjusted for CVD risk factors and other confounders. Results. Approximately 26% of women reported either physical or sexual abuse as a child and 23% as an adult. A history of childhood sexual abuse was associated with higher IMT controlling for age, site, race/ethnicity, education, body mass index, lipids, blood pressure, measures of insulin resistance, smoking, alcohol use, and medication use (b(SE)=0.02 (0.01), p<0.05; adjusted means, childhood sexual abuse: 0.80 mm vs. no childhood sexual abuse: 0.78 mm). No other abuse indices were significantly related to IMT, and no interactions by race/ethnicity were evident (p values for interaction >0.10).

Conclusions. This study is the first to show that childhood sexual abuse is related to higher IMT controlling for CVD risk factors and other confounders. These findings highlight the importance of considering the effect of life stressors, particularly childhood sexual abuse, on women’s later cardiovascular health.

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The content of this abstract is solely the responsibility of the authors and does not necessarily represent the official views of the NIA, NINR, ORWH or the NIH.

ABSTRACT 1551

ANGER, HOSTILITY AND RE-HOSPITALIZATIONS IN PATIENTS WITH HEART FAILURE IN THE BETRHEART STUDY

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Background: Heart failure (HF) is associated with high mortality and frequent exacerbations in clinical condition resulting in rehospitalization. Evidence suggests that anger and hostility traits are predictive of cardiovascular disease events. However, the role of anger and hostility characteristics in heart failure exacerbations and outcomes is not well understood. Methods: In the BETRHEART study of psychosocial determinants of HF outcomes, 150 patients (113 males, mean age 56.9±11.4) years with HF (ejection fraction (EF) ≤40; mean ±3±17.5%) completed psychosocial questionnaires and assessments of symptoms, functional status, and biomarkers at baseline and at 3 months. Anger and hostility was measured using the STAXI-II and the Cook-Medley (CM) Hostility scale, respectively. Depression was measured via Beck Depression Inventory-II (BDI-II) and the biomarker beta-naltreietic peptide (BNP) was assessed at a 3 month testing. Hospitalizations (HF-related and all cause) were assessed during a maximum of 36-months of follow-up. We determined prospective relationships of anger and hostility scales to HF symptoms (Kansas City Cardiomyopathy Questionnaire; KCCQ), functional status (6-minute walk test; 6MWT), BNP, all-cause and HF hospitalizations, and mortality. Results: Controlling for age, gender, ejection fraction, creatinine, smoking status and income, CM Hostility Total (β=0.22, p=0.008; model R2=0.13, p=0.001), CM Hostile Cynicism (β = -0.18, p=0.04; model R2 =0.11, p=0.003) and STAXI Anger Expression Out (β =-0.19, p=0.02; model R2 =0.12, p=0.002) all significantly predicted total number of all cause hospitalizations. Of the scales, only CM Hostility Total predicted a composite variable of hospitalization and death (p=0.02). However the anger or hostility scales did not significantly predict number of HF-related hospitalizations or death alone. All of these relationships remained significant after controlling for BDI and biomarkers in separate analyses. Anger and hostility were not predictive of HF symptoms, functional status, or BNP. Conclusions: Anger, hostility and their subcomponents appear to predict all-cause hospitalizations in patients with HF. They do not appear to be specific predictors of heart failure-related hospitalizations, and they are not predictive of functional status or symptoms. Based on these data, associations of anger and hostility with hospitalizations in HF patients likely involve mechanisms that are not specific to HF progression.
assessed. Methods: Cognitive and somatic depressive symptom dimensions (BDI) were assessed at study inclusion and 1 year later. DHEAS and TNF-alpha were determined in blood drawn, drawn at inclusion and 1-year follow-up. Linear mixed modelling for repeated measures with maximum likelihood estimation was used. Results: DHEAS levels at baseline and follow-up were correlated. A univariate analysis, reduced DHEAS levels were associated with a higher total (t=-3.25, p=0.002), cognitive (t=-2.85, p=0.005) and somatic (t=-3.25, p=0.002) depression scores. There was no significant effect of time. In multivariate analysis, adjusting for disease severity (NYHA class), gender, age, and comorbid diabetes, the relation between DHEAS and total depression (estimate=-1.72; t=2.81, p=0.002), cognitive depression (estimate=-1.0; t=-2.63, p=0.01), and somatic depression (estimate=-0.8; t=-2.40, p=0.02) remained significant. Adding TNF-alpha levels to the model rendered the relation of DHEAS and somatic depressive symptoms nonsignificant (estimate=-0.4; t=1.38, p=0.17), with TNF-alpha being a significant predictor of somatic depressive symptoms (estimate=0.22; t=4.09, p=0.0005). The associations of DHEAS with cognitive depressive symptoms (estimate=0.9; t=2.27, p=0.03) and with the depression total score (estimate=-1.2; t=-1.99, p=0.049) remained significant. Discussion: DHEAS was negatively associated with both cognitive and somatic depressive dimensions, independent of demographics and disease severity. The results further suggest that part of the association of DHEAS with somatic depression may be mediated by inflammation, while the effect of DHEAS on cognitive depression may work through other, more direct mechanisms, such as through modulation of serotonin signaling.

Abstract 1849

IMPACT OF PATIENT EXPECTATIONS PRIOR TO CARDIAC SURGERY ON POSTOPERATIVE OUTCOMES

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Background: Prediction of poor outcome and extended recovery time following cardiac surgery is most often focused on physical and surgical factors. Emotional and psychosocial factors are not routinely examined in the clinical setting for cardiac surgery, but may provide further insight. Preliminary evidence suggests that patient expectations impact physical health status and may be valuable to measure in the cardiac surgery setting. The purpose of this study was to examine the impact of the Cardiac Surgery Patient Expectations Questionnaire (C-SPEQ) on clinical and psychosocial outcomes as well as recovery following cardiac surgery. Methods: This study was observational with prospective data collection. A total of 93 patients awaiting non-emergent cardiac surgery were enrolled and completed a packet of questionnaires prior to surgery including the C-SPEQ. A similar packet of surveys was mailed to each patient 1 year post-surgery and 68 patients responded. Clinical and postoperative factors were collected as part of the Society of Thoracic Surgeons database and merged with data from the pre and post-surgery packets. Results: The mean age of patients was 62.9±11.8 years and 72% were male. Higher negative expectations pre-surgery (C-SPEQ score) were significantly correlated with depression (r=0.32, p=0.01) and perceived stress (r=0.36, p=0.003) at 1 year post-surgery, but not state anxiety (r=0.18, p=0.14). In multivariate analyses adjusting for age, gender, and EuroSCORE, higher C-SPEQ was not related to greater odds for pre-discharge complications (OR=1.01, p=0.68) or readmissions within 30 days (OR=1.05, p=0.31). After adjustment for age, gender, EuroSCORE, and complications, higher C-SPEQ score was associated with longer recovery time in months (B=0.14, p=0.006) and lower physical health-related quality of life (HRQL) at 1 year post-surgery (B=0.31, p=0.005). In univariate and multivariate Cox regressions, C-SPEQ score was not related to survival during follow-up. Conclusions: These results indicate that negative patient expectations had a detrimental impact on recovery and HRQL following cardiac surgery, but were not related to clinical outcomes. Although focus is mainly on improving patient clinical status, there are also opportunities to improve the pre-existing health experience following surgery. Pre-surgical interventions and education might better prepare patients, lower negative expectations, and improve psychosocial outcomes after cardiac surgery.

Abstract 1462

SELF-CARE AND SURVIVAL IN PATIENTS WITH CHRONIC HEART FAILURE

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Objectives: It is assumed that self-care is crucial to maintain healthy functioning in patients with chronic heart failure (HF). However, studies examining the association between self-care and clinical outcomes are scarce. In this study, we examined whether self-care behavior predicts mortality in a cohort of patients with chronic HF, beyond sociodemographic and clinical confounders. Method: At baseline, a Dutch cohort of 559 patients with chronic HF completed the 9-item European Heart Failure Self-care Behaviour scale to assess self-care (i.e., sodium and fluid restriction, daily weighing, exercising, and medication adherence) and consultation behavior. Follow-up information was obtained from the patients’ medical record in March, 2013. The endpoint was defined as all-cause mortality. Multivariate Cox proportional hazards model estimated the association between self-care and all-cause mortality. Covariates adjusted for included gender, partner status, New York Heart Association functional class (NYHA) III–IV, comorbidities (adjusted Charlson Comorbidity Index score), medication use, and current smoking status. Results: Mean age of patients was 66.3 ± 9.5 years, with 78% being male. After a median follow-up of 3.5 ± 2.4 years, 221 deaths (40%) from any cause were recorded. In multivariable analyses, total self-care was not significantly associated with all-cause mortality (HR = 1.10, 95% CI [0.84–1.45], p = 0.50). With respect to individual self-care behaviors, only adherence to a sodium restricted diet was associated with increased mortality (HR = 1.47, 95% CI [1.10–1.96], p = 0.01), after adjusting for potential confounders. One prespecified mortality outcome, i.e., being single, NYHA functional class III–IV, and presence of comorbidities. Conclusions: Self-reported adherence to a sodium restricted diet was independently associated with increased mortality in patients with chronic HF, after controlling for demographic and clinical confounders, including disease severity. While a low sodium diet is often advised to avoid acute decompensation, there is evidence that it may also have a negative effect on cardiovascular outcomes in terms of mortality. Therefore, future research is warranted to investigate its potentially toxic effect on clinical outcomes.

Abstract 1626

THE STANFORD INTEGRATED PSYCHOSOCIAL ASSESSMENT FOR TRANSPLANTATION (SIPAT): A PROSPECTIVE STUDY OF MEDICAL & PSYCHOSOCIAL OUTCOMES.

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Background: Available data suggest that in addition to established medical listing criteria, psychosocial and behavioral issues may significantly contribute to post-transplant outcomes. To improve the pre-transplant psychosocial evaluation process we developed a new assessment tool: the Stanford Integrated Psychosocial Assessment for Transplantation (SIPAT). Methods: We conducted a systematic review of our transplant-patient dedicated database and our institution’s electronic medical records to identify every patient who received solid-organ transplants during the period of 6/1/2008 through 7/31/2011 at Stanford University Medical Center. All patients had been assessed with the SIPAT pre-transplantation and were closely followed by the transplant multidisciplinary team post-transplantation. We then reviewed and compared prospectively accumulated psychosocial and medical outcomes at the one year of follow-up. The primary outcome were organ failure and mortality; secondary outcomes included occurrence and number of rejection episodes, occurrence and number of medical rehospitalization, occurrence and number of infection rates, new psychiatric complications or deceleration of pre-existing psychiatric diagnosis, new or recurrent substance abuse, absence of non-adherence, and failure of support system. Results: Two hundred and seventeen (n=217) subjects were included and included in the analysis. The average SIPAT score was 12.9 (SD 8.65) with range of 0 – 42. The average age at the time of transplantation was 51.9 (SD 13.4) years with the range of 20 – 80 years of age. Although there was no significant difference in the primary outcome (i.e., organ failure, mortality), due to low occurrence, the data clearly demonstrated that a higher SIPAT score was significantly correlated with the probability of poor medical and psychosocial outcomes. The SIPAT scores predicted various post-transplant medical complications, such as organ rejection episodes (p<0.02), medical hospitalizations (e.g., transplant related complications) (p<0.0001), and infection rates (p=0.02). Similarly, SIPAT scores also predicted the occurrence of various post-transplant psychosocial complications, such as psychiatric decompensation (p<0.005), presence of non-adherence (p=0.09), and failure of support system (p=0.02). When all psychosocial and medical outcomes were combined and logistic regression analysis was performed on these two pooled outcomes, it was also found that higher SIPAT scores increase the probability of an occurrence of undesirable medical outcomes (p=0.04) and negative psychosocial outcomes (p=0.03).

Conclusions: SIPAT is a comprehensive screening tool designed to assist in the psychosocial assessment of organ transplant candidates, while standardizing the evaluation process and helping identify subjects who are at risk for negative
MANAGEMENT OUTCOMES OF INDEX SUICIDE ATTEMPTS

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Purpose: Managing the acutely suicidal patient is a daily task for clinical psychiatrists. A history of attempted suicide is a known risk factor for a completed suicide, but little is known about how management of first lifetime, or Index Suicide Attempts (ISA) correlates with long-term outcome. We hypothesize management of patients – whether they are hospitalized and/or have scheduled follow-up – is correlated with long term outcomes as measured by rates of Subsequent Completed Suicide Attempts (SCSA).

Methods: Our cohort was identified by identifying 5,773 Olmsted County, MN residents who presented to a medical facility between 1986 and 2007 and received a billing (HCDA) or diagnosis (ICD) code corresponding to a suicide attempt. Charts were reviewed to identify patients making an ISA during the study period. A total of 1,507 patients (37% male, 63% female) were identified, 48 of whom died on the ISA, leaving 1,459 survivors as our cohort. Each chart was reviewed to ascertain past psychiatric history, management of the event, and follow-up after discharge. The National Death Index (NDI) was queried to identify patients who died by 12/31/2010, and the cause of their death.

Results: In our cohort, 22 males (4.2%) and 6 females (0.6%) died during an SCAS. No significant differences were found between males and females regarding rate of general hospitalization or follow-up. However, females with a psychiatric history were hospitalized at a greater rate than those without (p<0.0001), but males were not (p=0.088). Hospitalization led to better rates of follow-up for both genders (p=0.0001). Hospitalized females perished from SCASs at lower rates than their unhospitalized counterparts (p=0.0009), but males again did not (p=0.0380). Psychiatric hospitalization specifically was protective for females (p=0.0162) but not for males (p=0.1001). Follow-up in 30 days after the ISA was protective from SCASs for both males and females (p=0.0037 & p=0.0002, respectively).

Conclusions: This is the first study to track suicide outcomes following an ISA. It shows differences in SCASs for both males and females, depending on the type of management following an ISA. Females who were hospitalized on any service were less likely to die in an SCAS than those released immediately to the outpatient setting, while males were not. Both males and females who received outpatient follow-up within 30 days of the ISA are less likely to die in an SCAS than those who do not, emphasizing the importance of psychiatric follow-up in suicide prevention.

NEW MEASURE OF MEDICAL STUDENT AND PHYSICIAN CONFIDENCE IN EXHIBITING PATIENT-CENTERED BEHAVIORS

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Background: Patient-centered communication is a core competency in modern health care which has been found associated with higher levels of patient satisfaction and improved health outcomes as well as with greater professional satisfaction and lower risk of burnout among physicians. The aim was to develop a questionnaire to assess medical student and physician patient-centered self-efficacy (PCSEQ) and to test its reliability and validity. Methods: A comprehensive systematic review of the literature on patient centeredness and student portfolios on patient communication experiences, was completed by 448 medical graduate students. Exploratory analyses resulted in a 27-item version (PCSEQ-27) with three underlying factors: Confidence in: a) Exploring the patient perspective, b) Sharing information and power, and c) Dealing with communicative challenges.
Physiobehavioral stress management intervention on maternal stress and mood outcomes during pregnancy: The SMART MOMS project

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Prenatal stress, depression, and anxiety have been shown to have adverse effects on the health and well-being of mothers and their children. However, few studies have examined how to regulate stress and other mood states during pregnancy. The current study examined whether low-income pregnant women participating in a prenatal cognitive behavioral stress management (CBSM) intervention demonstrated reductions in self-reported stress (Perceived Stress Scale), depression (Edinburgh Postnatal Depression Scale), and anxiety (State-Trait Anxiety Inventory) through increased confidence in using relaxation and coping skills designed to regulate stress and mood, whereas women randomized to the eight-week prenatal CBSM intervention (n=55) learned relaxation and coping skills designed to regulate stress and mood, whereas women randomized to the eight-week prenatal AC group (n=45) received standard, print-based prenatal health information. Repeated Measures ANOVA analyses showed that women receiving the CBSM intervention displayed increased confidence in using relaxation and coping skills (F[3, 87] = 3.2, p < .05) and depression (F[3, 86] = 3.5, p < .05) throughout their pregnancy, compared to women in the AC group. Furthermore, increased confidence in using relaxation and coping skills was found to be associated with lower levels of stress (r = .47, p < .001) and anxiety (r = .27, p < .05) for women receiving the CBSM intervention. These findings suggest that prenatal CBSM interventions may be effective in helping low-income pregnant women to regulate stress and other mood states during pregnancy through their use of learned relaxation and coping skills.

IMPACT OF A PRENATAL COGNITIVE BEHAVIORAL STRESS MANAGEMENT INTERVENTION ON MATERNAL STRESS AND MOOD OUTCOMES DURING PREGNANCY: THE SMART MOMS PROJECT

Effects of a brief course in patient-centered communication skills training on PCSEQ-27 scores in MI patients

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Objective: Research shows that the analysis of heart drawings done by myocardial infarction (MI) patients is an effective tool to predict recovery. Little is known about the relationship between the illness perception of patients' heart condition after MI – shown by the heart drawings – and their subjective levels of distress. The aim of this study was firstly to affirm the use of drawings as tools to visualize illness perception and secondly to explore the use of heart drawings to measure patients' psychological distress levels.

Method and Design: 39 patients with an acute MI (82% men, mean age 60 ± SD = 9.2) were examined within 48 hours after the cardiac event. Patients were asked to draw their hearts before and after the infarction in two 49 cm² squares. Patient's cognitive representation of their MI was assessed using a brief German version of the self-rated revised illness perception questionnaire (IPQ-R). The overall psychological distress over the last seven days was recorded with the German version of the self-rated symptom-checklist-9 (SCL-9).

Results: Increases in the percentage of the heart drawn as damaged were significantly correlated with higher IPQ-R sum scores (r = 0.51, p < .05) controlling for age, gender and the prognostic Score. Illness perception explained 26% of the variance (r² = 0.26). Also there was a significant relationship between SCL-9 sum scores with the percentage of the heart drawn as damaged, (r = -0.66, p < .05). Symptom distress explained 43% of the variance (r² = 0.43).

Conclusions: Data suggest that drawings of the size of damaged myocardial surface percentage correlate with perceived threatening. Furthermore it reflects the level of psychological distress after an acute MI. These results support the notion that drawings offer a simple starting point for doctors to assess patients’ cognitions when discussing their heart condition and an opportunity to counter negative illness beliefs. Finally, they can help identify an augmented psychological distress level shortly after the acute coronary event.

ASSOCIATION OF HEART RATE VARIABILITY WITH PLASMA CORTEXISOL IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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Objectives: There is growing evidence that heart rate variability (HRV) plays a role in a wide range of cardiovascular risk factors. Substantial evidence exists to support the idea that decreased HRV predicts the development of a number of risk factors, whereas increased HRV is associated with lower risk profiles. This study hypothesized that increased plasma cortisol levels in patients with acute myocardial infarction (MI) are associated with decreased HRV.

Methods and Design: 54 patients with acute MI (81.5% men, mean age 59 ± SD = 9.7) were examined within 48 hours after the cardiac event. Patients included had perceived substantial distress during MI based on the three screening questions tapping fear of dying, fear of being, and helplessness. Frequency domain measures of HRV (high frequency power (HF), low frequency power (LF) and the low to high frequency power ratio (LF/HF)) were assessed from 5-min electrocardiogram recordings during stable supine resting. Plasma cortisol was measured within 48 hours of admission.

Results: Decreased vagal activity (i.e., low HF power) was significantly associated with higher plasma cortisol (r = -0.299, p < .05) assessed within 48 hours after MI controlling for age, gender and body mass index. An increased autonomic imbalance (i.e., a higher LF/HF ratio) was also associated with higher levels of plasma cortisol (r = -0.333, p < .05).

Conclusions: There is a significant association between decreased HRV and higher plasma cortisol in patients with substantial distress during acute MI. These results support the notion that autonomic imbalance is related to HPA axis activity during acute MI.
but not during the task (p = .07). Higher trait anxiety levels were also associated with lower levels of self-reported control and performance, self-efficacy, and higher levels of task stressfulness (ps < .01), but unrelated to actual performance and self-report engagement (ps > .58). In conclusion, higher trait anxiety is associated with higher levels of self-reported stress-related somatic symptoms, but not with the extent of actual biological changes elicited by psychological stress, indicating a dissociation between the psychological and physiological systems.

170) Abstract 1516
PREVENTORS OF ADJUSTMENT IN MEN DIAGNOSED WITH PROSTATE CANCER AND WHEN ATTENDING FOR BIOPSY.
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Background: Receiving a diagnosis of prostate cancer has been linked with reduced psychological well-being (Sharples, 2008), and distress has been related to poorer treatment outcomes in cancer patients (Somerset et al., 2004) highlighting the importance of understanding factors that predict psychological responses to a cancer diagnosis.

Individual differences in stress appraisal or self-efficacy may explain variability in patient adjustment. Perceived stress at diagnosis was found to predict adjustment to breast cancer (Groarke et al., 2011). Stress predicted poor quality of life post-treatment in men with prostate cancer (Lev et al., 2009) as did lower self-efficacy (Eller et al., 2006). The objective of this study, is to test the relative importance of age, medical variables, perceived stress and self-efficacy in predicting adjustment in men facing the threat of a cancer diagnosis and in those recently diagnosed.

Method: Men attending a new Rapid Access Prostate Clinic for a biopsy (N=115) and with a diagnosis (N=89) participated in the study. Psychological variables included global and specific stress measured by the Perceived Stress scale (PSS) and Impact of Events scale (IES), and General Self Efficacy (GSES). Adjustment was measured by the profile of mood states (POMS) and quality of life (EORTC QLC – C30). Medical (Gleeson score, type of treatment) and demographic data was also gathered.

Findings: Hierarchical regression analyses demonstrated that for both groups, the set of predictors accounted for 7% - 32% of variance on mood and quality of life.

Discussion: Perceived global stress and self-efficacy predicted global health, and emotional functioning in both groups and explained variance on five mood states particularly distress. This is an important finding as perceived global stress has rarely been examined in this context. Research and clinical implications are discussed.

171) Abstract 1475
THE INFLUENCE OF LOW AROUSAL POSITIVE AFFECT ON CARDIOVASCULAR RESPONSE AND PAIN PERCEPTION WHILE RECEIVING A MOCK VACCINE.
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Growing evidence suggests that positive affect (PA) is beneficial for a wide array of health outcomes; however, little is known about what types of positive emotions are beneficial, and whether there are certain circumstances in which they are most helpful. This study examined what types of PA were helpful in the context of a naturalistic stressor: a needle injection. We hypothesized that more self-reported low arousal PA (i.e., more calm) would be most beneficial in terms of cardiovascular arousal reduction and reduced pain reports as compared to the effects of higher arousal positive states (e.g., happiness or vigor). Two hundred thirty one undergraduates enrolled in a large Midwestern university were recruited to receive a mock vaccination (saline solution injection) as part of a larger study on emotion expression and stress. Participants (Mage = 19.21, 83.5% Caucasian, 44.2% female) completed a variant of the Profile of Mood States questionnaire at baseline, as well as questions on pre-injection anxiety and pre- and post-injection pain perceptions.

Heart rate (HR) was monitored throughout the study and means for HR during baseline, pre-injection, injection, and post-injection were calculated. After conducting a median split on calm scores, a repeated measures ANOVA showed a significant effect where more calm predicted lower HR throughout the study, F (2.04, 436.62) = 71.09, p < .001. Similarly, calm was associated with reduced needle anxiety (r = -.321, p < .001) and pain anticipation reports (r = -.230, p < .001) prior to injection, as well as reduced pain reports for severity of injection immediately following the shot (r = -.134, p < .042). Other arousal levels of PA (mid and high arousal) were not associated with HR or self-reported needle pain/anxiety responses. These findings highlight the importance of studying different arousal levels of PA in the context of stress and health.


Figure 1. Sample interaction: Bully video recovery arousal X gender predicting parent-rated prosocial compliant behavior

174) Abstract 1179

NOT ALL EXERCISE IS CREATED EQUAL: SOCIOECONOMIC, PSYCHOSOCIAL, AND HEALTH PROFILES FOR LEISURE AND WORK-RELATED PHYSICAL ACTIVITY

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The health benefits of regular physical activity (PA) are widely touted. Federal recommendations indicate that adults receive at least 150 minutes of moderate PA each week, equivalent to 500 MET minutes per week (MMW). We investigated social, psychological, and health-related predictors of meeting such guidelines in a national sample of middle-aged and older adults as well as differences therein depending on context in which PA is performed. Data came from the MIDUS (Midlife in the U.S.) national sample. Demographic information (age, gender, and education), self-reported psychological well-being and depressive symptoms, and health status (smoking, body mass index (BMI), and chronic conditions) from wave I were entered simultaneously as predictors of PA, assessed as MMW at wave 2 (9-10 years later). Logistic regression models predicted MMW as a binary variable indicating whether recommendations were met (≥ 500 MMW). Qualitative analyses were used to categorize the context in which PA was performed, and subsequent models examined predictors of PA within the context of leisure or at work. Individuals reporting greater well-being, higher educational attainment, fewer chronic conditions, and lower BMI were more likely to meet federal guidelines (p’s < .01). Controlling for PA at work, the same factors remained significant predictors getting ≥ 500 MMW in leisure-time PA (p’s < .03). However, getting ≥ 500 MMW of PA at work was more likely among depressed individuals, males, younger adults, those with less education, and more chronic conditions, controlling for PA during leisure (p’s < .03). Results highlight relevant demographic, psychological, and health factors for understanding which adults meet physical activity guidelines in national sample. Educational status emerged as a key predictor of both work and leisure PA, with higher status associated with greater leisure PA, and lower status associated with greater work-related PA. These findings further add to the growing literature on salutary effects of psychological well-being. The identified factors may serve well as targets for potential PA interventions.

175) Abstract 1835

SELF-COMPASSION AS A PREDICTOR OF CORTISOL RESPONSES TO REPEATED ACUTE PSYCHOSOCIAL STRESS

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Objective: Prior research suggests that the perception of threat to the self is associated with increased cortisol responses to psychosocial stress. We hypothesized that self-compassion, which involves treating oneself with kindness and understanding rather than harsh judgment, would predict lower cortisol responses. We examined whether dispositional self-compassion, which involves treating oneself with kindness and understanding rather than harsh judgment, would predict lower cortisol responses.

Results: On average, participants showed a significant increase in cortisol in response to stress on day 1 (F = 11.46, p < .001), and a significant decrease in cortisol response from day 1 to day 2 (F = 4.88, p = .032). Results of regression analyses showed that participants who were higher in dispositional self-compassion exhibited significantly lower cortisol responses to both initial stress (day 1: β = -.35, p = .021) and repeated stress (day 2: β = -.31, p = .045).

Conclusions: These results suggest that self-compassion, through its inverse relationship with cortisol reactivity, may be beneficial for physical health. On a broader level, these results contribute to our understanding of the interactions between psychological and biological processes in shaping human health.

176) Abstract 1562

OPTIMISM AND SELF-ESTEEM IN RELATION TO DIABETES PREVALENCE AND GLYCEMIC CONTROL IN HISPANIC ADULTS IN THE U.S.: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL) SOCIOCULTURAL ANCILLARY STUDY

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Hispanics in the U.S. have higher rates of diabetes mellitus (DM) relative to Non-Hispanic Whites. Few studies have focused on possible protective psychosocial factors in relation to DM prevalence and management, particularly in adult Hispanic populations. This study examined whether dispositional optimism and self-esteem were associated with DM prevalence and glycemic control measured via HbA1c in a U.S. Hispanic adult sample. Participants were 5,219 U.S. Hispanics with DM diagnosis (N = 1,051, aged 18-74, mean age = 42) who participated in the baseline examination of the HCHS/SOL and sociocultural ancillary, an epidemiological study of risk factors for CVD in U.S. Hispanics. Optimism (OR = .97, 95% CI .94-.99) and self-esteem were significantly and inversely related to DM prevalence (OR = .97, 95% CI .94-.99) when entered in separate models. Optimism was significantly and positively associated with HbA1c in individuals with DM (β = .08, p = .03). When optimism and self-esteem were entered simultaneously, neither remained associated with DM prevalence. However, optimism remained positively associated with HbA1c in individuals with DM (β = .11, p = .003), independent of self-esteem. Analyses adjusted for age, gender, education, income, Hispanic background, acculturation, family history of DM, health insurance status, BMI, and awareness of DM diagnosis at baseline. Higher levels of self-esteem and optimism appear to be associated with lower likelihood of having DM in Hispanics, but do not contribute above and beyond each other. However, higher levels of optimism are associated with lower glycemic control in Hispanics with DM, even when adjusting for self-esteem, suggesting a possible negative mechanism for the association between optimism and HbA1c when an individual already has DM. Future research should examine these relationships longitudinally, focusing on the roles optimism and self-esteem play in their associations with DM and glucose management by examining possible mechanisms.

177) Abstract 1468

OPTIMISM PROTECTS AGAINST THE ADVERSE EFFECTS OF PERCEIVED RACIAL DISCRIMINATION ON CARDIOVASCULAR RISK

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Background: It is well-established that African Americans are at greater risk for cardiovascular (CV) disease compared to Caucasian Americans. Racial discrimination may contribute to these health disparities via stress pathways. In contrast, individuals who report greater optimism may employ better coping strategies during stressful life events, thereby protecting against discrimination-related CV disease risk. The purpose of this study was to examine whether optimism buffers the relationship between perceived racial discrimination and biomarkers of CV health. Method: We collected blood samples from 35 African American participants from a larger ongoing study as part of a larger ongoing study. Blood serum samples were assayed for triglycerides, uric acid, LDL and HDL cholesterol, and other markers of CV disease risk. Before coming into the lab, participants completed the Life Orientation Scale, which measures dispositional optimism and the Daily Life Experiences Scale, which measures the frequency, intensity, and level of distress from experiencing daily race-based “micro-stressors.” Results: Regression analyses showed a significant interaction between perceived discrimination and optimism on triglycerides, F(1, 28) = 3.40, p = .012, R2 = .421, controlling for age, gender, and body mass index (BMI). Among participants with lower optimism, greater discrimination was significantly related to higher levels of triglycerides, t(28) = -3.39, p = .001, whereas this relationship was not significant among participants with higher optimism. Findings yielded similar results: greater perceived discrimination interacted marginally with optimism F(1, 29) = 6.48, p = .121, R2 = .573, with those with low optimism showing significantly greater levels of uric acid at higher levels of perceived discrimination, t(29) = 3.21, p = .003. Interactions with cholesterol did not yield this interaction. These data suggest that optimism, or associated coping strategies such as positive reframing, may serve...
as a buffer against the negative cardiovascular effects of perceived racial discrimination.

178) Abstract 1504

MULTIMORBIDITY IN MIDDLE AND LATER LIFE: A LONGITUDINAL ANALYSIS OF RISK AND PROTECTIVE FACTORS
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As the population ages, the United States has seen a marked increase in the number of middle-aged and older adults living with chronic medical conditions. Recent estimates indicate that 51% of adults age 65-74 have at least one chronic condition – this number approaches 90% in those over 65 – and the proportion of adults with two or more chronic conditions (multimorbidity) is estimated to be 45% in adults age 65 and as high as 73% in those over 65. Chronic disease generally and multimorbidity in particular are significant health concerns, as they are related to functional decline, higher healthcare costs, and higher mortality. A better understanding of the social and psychological antecedents of multimorbidity thus has the potential to extend good quality of life well into old age. Using longitudinal data from the Survey of Midlife in the United States (MIDUS), we examine the relationship between sociodemographic factors (age, sex, race, and educational attainment), psychological resources (psychological well-being), and chronic conditions. Specifically, we examine increases in the number of chronic conditions and transitions to multimorbidity across the two waves of MIDUS (separated by 9-10 years) and how examine increases in the number of chronic conditions and transitions to multimorbidity across the two waves of MIDUS (separated by 9-10 years) and how

181) Abstract 1796

PREDICTORS OF ADHERENCE TO AIRWAY CLEARANCE THERAPY AMONG ADULT CYSTIC FIBROSIS PATIENTS
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Daily airway clearance therapy is a critical part of treatment for cystic fibrosis (CF). Adherence rates are poor, a problem exacerbated by the multiple demanding regimens that patients must manage on a daily basis. Few investigations have examined adherence among adult patients– there is an urgent need to identify modifiable risk or facilitating factors. This longitudinal study drew on Social Cognitive Theory and elements of the Theory of Planned Behavior to evaluate predictors of airway clearance adherence. Participants were receiving treatment in a regional CF center. Mean FEV1% was 64.1 (25.7), mean age was 27.1 (9.3) years, and half reported annual income below $20,000. Predictor variables, assessed at baseline, included self-efficacy for airway clearance therapy, outcome expectations (i.e., perceived necessity and concerns regarding airway clearance therapy from the Beliefs about Medication-Specific scale), and social norms. Self-reported adherence to airway clearance was evaluated using the Cystic Fibrosis Treatment Questionnaire. Adherence was poor in 38.1% of participants (i.e., missing more than 2x/week). In bivariate analyses, all 4 predictor variables assessed at baseline were significantly related to self-reported adherence (analyzed as a continuous variable) 6 months later (all p's < .01). In multiple regression analyses that modeled the effects of these predictors simultaneously while controlling for FEV1%, self-efficacy (β = .31, p = .03) and social norms (β = .26, p = .02) remained significant independent predictors. There was a marginal effect for perceived necessity (β = .22, p = .09). This longitudinal study addresses an important gap in the research literature regarding adherence with CF. As adherence to airway clearance therapy was problematic among these patients, social cognitive variables were significantly related to adherence. Further research is needed to confirm and extend these findings (e.g., evaluating changes in social-cognitive variables and adherence over time in multi-institutional cohorts), as foundation for critically-needed intervention efforts.

182) Abstract 1040

UNRAVELING THE ROLE OF STRESS IN HEART FAILURE: PROSPECTIVE RELATIONSHIPS WITH HOSPITAL READMISSION EVENTS, SYMPTOMS, AND FUNCTIONAL STATUS IN THE BETRHEART STUDY.
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Background. Heart failure (HF) is a condition characterized by high mortality and frequent hospital readmissions. The role of psychosocial stress in HF exacerbations is unclear because prior research is limited to single stress assessments that do not capture long-term stress. We aim to examine the relationship between stress and HF outcomes including cardiovascular (CV) hospitalizations, functional status, and symptoms in the BETRHEART study, a prospective study of psychosocial and biological factors in HF.

Methods. In 144 HF patients (77% male; age=57±11.5 yr; 49% Hispanic), perceived stress (PS), HF symptoms (KCCQ-S), functional status (6min walk test: 6MWT), hospitalizations, and health care costs (HCC) were assessed at baseline and in 2-week intervals for 3 months. HF hospitalizations and death were monitored for an additional 6 months. Linear mixed models examined prospective between- and within-subject associations of stress with HF symptoms, functional status, and CV hospitalizations or death up to 9 months, adjusting for clinical and demographic covariates.

Results. A robust between-subject association between the PSS and the KCCQ-S (β=-1.60, SE=0.19, p<.001) indicated that patients with higher mean stress had greater symptom burden, but no within-subject association (β=0.20, SE=0.10, p>.05). A within-subject association between the PSS and 6MWT (β=3.45, SE=1.91, p<.001) indicated that higher PSS scores at a given assessment predicted

180) Abstract 1384

INFLUENCE OF ETHNICITY AND ANXIETY ON SLEEP DEFICIENCIES AMONG PREGNANT WOMEN
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Previous research has shown that Hispanics have better health compared to non-Hispanics, also known as the “Hispanic Paradox.” However, few studies have examined whether patterns in later Hispanic versus non-Hispanic women differ during pregnancy. The aim of the present study was to examine whether ethnicity influenced quality of sleep during pregnancy. It was hypothesized that Hispanic women would experience fewer sleep disturbances during pregnancy than non-Hispanic women. Our sample included 100 low-income pregnant women (71% Hispanic) who completed anxiety (Prenatal Anxiety Scale) and sleep assessments (PSQI) during the first, second, and third trimesters as part of a larger randomized study on stress management. Repeated measures ANOVA analyses indicated that non-Hispanic women experienced significantly higher sleep deficiencies than Hispanic women throughout their pregnancy [F(1, 85) = 4.1, p < .05]. Among non- Hispanics, women who had high anxiety significantly experienced higher sleep deficiencies than those with low anxiety [F(1, 49) = 8.53, p < .01]. Anxiety was not found to affect sleep deficiencies among Hispanic women. These results suggest that non-Hispanic women, especially those with high anxiety, may benefit from prenatal programs designed to improve sleep quality during pregnancy.
poorer subsequent functional status. The PSS was not associated with BNP in between or within-subject analyses. Higher mean PSS scores predicted more CV hospitalizations in the 9 months period (B=0.09, SE=0.03, p<.01). Changes in stress were not associated with hospitalization before next assessment, but PSS scores were higher following a hospitalization (p<.05). Baseline and the change in anxiety occurring before the first CV hospitalization, patients with higher PSS scores were at greater risk of subsequent hospitalization or death during the 9 months (B=2.51, SE=1.21, p<.05).

Conclusion. Patients with generally high levels of stress experience worse HF symptoms and more hospitalizations or death compared to those with low stress. “Acute” increase in stress did not increase risk of hospitalization soon after stress assessments, but hospitalization increased stress levels. Acute increases in stress predicted poorer functional status. The role of perceived stress in HF outcomes is complex and likely involves multiple biobehavioral pathways that are independent of underlying disease severity.

183) Abstract 1050

DEPRESSIVE SYMPTOMS DURING REHABILITATION PREDICT FUTURE CARDIOVASCULAR-RELATED HOSPITAL READMISSIONS PLUS ALL-CAUSE MORTALITY

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Purpose: Depression is a cause and a consequence of cardiovascular diseases (CVD). Furthermore, depression has an adverse impact on the prognosis of patients with CVD. We hypothesized that depressive symptoms at the beginning of and/or discharge from a cardiac rehabilitation program are associated with poor prognosis during follow-up. Methods: We examined 495 CVD patients (M = 59.9 ± 11.3) who were enrolled in a rehabilitation program and completed the depression subscale of the Hospital Anxiety and Depression Scale (HADS-D). At follow-up, we evaluated the predictive value of depression scores on CVD-related hospital readmission plus all-cause mortality. We run Cox proportional hazard models, controlling for sociodemographic factors, cardiovascular risk factors (CVRF) and disease severity.

Results: During a mean follow-up period of 41.5 ±15.6 months, 58 patients experienced a CVD-related hospital readmission and 14 patients died. During rehabilitation, the prevalence of clinically relevant depression (HADS-D scores ≥ 8) could be reduced in 37% of patients. Continuous depression scores during rehabilitation (admission plus discharge) emerged as a significant predictor of outcome (HR 1.11, 95% CI 1.00 - 1.24). While a three point higher level on the depression scale at discharge predicted a 27% higher risk for a future CVD-related event plus all-cause mortality (HR 1.27, 95% CI 1.03 - 1.53), depressive symptoms at admission did not emerge as a significant predictor of outcome. Patients who suffered from a clinical depression at the beginning and at discharge of the program had a 2.4-fold increased relative risk of future CVD-related events and hence, the worst prognosis. Conclusion: Through cardiac rehabilitation CVD patients experienced a reduction in depressive symptoms during rehabilitation, and particularly so if persisting at discharge from rehabilitation, predicted poor prognosis. The implications of these findings for depression care in CVD patients need further study.

184) Abstract 1098

QUALITY OF LIFE IN PATIENTS WITH CONGENITAL VASCULAR MALFORMATIONS

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Objectives: To assess quality of life in patients with congenital vascular malformations and to identify factors of congenital vascular malformations being associated with poor quality of life, including high psychological and/or somatic (physical) distress.

Methods: We evaluated 71 patients (mean age 40 ± 16 years, 51% women) with arterio-venous (n = 10), venous/capillary (n = 34), lymphatic (n = 10), and combined (n = 17) malformations. All patients completed validated psychometric assessment tools which were the 36-item Short Form Health Survey, the Hospital Anxiety and Depression Scale (HADS), the Pain Questionnaire-15 and the Pain Disability Index.

Results: Compared with population norms, the group of congenital vascular malformation patients as a whole showed lower 36-item Short Form Health Survey Physical (46 vs. 50) and Mental (46 vs. 52) Component Summary scores, indicating impaired physical and mental health. In addition, 13% of patients with congenital vascular malformations had clinically relevant psychological distress (Hospital Anxiety and Depression Scale total score ≥ 17) and 15% had increased somatic distress (Patient Health Questionnaire-15 total score ≥ 10). Greater levels of psychological and somatic distress were significantly associated with lower scores of virtually all of the eight 36-item Short Form Health Survey subscales (P < .05).

Conclusions: Our findings suggest that, compared with a normal population, patients with congenital vascular malformation have lower quality of life, which, moreover, is accompanied by increased psychological and somatic distress. In treating patients with congenital vascular malformations, it is important to be aware of the psychological impact of this rare illness and to offer appropriate support.

185) Abstract 1119

PHYSICAL SYMPTOMS, NEGATIVE AFFECT, AND HEALTH: THE ABILITY OF PHYSICAL SYMPTOMS TO PREDICT FUTURE HEALTH 10 YEARS LATER

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Daily physical symptoms are strongly related to our perceived sense of health and well-being. In addition to influencing our health behaviors and daily routines, symptoms are commonly reported by primary care providers as objective health indicators and indicators of physical illness. Despite the prevalence of physical symptoms in our daily lives, the role of these symptoms in the progression of lifetime health and illness is unclear. Some researchers posit that symptom reports are not reliable indicators of future health outcomes because they are largely reflections of psychological and emotional states. However, few studies have examined the ability of physical symptom reports to predict future health outcomes independent of these constructs.

The current study (N=1189) used data from both Waves 1 and 2 of the Midlife in the United States (MIDUS) Survey and the National Study of Daily Experiences (NSDE) to assess the association between daily physical symptoms and health outcomes over a 10-year period. Physical symptoms at Time 1 were found to significantly predict the occurrence of self-reported health outcomes at Time 2. Higher scores on the physical symptom scale were predictive of more chronic conditions (p<.001), higher functional disability (p<.001), and lower self-rated health scores (p<.001). Moreover, these associations remained significant after adjusting for age, gender, negative affect, and neuroticism. These findings suggest that daily physical symptoms are indicators of underlying health processes and are important predictors of future health.

186) Abstract 1131

WHAT DETERMINE CANCER PATIENTS’ AND ONCOLOGISTS’ NEED FOR REFERRAL TO PSYCHOSOCIAL SERVICES?: RESULTS FROM THE DISTRESS SELF-SCREENING SYSTEM USING TOUCHSCREEN COMPUTER

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Objectives: Many cancer patients suffer from psychological distress which may worsen health-related outcomes. There have been researches indicating that every cancer patient warrants distress screening, whereas there are few studies examining how the aspect or the level of distress affect patients’ willingness for referral to psychosocial services. This study explored which components from distress screening affect patients and oncologists regarding willingness for psychosocial service use in a large cancer population, in a usual care setting.

Methods: Adult cancer patients who voluntarily used touchscreen computer for distress self-screening at Seoul National University Cancer Hospital were included. The study instruments comprised of the four-point scale distress screening tool which asks anxiety, irritability, and perceived distress, and the question asking their willingness for referral to psychosocial service. Screening summary and the estimated need-for-referral score in 4-point scale were delivered automatically to patients and their oncologists. We examined the factors associated with patients’ willingness for referral and what most affected oncologists on referring patients to psychosocial services.

Results: A total of 1107 patients (618 females, 489 males) completed the questionnaire using touchscreen computer and visited the oncology clinic at least once after screening. A total of 356 patients (32.2%) reported willingness to use psychosocial service. Patients with worse sleep quality, more anxiety, and higher estimated need-for-referral score were more willing for a referral. Oncologists referred 229 patients (20.7%), after reviewing patients’ screening summary. The patients who showed higher willingness for referral and stronger suicidal ideation were more likely to be referred. Neither the estimated need-for-referral score nor PHQ-9 total score affected oncologists on making referrals.

Conclusions: The level of actual referral to psychosocial services was relatively low compared to patients’ reported willingness. Since cancer patients are less likely to perceive their depression and irritability as signs to seek psychosocial help, oncologists should carefully assess these symptoms to make appropriate referrals to psychosocial services.

187) Abstract 1141

ASSOCIATION OF SOCIAL SUPPORT WITH PSYCHOPHYSIOLOGICAL REACTIONS IN ACUTE MYOCARDIAL INFARCTION PATIENTS

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and physical activity in patients with a recent acute coronary syndrome (ACS).

Design and Methods: We examined 52 patients with acute MI (84.6% men, mean ageSD = 59.9±10.1) within 48 hours after having reached stable hemodynamic conditions. Patients completed the German versions of the self-rated 7-item Enhancing Recovery in Coronary Heart Disease Patients (ENRICHDD) Social Support Inventory (ESSI) and of the 19-item self-rated Acute Stress Disorder Scale (ASDS) to rate the perception of acute stress. The platelet count was also assessed within 48 hours of acute MI.

Results: Lower social support was associated with higher perception of acute stress and also with higher platelet count. Sum scores of the ESSI correlated significantly inversely with sum scores of ASDS (r = -0.314, p = 0.024). Furthermore, a significant inverse relation was found between sum scores of the ESSI and platelet count (r = -0.390, p = 0.004). There was no significant association of ASDS sum scores and platelet count.

Conclusions: The results suggest a beneficial effect of social support on acute stress perception and thrombocytopenic potential in patients with acute MI. Further studies are warranted to elucidate the psychophysiological mechanisms underlying these associations.

Differential Impact of Serotonin Transporter Activity on Temperament and Behavior in Persons with a Family History of Alcoholism in the Oklahoma Family Health Patterns Project

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Background: Central serotonergic (5-HT) function is implicated in pathways to depression. However, little is known about genetic variation in central 5-HT function and its potential impact on temperament and behavior in persons with a family history of alcoholism (FH+).

Methods: 314 healthy young adults (23.5 yrs of age, 57% female; 193 FH+ and 121 FH−) enrolled in the Oklahoma Family Health Patterns project, a study of alcoholism risk in relation to temperament and behavioral dysregulation. Dysphoria was assessed using the Eysenck neuroticism and Beck depression scales, and Cloninger’s Tridimensional Personality Questionnaire. Risk taking was assessed with the Iowa Gambling Task (IGT) and Balloon Analogue Response Task (BART). All subjects were genotyped for a functional polymorphism (5-HTTLPR) in the promoter region of the serotonin transporter gene (SCL6A4).

Results: FH+ subjects with the gain-of-function 5-HTTLPR genotype scored higher in neuroticism, harm avoidance, and symptoms of Depression (p values<.03). No effect of 5-HTTLPR genotype was seen in FH− carriers of the gain-of-function 5-HTTLPR genotype played to minimize their frequency of losses in the IGT whereas FH− carriers played a balanced strategy (p < .003). No 5-HTTLPR effects were seen in the BART. Results were unaffected by gender.

Conclusions: The functional 5-HTTLPR polymorphism predicted significant variation in negative mood and poorer affect regulation in FH+ participants with possible consequences for behavior, as seen in a simulated gambling task. This pattern may contribute to a drinking pattern that is compensatory for such affective tendencies.

A qualitative examination of the connection between positive psychological constructs and physical activity following an acute coronary syndrome

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Background: There has been extensive focus on the relationship between depression and physical activity in patients with a recent acute coronary syndrome (ACS). However, despite evidence linking positive psychological constructs (e.g., optimism) to superior cardiac outcomes, there has been minimal research examining connections between positive constructs and activity in ACS patients.

Methods: Semi-structured one-hour individual qualitative interviews were completed in the hospital with 34 patients suffering ACS between March and August 2013; a majority of these patients completed the interviews at least 13 months later. The interviews focused on positive psychological states/traits, barriers to health behavior completion, and the connection between these phenomena. Interviews were transcribed and coded by two independent raters using NVivo 10 software, and reliability rated; disagreements in coding were resolved via discussion and review of the raw data.

Results: Gratitude, pride, love, and joy were among the most common and positive psychological constructs noted at each interview. However, determination and optimism were the positive constructs most commonly linked to physical activity, many times in the direction of activity leading to the positive state. More purely hedonic states (e.g., happiness, joy) were not consistently linked to activity in this cohort.

Conclusions: Positive psychological constructs are common post-ACS, and specific constructs such as determination appear to be linked to physical activity. Additional studies of specific positive constructs and the directionality of links between positive constructs and behaviors are needed in ACS patients. In further exploration of the impact of positive affective interventions on physical activity and other health behaviors is needed.

Relastionship distress predicts hunger-related hormone levels

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Objective: Relationship distress reliably enhances risk for poor health. Ghrelin and leptin, two hunger regulating hormones, are two underexplored mechanisms that may underlie this effect.

Methods: Participants were 50 women who were part of a larger study examining the health consequences of regular yoga practice. Their average age was 41.32 and their average body mass index (BMI) was 23.06. Women attended three study visits spaced apart by approximately 1 week. At each visit, women provided a blood sample and completed an adapted version of the Daily Inventory of Stressful Events (DISE), assessing stressors that occurred the day before each visit. They also completed a Food Frequency Questionnaire (FFQ) at their initial visit that measured participants’ typical intake of select foods.

Results: Women who experienced greater relationship stress had higher serum concentrations of ghrelin, which sends hunger signals to the brain, than those who experienced less relationship stress. They also had lower concentrations of leptin, which signals satiation. Non-relationship stressors were unrelated to either ghrelin or leptin levels. Consistent with the hormone results, women who experienced greater relationship stress also reported typically consuming more calories, fat, sugar, and sodium than women who experienced less relationship stress. Non-relationship

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stresses were unrelated to participants’ typical intake of calories, fat, sugar, and sodium. Conclusions: The current study demonstrated that relationship stress is linked to physiological indices of greater hunger and less satiation, and increased food consumption. Accordingly, these results provide one potential explanation linking relationship distress to poor health.

192) Abstract 1214
THE FACTORS ASSOCIATED WITH CANCER PATIENTS’ PSYCHOSOCIAL SERVICE USE FOLLOWING ONCOLOGISTS’ REFERRAL: RESULTS FROM THE DISTRESS SELF-SCREENING SYSTEM USING TOUCHSCREEN COMPUTER
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Objective: Distress is common among cancer patients, which may worsen their health-related outcomes. There have been guidelines indicating that every cancer patient needs distress screening, whereas relatively few studies have examined patients’ trajectories in care after screening. The association between the service use and the quality of distress shown on screening is not well known. This study explored which components from distress self-screening contribute to psychosocial service use after being referred by oncologists in a large cancer population, in a usual care setting.

Methods: Adult cancer patients who voluntarily used touchscreen computer for distress self-screening and were referred to psychosocial service by oncologists at Seoul National University Cancer Hospital were included. The measures from self-screening were PHQ-9, 4-point scaled questions regarding anxiety, irritability, and perceived distress, and willingness for psychosocial service use. A report accounting for the screening and estimated need-for-referral score in 4-point scale were delivered automatically to patients and their oncologists. We explored the factors which were associated with actual psychosocial service use amongst those who had been referred by oncologists.

Results: A total of 229 cancer patients (136 females, 93 males) completed distress self-screening using touchscreen computer and were referred by oncologists based on their screening results. Among them, seventy-five (32.8%) patients utilized psychosocial services. Univariate analyses showed that the utilization of psychosocial services was associated with PHQ-9 score (total and each subscale), anxiety, irritability, perceived distress, the estimated need-for-referral score, and willingness for referral. In multivariate analyses however, only depression and sleep disturbance subcores from PHQ-9 showed significant association with the psychosocial service engagement after referral.

Conclusion: The level of psychosocial service use was low among cancer patients even after oncologists’ referral. Among the patients who had been referred, depressive mood and sleep disturbance were strong indicators which might propel the patients to utilize the actual service. Psychoeducation regarding the other aspects of distress and their consequences needs attention to promote the utilization of psychosocial services.

193) Abstract 1844
SPIRITUALITY AND CARDIOVASCULAR OUTCOMES DURING THE MIDLIFE TRANSITION
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Purpose: The menopausal transition can be a physically and emotionally challenging stage of life that may be compounded by psychosocial stressors. More recent studies have found evidence that stress is a major indicator of hypertension and CVD in women. Some studies have found that postmenopausal women (PW) have higher blood pressure and are more reactive to laboratory stressors than premenopausal women of the same age possibly related to increased sympathetic nervous system activity (Farag et al., 2003; Mathews et al., 2001). Previous studies have found an association between religiosity/spirituality and lower blood pressure (BP) although one study did not find that daily spiritual experiences were protective for SBP in midlife women (Fitchett & Powell, 2009). Another study reported that greater religiosity/spirituality was associated with elevated BP (Tartaro et al., 2005). We hypothesized that women in the midlife transition who are higher in spirituality will have lower BP reactivity and a shorter recovery time from laboratory stressors.

Method: Participants included 75 women ages 40-60. The Trier Social Stress Test (TSST) and Functional Assessment of Chronic Illness Therapy – Spiritual well-being (FACIT-Sp) were used to test our hypothesis. Subjects were asked to respond on the FACIT-Sp through an online survey, after which a lab visit was conducted where the TSST was administered to each subject. Blood pressure of participants was measured during an initial resting period, the TSST administration, and a 20-minute recovery period.

Results: Because of the nature of our repeated measures factors, we used Proc Mixed (SAS Institute) to analyze the data. Women who said that they are currently experiencing menopause showed more reactivity and higher BP during the TSST compared to pre- or postmenopausal women. Also, women experiencing menopause and reporting higher levels of spirituality and meaning in life had higher BP and greater reactivity to the TSST, F(1, 71)=8.709, p=0.004.

194) Abstract 1378
SOCIAL CONCERN AMONG WOMEN REPORTING TRAUMA SYMPTOMS RELATED TO INFERTILITY
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Background: Infertility is a distressing experience that often becomes managed in the context of one’s social environment. Yet little research has focused on the social stress associated with being infertile. We examined whether the experience of infertility-related social concerns differed among women meeting clinical threshold for trauma-related symptoms and those who did not meet this threshold.

Method: Using existing baseline data from 18 women who participated in an intervention study at a reproductive services center, we compared ratings on the Social Concern subscale of the Fertility Problem Inventory (FPI) among women who met clinical threshold for trauma-related symptoms on the Impact of Event Scale – Revised (n = 8) compared to women who did not meet this clinical threshold (n = 10). Comparisons were also made among the other subscales of the FPI: Sexual Concern, Relationship Concern, Need for Parenthood, and Reaction of a Childfree Lifestyle. ANOVAs were used to compare differences between groups.

Results: A significant difference was found between women reporting clinically significant trauma-related symptoms and those who did not in their ratings of social concern on the FPI (F (1, 16) = 6.47, p < .05, η2 = .30). No significant differences were found between groups on the other FPI subscales.

Conclusion: Results indicate that the group of women experiencing the most distress concerning their infertility diagnosis are experiencing greater social stress indicated by sensitivity to reminders of their infertility from others, social isolation and alienation from family and peers. Despite limitations of cross-sectional study design, these results have implications for future research on the effects of one’s social environment as it relates to distress in one’s experience of infertility. A need to enhance social support and efficacy negotiating interpersonal relationships among women coping with infertility is also indicated.

195) Abstract 1380
DEPRESSIVE SYMPTOMS PREDICT POOR TREATMENT ADHERENCE AND RESPONSE IN HEAD AND NECK CANCER
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Head and neck cancer introduces numerous unique stressors, including problems with facial pain, opening the mouth, swallowing and vocal function. Surgery may be disfiguring, while chemotherapy and radiation may result in loss of vocal tone or smell. Head and neck patients are therefore at high risk for psychological distress. We hypothesized that patients experiencing greater psychological distress on presentation would be more likely to experience poor treatment compliance and response.

Patients presenting to a Multidisciplinary Head and Neck Cancer Clinic over the past year (n=106) completed a screening measure of anxiety and depressive symptoms (HADS). Medical records were reviewed for data on treatment regimen, breaks in treatment, and clinical response. Psychological status was entered as the predictor, and treatment variables as the outcome, in logistic regressions adjusted for age, stage, cancer site, and treatment regimen. Patients were mostly male (73%), averaging 61 years of age, with oropharyngeal squamous cell carcinoma (larynx, tonsil, tongue, oral; 58% of sample), typically presenting in stage IV (29%). Nearly half (46%) reported anxiety, and one-third (33%) reported depressive symptoms that were considered clinically significant. While 9% of patients had a break in radiation and/or chemotherapy treatment >2 days, 18% displayed evidence of persistent or residual disease upon completion. Patients endorsing higher levels of depressive symptoms (HADS-D) were significantly more likely to experience treatment breaks [p(Wald)=0.046] and display evidence of residual/persistent disease [p(Wald)=0.007].

Higher depressive symptomatology may interfere with treatment adherence, and may result in increased likelihood of residual or persistent disease in head and neck cancer patients.

196) Abstract 1856
HIGHER LEVELS OF DISPOSITIONAL OPTIMISM ARE ASSOCIATED WITH IMPROVED DIET IN STAGE B PRE-SYMPTOMATIC HEART FAILURE PATIENTS

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Research has shown that positive psychological traits are related to physical well-being and lower mortality by cardiovascular disease; however, the mechanism behind positive psychological factors and improved health is unclear and may be in part mediated by dietary behavior. This study examined whether the level of dispositional optimism was associated with the dietary habits of presymptomatic Stage B heart failure patients. The amount of dietary fat intake was measured using the Block Simplified Fat Screener while the amount of fruit, vegetable, and fiber consumption was measured using the Block Simplified Fiber, Fruit, & Vegetable Screener. The sample consisted of 163 Stage B heart failure patients (95% male) with a mean age of 63.5 years old (SD = 10.11) and Body Mass Index (BMI) of 30.0 kg/m2 (SD = 4.8). and adjusted mean level of brain-type natriuretic peptide (BNP) of 3.81 (SD = 1.1). In a linear regression model controlling for age, gender, BMI, and adjusted-BNP, a significant inverse correlation was observed between dispositional optimism and fat consumption (p = .01; $\beta = -209$, $AR^2 = .042$). such that higher levels of optimism were associated with lower fat consumption. A significant positive correlation was also observed between dispositional optimism and fruit/vegetable/fiber consumption (p = .004, $\beta = .228$, $AR^2 = .050$), that such higher levels of optimism were associated with higher fruit, vegetable, and fiber consumption. Future studies may wish to explore the association between dispositional optimism and other healthy behaviors, and perhaps examine perception of agency in one’s future health outcomes.

197) Abstract 1540

LONELINESS AND SOCIAL CONNECTEDNESS INDEPENDENTLY PREDICT SLEEP PROBLEMS IN OLDER ADULTS: EVIDENCE FROM THE IRISH LONGITUDINAL STUDY OF AGING.

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The subjective perception of loneliness has been associated with several facets of poor health, including reduced sleep quality. However, the mechanisms by which loneliness uniquely different from measures of social connectedness, loneliness not only associated with well-being but are not fully understood. This analysis considers loneliness and social connectedness simultaneously in relation to sleep difficulties, drawing on data from Wave 1 of The Irish LongituDinal study on Ageing (TILDA). Three self-report items on sleep quality assess likelihood of daytime dozing, difficulty falling asleep, and trouble waking up too early; a fourth item identifies restless sleep in the past week. Sleep, loneliness, and social connectedness were assessed for men and women (82% of the sample; 44.5% men), with a mean age of 62.73 years (SD = 9.26). Approximately 16% of the sample reported a high chance of daytime dozing, 17% reported frequent trouble waking up too early, and 12% reported frequent problems falling asleep, while 40% reported at least some restless sleep during the previous week. In multinominal regression, scores on an abbreviated version of the UCLA loneliness scale positively predicted trouble falling asleep most of the time compared with rarely/never (B = .25, p < .001; OR = 1.23, CI 1.25 – 1.33), and difficulty waking up too early (B = .19, p < .001; OR = 1.21, CI 1.18 – 1.25). Social connectedness scores were negatively associated with frequency of trouble falling asleep (B = -.47, p < .001; OR = 0.57, CI 0.69 – 0.46); and difficulty waking up early (B = -.43, p < .001; OR = 0.78, CI 0.73 – 0.84). Both variables also predicted frequency of restless sleep during the previous week. Models including both loneliness and social connectedness indicated that both were significantly associated with sleep problems, with no evidence for interaction effects. However, inconsistent associations were observed for likelihood of daytime dozing. The findings suggest that loneliness and social (dis)connectedness should be considered simultaneously in models of health. Follow-up analyses will examine associations with resting systolic and diastolic blood pressure as an objective index of health.

198) Abstract 1764

OXTR POLYMORPHISM PREDICTS SOCIAL RELATIONSHIPS THROUGH ITS EFFECTS ON SOCIAL TEMPERAMENT

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Humans have a fundamental need to form and maintain strong interpersonal bonds, yet individuals differ appreciably in the degree to which they are socially connected. It is not clear whether specific types of social processes and factors are specifically responsible for the observed associations. To address this issue, this study examined the neural processing of socially-relevant information. We tested a hypothesized social cascade from the molecular level (i.e., OXTR variation) to the social environment, through negative affectivity and inhibited sociality, in a sample of 1,295 midlife men and women of European American (N=1081) and African American (N=214) ancestry. Compared to persons having any T allele of rs1042278, individuals homozygous for the alternate G allele reported significantly lower levels of negative affectivity and inhibited sociality, which in turn predicted significantly higher levels of social support and a larger/more diverse social network. Moreover, the effect of rs1042278 variation on social support was fully accounted for by associated differences in negative affectivity and inhibited sociality. These findings suggest that OXTR variation modulates levels of social support via proximal impacts on individual temperament.

199) Abstract 1448

WHAT TYPES OF SOCIAL RELATIONSHIP VARIABLES ARE ASSOCIATED WITH RESPIRATORY SINUS ARRHYTHMIAS?

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It is well known that social relationships are good for health, however, it remains unclear whether specific types of social processes and factors are specifically related to RSA. Given the importance of social factors to benefit cardio-metabolic function, this study examined the associations between social relationship variables and RSA. This study included 225 participants recruited from undergraduate psychology classes. The aim of this study was to test the associations between social relationship variables and RSA. This was followed by a five minute resting baseline assessment of RSA. Simple linear regressions were conducted to test whether any of the social relationship variables would significantly predict RSA. Results indicated that social support was a significant predictor of RSA (F (1, 126) = 5.398, MSE = 1.262, p = .022), accounting for 4.1% of the variance within RSA. Similarly, loneliness was a marginally significant predictor of RSA (F (1, 124) = 3.098, MSE = 1.289, p = .081), accounting for 2.4% of the variance within RSA. Other social variables were not significant correlates of RSA. These results show that certain social variables are stronger correlates of physiological outcomes than others, and that these differences are evident even in young healthy samples. Future work should examine the predictive health effects of these social constructs in other health-related outcomes.

200) Abstract 1449

STRESS-RELATED CHANGES IN CLINICAL PAIN AND MOOD IN WOMEN WITH CANNABIS USE: THE EFFECTS OF DEPRESSION AND POSITIVE MOOD INDUCTION

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Chronic pain with co-morbid depression is characterized by poor mood regulation and stress-related pain. The study aimed to compare depressed and non-depressed chronic pain patients on clinical pain and mood reactivity to stress, but does impair recovery in chronic pain patients. Condition effects on pain recovery. The findings suggest that depression does not alter mood or pain, contrary to prediction. Depression status did interact with mood conditions. Moreover, changes in joviality accounted for the depression x mood condition effects on pain recovery. The sample comprised 108 women with pain due to fibromyalgia (FM) and/or osteoarthritis (OA). Approximately 29% of the sample was categorized as depressed (i.e., scored > 26 on the Center for Epidemiological Studies-Depression scale). All participants rested during a 15-min baseline period and subsequently underwent a 20-min interview regarding an interpersonal conflict. They were then randomly assigned by pain condition (FM vs OA) and depression status to a 2.5-min film clip selected to induce either a positive (n=50) or neutral mood (n=58). Repeated measures ANOVA results revealed that the stress interview increased dendorpy and clinical pain, and decreased jovedlity from baseline, lowed depression status did not predict stress-related reactivity in mood or pain, contrary to prediction. Depression status did interact with mood condition to predict recovery in joviality and clinical pain; depressed women recovered only in the positive mood condition, whereas non-depressed women recovered in both mood conditions. Moreover, changes in joviality accounted for the depression x mood condition effects on pain recovery. The findings suggest that depression does not alter pain and mood reactivity to stress, but does impair recovery in chronic pain patients. Boosting post-stress jovial mood ameliorates pain recovery deficits in depressed patients, a finding that may be relevant to chronic pain interventions.

201) Abstract 1806

NEIGHBORHOOD MATTERS: THE IMPACT OF LIVING IN A HISPANIC ENCLAVE ON FUTURE DEPRESSIVE SYMPTOMS FOLLOWING AN ACS EVENT

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Background: The Ethnic Density hypothesis posits that living around others from similar backgrounds confers mental health benefits, such as decreased depressive symptoms. Contrary to this hypothesis, we have previously shown that Hispanic ethnic density was cross-sectionally associated with increased depressive symptomatology in non-depressed adults (n=134) and an acute coronary syndrome (ACS). To date, no study has examined the prospective association of ethnic density on long-term depressive symptoms following an acute medical event.

Objective: To prospectively assess the impact of Hispanic ethnic density on depressive symptoms, 1 year following an acute coronary syndrome (ACS) event (myocardial infarction or unstable angina pectoris). Significant differences were noted across baseline and 1 year following an ACS event, participants from the Prescription Usage, Lifestyle, and Stress Evaluation prospective cohort study (N =751) completed the Beck Depression Inventory as a measure of depressive symptomatology. Hispanic ethnic density was measured by the percentage of Hispanics living within each participant’s census tract using data extracted from the American Community Survey Census (2010 – 2013).

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Baseline demographic measures (age, sex, ethnicity, education, nativity status), clinical factors (baseline depression, charlson disease severity, left ventricular ejection fraction, and GRACE prognostic risk score), and neighborhood characteristics (number of households, median income, and percentage of households receiving public assistance) were model covariates. Results: In an unadjusted linear regression analysis ethnic density was associated with greater depressive symptoms at 1 year ($\beta = .10$, $p = .01$). After adjustment for demographic, clinical, and neighborhood factors, Hispanic ethnic density did not predict 1 year depressive symptoms ($\beta = .01$, $p = .91$). However, number of households (residential density) was inversely associated with depressive symptoms at 1 year ($\beta = -.08$, $p = .01$). Discussion: The U.S. census projects that Hispanics will be the majority population by 2042. Previous research suggests that ethnic density may be protective against depression in Hispanic enclaves. However, among ACS patients, the data are less clear. Our results suggest that residential density, and not ethnic density, might be protectively associated with depression. These data add to a growing body of literature on the effects of place on health.

Figure 1. Descriptive mapping of PULSE N= 751 acute coronary syndrome patients and the Hispanic concentration in their census tract. Each dot represents 1 patient. Hispanic ethnic density: Red = High Hispanic concentration, Yellow = moderate Hispanic concentration, Purple = low Hispanic concentration.
Formal mediation analysis suggests that OI partially mediates the relationship between JH and anxiety.

Conclusions: We demonstrate that rates of hypermobility and symptoms of autonomic dysfunction are particularly high in psychiatric populations. It is likely that their importance to the generation and maintenance of psychopathology is poorly appreciated. Work underway (autonomic testing, MRI) will test the hypothesis that autonomic reactivity and interoceptive sensitivity predispose to the expression of psychiatric symptoms, particularly anxiety. It is further hypothesized that inefficient neural co-ordination of efferent autonomic drive with imprecise interoceptive representations may be amplified in hypermobile individuals.

205) Abstract 1439
A MECHANISTIC INVESTIGATION OF GENDER-SPECIFIC RISK PROFILES
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Coronary artery disease (CAD) is the number one cause of death for females in the United States. Hormonal changes accompanied by the menopausal process may be linked to the development of CAD in women. Inflammation and depression may also be two relatively gender specific factors associated with CAD in women. For instance, inflammation, a risk factor for CAD, has been shown to be higher in women than in men. Additionally, research has suggested a link between inflammation and depression, another risk factor for CAD that has been shown to be higher in women. Utilizing a sample from the Spokane Heart Study, a longitudinal study that tracked the progression of CAD from the early stages of the disease through the measurement of numerous risk factors, we examined the potential mediating effects of depression on sex/inflammation and menopausal status/inflammation links. We hypothesized that (1) depression (CES-D scores) will longitudinally mediate the link between gender and CRP levels and (2) depression will mediate the link menopausal status and CRP levels. Significant paths were found between sex and CRP, and depression and CRP, in Model 1. In Model 2, significant paths were found between menopausal status and depression, and depression and CRP. However, the path between menopausal status and CRP was not significant, perhaps due to small sample size, prohibiting any mediation interpretations. Study results are consistent with previous research suggesting links between female sex and inflammation, depression and inflammation, and post-menopausal status and depression, but could not confirm a mediating role for depression with regard to associations between gender and menopausal status respectively, and inflammation.

206) Abstract 1495
BLUNTED EXERCISE-INDUCED MOBILIZATION OF MONOCYTES IN SOMATIZATION SYNDROMES AND MAJOR DEPRESSION
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Objective: Previous research indicates that physical activity may alter the number of circulating immune cells. In the present investigation we examined whether increasing or decreasing the level of physical activity affects circulating lymphocyte and monocyte counts in patients with somatization syndromes (multiple somatoform symptoms) and patients with major depression.

Methods: Thirty-eight participants with major depression, 26 participants with somatization syndromes and 47 healthy controls participated in the study. Using an experimental withinsubject design, participants were involved in 1 week of increased exercise. Baseline comparisons and mixed models indicated reduced T helper cell counts in patients with somatization syndromes.

Results: One week of exercise increases the number of monocytes in healthy controls, but not in patients with somatization syndromes or patients with major depression. In both clinical groups, depressive symptoms and somatoform symptoms were significantly reduced after 1 week of exercise. Counts of total lymphocytes, lymphocyte subsets and monocytes were determined before and after each trial, an intertrial interval was 3 weeks. Linear mixed models adjusted for sex, body mass index, age, fitness status and the order of trials were used for longitudinal data analysis.

Results: One week of exercise increases the number of monocytes in healthy controls, but not in patients with somatization syndromes or patients with major depression. In both clinical groups, depressive symptoms and somatoform symptoms were significantly reduced after 1 week of exercise. Counts of total lymphocytes, lymphocyte subsets and monocytes were determined before and after each trial, an intertrial interval was 3 weeks. Linear mixed models adjusted for sex, body mass index, age, fitness status and the order of trials were used for longitudinal data analysis.

Conclusions: This study demonstrates a blunted mobilization of monocytes by exercise in both patients with somatization syndromes and patients with major depression.

207) Abstract 1400
SOCIAL SUPPORT AND PERCEIVED STRESS MEDIATE THE RELATIONSHIP BETWEEN SUBJECTIVE SOCIAL STATUS AND GENERAL HEALTH
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Across the animal kingdom, one of the most ubiquitous factors regulating body functioning and affecting quality of life is social status—an individual’s social standing relative to others. In humans, a large body of evidence demonstrates that a component of social status, socioeconomic status (SES), is inversely related to mortality. Subjective social status (SSS)—a broader construct reflecting the psychological perception of one’s position within the social hierarchy—predicts health outcomes better than objective SES. Despite its potential importance, however, the role of SSS in health outcomes is not well understood. For example, whereas a number of studies have identified a positive association between SSS and health outcomes, the psychological mechanisms that mediate this relationship are unknown. Based on extensive literature linking social support to physical health, we hypothesized that social support would be one such mechanism. Because of evidence showing that stress is negatively associated with health among many nonhuman animals, and is positively associated with increased mortality across human and nonhuman species, we hypothesized that perceived stress would be another such mechanism. To test these mediational hypotheses, we conducted an online study of 177 participants (113 women; Mage = 37 years). Participants reported their SSS using the MacArthur ladder scale, and their general health, social support, and perceived stress. To test for mediation, we ran a series of regression analyses. Analyses established that SSS positively predicted general health. When SSS, social support, and perceived stress were simultaneously entered as predictors of general health, SSS no longer significantly predicted general health. A bias-corrected bootstrapping procedure showed that the reduction in the direct relation between SSS and general health by both social support and perceived stress was statistically significant. This provides support for the hypothesis that SSS is positively associated with general health through increased social support and decreased perceived stress, and builds on a growing literature highlighting the importance of social standing for health and quality of life.

208) Abstract 1446
RISK FOR HIGHER CAC LEVELS AMONG MEN WITH DEPRESSION
Background: Depression and depressive symptoms have long been associated with risk for cardiovascular disease (CVD). However, there remains debate about whether these risks affect men and women to the same degree and the extent to which depressive symptoms vs clinical levels of depression are predictive of CAD. The current study aims to clarify whether males or females with depressive symptoms experience an increase in coronary artery calcification (CAC). It also assesses whether depressive symptoms or depression (CESD score) differ in their prediction of CAC levels. Methods: Participants from the Spokane Heart Study (1994-2010) data who have taken the Center for Epidemiological Studies Depression Scale (CESD) within one year of a CT scan in their 4-7th visits were included (n=425). Participants took surveys during each visit, which included the CESD. CESD scores were either analyzed continuously (‘depressive symptoms’) or dichotomously with a score of 16 or greater indicating ‘depression.’ Scores of equal to or greater than 16 have been demonstrated to correlate with clinically significant depression. Serum lipids, c-reactive protein, smoking status, BMI, blood pressure, age, and sex were accounted for in the analyses. Results: Utilizing linear regression, depression significantly predicted higher levels of CAC in a model that included both sexes (β = .643; p = .027). When the data was split by sex, males with depression had significant increases in CAC levels (β = .559; p = .045) and females did not (β = .081; p = .791). For depressive symptoms, the model that included both sexes was not significant (β = .004; p = .815). It remained nonsignificant for males (β = .022; p = .314) and females (β = .028; p = .331) when the data was split by sex. Conclusion: These results suggest that depression predicts higher levels of CAC for...
men than do depressive symptoms in contrast to some other studies suggesting that depression is a more significant risk factor for women. For women, neither depression nor depressive symptoms predicted higher levels of CAC. Additional research is necessary to uncover mechanisms through which depression may increase CVD risk differentially for men and women.

209) Abstract 1028

REDUCED INFLAMMATION IS NOT ASSOCIATED WITH COGNITIVE GAINS AFTER BARIATRIC SURGERY

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Background: Bariatric surgery is associated with improved cognitive function, though mechanisms for these benefits are unclear. Elevated inflammation is common and associated with impaired cognitive function in other populations. Importantly, inflammation levels have been shown to decrease after bariatric surgery, implicating it as a possible mechanism for post-operative cognitive improvement.

Methods: Participants were 77 patients who underwent bariatric surgery and were enrolled in the Longitudinal Assessment of Bariatric Surgery (LABS) Study. Patients completed a computerized cognitive test battery prior to surgery and at one year post-operatively. Cognitive domains assessed were attention/executive function, language, and memory. Participants also underwent a blood draw to obtain levels of high-sensitivity C-reactive protein (hs-CRP), at both time points. Regression analyses examined the relationship between baseline hs-CRP and cognitive function, adjusting for age, sex, and baseline body mass index (BMI). Post-operative effects of hs-CRP levels on cognitive function at 1-year follow-up were also examined, adjusting for age, gender, BMI change, and baseline hs-CRP and cognitive scores.

Results: Serum bariatric surgery patients exhibited pre-operative cognitive impairment. Improvements were found in attention/executive (F(1,76) = 91.80, p < .001) and memory abilities (F(1,76) = 48.31, p < .001) one year after surgery. On average, CRP levels were elevated at baseline, but fell within the normative range post-operatively (F(1,76) = 84.06, p < .001). However, pre-operative CRP levels were not associated with baseline cognitive function and changes in CRP did not correspond to changes in cognition following surgery (p > .05 for all domains). Interestingly, follow-up repeated measures analyses showed a trend for smaller improvements in memory among participants classified as having baseline CRP levels of > 0.30 mg/dL versus those with average levels of baseline CRP (Group X Time: F(1,75) = 3.08, p < .008). Conclusions: Improvements in hs-CRP levels were not associated with post-operative cognitive benefits in bariatric patients. Future studies are needed to explore other inflammatory markers (e.g., interleukin-6) and to clarify other potential mechanisms by which bariatric surgery results in cognitive improvement, including improved insulin regulation and changes in appetite neurotransmitters.

210) Abstract 1365

TRAIT REFLECTION PREDICTS INTERLEUKIN-6 RESPONSE TO SOCIAL-EVALUATIVE STRESSOR

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Past work has focused on negative repetitive thought (RT) about stressors (e.g., worry and rumination) and sustained stress responses (e.g., Brosschot, et al., 2006). However, less is known about the effects of more positive types of RT (e.g., reflection) on the physiological stress response. Trait reflection is the tendency towards intellectual self-attentiveness and is associated with positive personality traits like openness, which is associated with lower resting levels of pro-inflammatory cytokine interleukin-6 (IL-6; Chapman, et al., 2011). The present study examined whether greater trait reflection associated with a lower inflammatory response (i.e., circulating IL-6) to an acute psychosocial stressor. Thirty-one healthy undergraduates completed a socially-evaluative speech stressor and were expected to either ruminate or distraction prompt. Participants self-reported openness using the Big Five Inventory and trait reflection using the reflection subscale of the Ruminations-Reflection Questionnaire (John et al., 1991; Trapnell & Campbell, 1999). High sensitivity plasma IL-6 concentrations were determined prior to the stress task and one hour post-stressor onset. The difference between the post-stressor and pre-stressor transformed IL-6 concentrations were used as the outcome variable. To assess how trait reflection predicted changes in IL-6 in due to a stressor, hierarchical linear regression was used. In the first step, change in IL-6 was regressed onto a model containing experimental condition, body mass index, and openness in order to control for these factors. In the second stage, trait reflection was added to the pre-stress model (R2 = .27, F(1,23) = 9.51, p < .005). Post-stress trait reflection predicted less change in IL-6, β = -.59, t(1, 23) = -3.09, p = .005. Multiple mediators were tested post-hoc (e.g., positive affect, negative affect), but none were significant. Participants who reported being more prone towards self-reflective thought demonstrated less of an increase in IL-6 in response to the stressor above openness. These results suggest that positive types of RT may be important for understanding acute inflammatory responses to psychosocial stressors.

211) Abstract 1580

MUSIC LISTENING REDUCES STRESS IN DAILY LIFE - A PSYCHOBIOLOGICAL PERSPECTIVE

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Background: Music listening may be thought of as a means of health promotion due to its perceived ability to reduce stress. Results from experimental studies point towards such a stress-reducing effect of music listening, but the available results are inconsistent. The mechanisms that potentially translate the effects of listening to music into positive health outcomes remain unknown. In our study, we aimed to investigate the relationship between music listening and stress perception in daily life using a multi-dimensional approach to stress.

Method: By means of ecological momentary assessment the relationship between daily music listening and perceived stress was examined in healthy university students. A total of fifty-five students were investigated during a) five days of a regular term week and b) during five days of an examination period. Students rated their perceived stress levels and current music listening behavior (e.g., intentions for music listening, valence/ arousal of selected music) six times per day. A sub-sample (n=25) additionally provided a saliva sample at each time point for the later assessment of cortisol (sCort) and alpha-amylase (sAA).

Results: Hierarchical linear modeling revealed that music listening predicted lower stress levels, however only during the regular term week (p<.05). Music that was listened to with the intention to relax led to decreased sCort (p<.01). No such effects were found for sAA, but sAA was sensitive to the arousal of the selected music, with energizing music increasing sAA secretion (p<.05).

Conclusion: Our findings indicate that music listening can be considered a means of stress reduction in daily life. Intentions for music listening need special consideration when selecting music for stress reduction purposes. Furthermore, our results shed light on the physiological mechanisms underlying the stress-reducing effect of music, with music listening differentially affecting the physiological stress systems.
Background: The incidence and prevalence of metabolic syndrome (MetS) increases steadily in industrial societies. Work stress has been identified as one modifiable risk factor. Work stress can be conceptualized differently, e.g. in terms of demands (quantitative, physical) and resources at work (social support, control). It is unclear, however, how the respective resources and demands might induce a higher or lower risk for MetS. The objective of this study was to examine, which demands and resources were associated with MetS in apparently healthy working adults. Methods: Cross-sectional data of a healthy occupational sample (n=4353) was used. MetS was defined according to the criteria of Alberti & colleagues (2009). Work demands (quantitative, physical, cognitive, emotional), resources (social support, operational control, skill stimulation) at work and effort-reward imbalance (ERI) were assessed by validated questionnaires. Logistic regressions were used to estimate the odds ratios (ORs) and 95% confidence intervals (95% CI) for the associations between demands and resources at work and MetS. The analysis was adjusted for demographics (age, sex), lifestyle (smoking, alcohol consumption, physical exercise), co-morbid conditions (e.g. weight status, control), and for the other demands and resources. Results: In the fully adjusted models only physical demands (OR = 1.05; 95%CI = 1.03-1.08), social support (OR = 0.97; 95%CI = 0.95-0.99), and perceived control (OR = 1.03; 95%CI = 1.01-1.06) were significantly associated with MetS. All other work demands and resources were not significantly associated with MetS. This pattern remained after additional adjustment for effort-reward imbalance (ERI). Conclusion: Our findings indicate that physical demands and social support were associated with MetS in a healthy working cohort, which may provide an angle for early prevention. However, epidemiological studies investigating the association of work-related psychosocial stress and MetS still provide an inconsistent picture, which in our study is reflected by ERI not being associated at all and operational control at work being positively associated with MetS, contradictory to previous findings. Clearly more research reagrding specific work stress factors is needed.

21A) Abstract 1411
SICKNESS BEHAVIOR AND INFLAMMATORY MARKERS AMONG MEN WITH PROSTATE CANCER
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Research conducted mostly with breast cancer survivors has shown that sickness behaviors (i.e., fatigue, depression, insomnia) are associated with increases in circulating cytokines. To date, no studies have examined the relationship between sickness behaviors and cytokines among prostate cancer patients receiving androgen deprivation therapy (ADT). ADT eliminates testosterone which is known to suppress inflammation. Thus, this pilot study aimed to examine changes in sickness behaviors and cytokine levels after initiation of ADT. Participants were 61 men with prostate cancer (age M = 66.97, SD = 8.50) who were on average 3.42 years (SD = 4.70) from their prostate cancer diagnosis and 68 men without a history of cancer (age M = 68.71, SD = 8.28) who were age and geographically matched (CA- group). Participants completed self-report measures of fatigue (FSI), depression (CESD), and insomnia (ISI) and provided blood samples for analyses of pro-inflammatory cytokines (IL-1β, IL-6, IL-8, IL-10, IL-12, and GM-CSF) prior to initiation of ADT and 6 months later for the ADT group and at ageequar timepoints for the CA- group. Cytokines were analyzed using the Millipore high-sensitivity human cytokine multiplex assay and log-transformed prior to analysis. ADT group participants showed an increase in IL-6 relative to controls (p < .01) and no differences by group were observed for other cytokines (ps > .05). Spearman correlations in the ADT group indicated that increases in IL-6 were associated with increases in fatigue severity (r(56) = .28, p ≤ .01; r(57) = .42, p ≤ .01), whereas pain severity has an influence outside of such thought patterns as well as via negative thought patterns lead to impaired sleep and physical symptomatology, whereas pain severity has an influence outside of such thought patterns as well as via rumination and anxiety. The implications for future clinical interventions involving rumination, stress management, and sleep will be discussed. Funding provided by NIH grants 1RO1-AG042595 and R01-AG039409.

21B) Abstract 1433
SLEEP QUALITY AND PHYSICAL SYMPTOMATOLOGY AMONG DIVERSE MID-LIFE ADULTS IS PREDICTED BY DEPRESSED MOOD AND PAIN SEVERITY: THE ROLE OF PERCEIVED STRESS, ANXIETY, AND RUMINATION
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Anxiety, rumination, depressed mood, and pain have all been related to worse sleep quality in addition to poorer physical health. It is unclear, however, how they relate to each other to contribute to impaired sleep quality and greater physical symptomatology over time. In a sample of 168 racially and socioeconomically diverse adults, we investigated the extent to which depressed mood accounted for the associations between rumination, pain severity, anxiety, and two outcomes: self-reported sleep quality and total physical symptoms. As part of a larger investigation of the effects of stress and rumination on cognitive aging outcomes, participants completed standard psychosocial questionnaires at baseline (at which time trait rumination, anxiety, and pain severity were assessed) and were then provided with smartphones to capture daily variation across two weeks in a number of constructs, including sleep and physical symptomatology. Controlling for important covariates (e.g., age, BMI), structural equation modeling revealed that depressed mood fully mediated the impact of both rumination and anxiety on each outcome (sleep quality and physical symptomatology); in contrast, while pain severity was also linked with anxiety and rumination, it more directly predicted both outcomes. In this model, which was a good overall fit to the data [χ2 (47) = 61.58, p = .32; RMSEA =.03 (.00-.07), CFI = .99], rumination and anxiety were strongly related to depressed mood (βs = .20, and .41, respectively), and both depressed mood and pain severity predicted worse sleep quality (βs = -.30, and -.21, respectively) and greater symptomatology (βs = .28, and .42, respectively). Associations between pain, anxiety, and rumination were stronger in those reporting higher than average perceived stress. Results suggest that depressed mood is a psychological mechanism by which repetitive negative thought patterns lead to impaired sleep and physical symptomatology, whereas pain severity has an influence outside of such thought patterns as well as via rumination and anxiety. The implications for future clinical interventions involving rumination, stress management, and sleep will be discussed. Funding provided by NIH grants 1RO1-AG042595 and R01-AG039409.
PREDICTING TECHNIQUE AND PATIENT SURVIVAL OVER 12 MONTHS IN PATIENTS MAINTAINED ON PERITONEAL DIALYSIS: THE ROLE OF ANXIETY AND DEPRESSION

Konstantina Griva, Ph.D., Psychology, National University Of Singapore, Singapore, Singapore, Yu Zheli, Msc, Renal Medicine, Khoo Teck Puat Hospital, Singapore, Singapore, Marjorie Wai Yien Foo, Mb Chb (Belfast), Mrcp (, Renal Medicine, Singapore General Hospital, Singapore, Singapore BACKGROUND: Distress occurs relatively commonly in people with chronic kidney disease and has been shown to be associated with poor quality of life, but its role on clinical outcomes for patients on peritoneal dialysis is uncertain. Most studies on risk factors for poor clinical outcomes in PD patients focus on comorbidities, inflammation and nutrition. Consideration of the role of psychosocial factors is limited. We evaluated the effect of depression and anxiety on 1-year prognosis in peritoneal dialysis (PD) patients. MATERIALS AND METHODS: Consecutively recruited PD patients were enrolled in a 12-month longitudinal study. Depression and anxiety of social support at baseline and were followed up for 1-year adverse clinical events: technique and actuarial patient survival. Laboratory parameters and clinical data such as time on dialysis, primary kidney disease diagnosis, PD dose/ regimens and characteristics such as presence of caregiver for administration of PD were extracted from medical records. RESULTS: A total of 205 PD patients (age, 58.9 ± 12.49 years; 45.2% men) were studied; 59.7% of the participants were indicated with depression and 41.5% with anxiety at baseline. During the 12 month follow-up, N=20 patients died (N=11 Cardiovascular deaths) and N =12 switched to hemodialysis due to technique failure. Presence of caregiver, depression, anxiety, Charlson comorbidity index, diabetes, cerebrovascular disease and albumin were associated with actuarial/technical survival in univariate analyses. None of the demographic or other laboratory/clinical characteristics were significant. Multivariate proportional hazard model to adjust for confounders indicated that anxiety remained significant with HR of 2.145 [95% CI 1.03, 4.49, p = 0.043] for death/technique failure. CONCLUSION: Anxiety is an important predictor of actuarial and technique survival in PD patients. The high prevalence of depression and anxiety in PD patients and their impact on clinical outcomes call for screening and intervention integrated in routine renal care. Effective treatment for symptoms of distress may represent an easily achievable means of improving the clinical outcome of PD patients.

SOCIAL COMPARISON AND PSYCHOSOCIAL FUNCTIONING IN SEVERE TRAUMATIC BRAIN INJURY: A PILOT STUDY

Kyle Haggerty, Ph.D., Brain Injury Services, Bancroft Neurohealth, Haddonfield, NJ, Danielack, Ph.D., Psychology, Holyoke, MA, R. A. L. N. E., Psychology, Holyoke, PA Background: Traumatic brain injury (TBI) affects 1.7 million Americans each year. Of these, 25% are severe, involving deficits in multiple domains. Patient-centered outcomes for TBI often focus on psychosocial functioning, such as cognitive coping with trauma, post-traumatic growth (PTG), and psychological acceptance. Self- evaluations relative to others (i.e., social comparisons) may be useful for understanding these experiences in severe TBI, as the extent and type of comparison has been associated with mental health outcomes in mild TBI. In addition, understanding social comparisons may help inform treatment decisions such as designating long-term living environments. The present pilot study examined beliefs about social comparison responses and concurrent psychosocial functioning, to determine the potential utility of follow-up assessment. Method: Patients at a long-term rehabilitation facility (N=31) completed measures of social comparison, cognitive coping, PTG, and acceptance. Participants also responded to brief social comparison vignettes to assess the valence of their responses. Results: Scores for general tendency toward social comparison were comparable to previous studies of demographic variables indicated that men achieved higher VO2 peak than women (F=10.06, p<.01), but there were no sex differences for either of the walk tests or the DASI, and age was not associated with any of the measures of functional status. Hierarchical regression analysis, entering sex as a control variable, indicated that self-reported functional status (DASI) predicted VO2 peak (β=1.07, p<.05; R2=.11, p<.05), but 60ftWT and 6MWT were not associated with VO2 peak. 60ftWT time was correlated with distance walked during the 6MWT (r=−0.49, p=.001), but neither of the walk tests were associated with DASI scores. Conclusions: Results indicate that the brief, self-report DASI was a better indicator of VO2 peak than either of the WTs. Given this discord between WT performance and VO2 peak, WT may not be substituted as an alternative to CPEX for determining initial CR treatment recommendations, but may be useful when conducting repeated exercise assessments to evaluate change in aspects of functional performance. In settings where CPEX is not feasible, the self-report DASI may provide a useful indicator of functional capacity.

THE EFFECTS OF PERCEIVED STRESS AND SOCIAL SUPPORT ON MATERNAL-FETAL ATTACHMENT IN A POPULATION OF LOW-INCOME WOMEN

Ana B. Roman, B.A., Guido Urizar, Ph.D., Psychology, CSULB, Long Beach, CA Previous research studies have documented perceived stress and social support as being two key psychosocial components in terms of their effect on maternal-fetal attachment, which is the emotional bonding process that occurs between a mother and her fetus throughout the course of a woman’s pregnancy. The present study analyzed the effects of perceived stress and social support on maternal-fetal attachment among a sample of 100 pregnant women who were participating in a longitudinal study on stress management (mean age = 26.3; 71% Latina; 93% with incomes below the poverty line). Participants completed assessments on perceived stress (PSRS), social support (MOS), and maternal-fetal attachment (MFAS) during pregnancy. A multiple regression analysis was employed to test whether lower perceived stress and higher social support predicted higher maternal-fetal attachment during pregnancy. Results showed that both perceived stress (β = -.21, p =.05) and social support (β = .41, p < .001) significantly predicted maternal-fetal attachment. Therefore, participants who reported lower perceived stress and higher perceived social support also reported higher maternal-fetal attachment. Furthermore, results from this study suggest the development of effective interventional stress management programs, for ethnically minority and low-income women, geared toward strengthening various psychosocial factors, such as social support,
that may contribute to elevated blood pressure (BP) by increasing BP responses to stress. Although this relationship is largely evaluated in adults, the antecedents of CVD (e.g. atherosclerotic processes) can develop in early childhood. To gain a better understanding of these early risks in children, we tested whether hostility and hypertension in children would be associated with their parent’s hostility. In the present study, male and female children aged 9 to 11 years of age (N=100) underwent cardiovascular acute stress reactivity protocol and were assessed across subscales of hostility (cynicism, angry affect, and aggression) using the Cook Medley Hostility Scale. These analyses controlled for gender, age, race, BMI, lead (Pb), socioeconomic status, and family history of CVD. The study found for boys (N=56), angry affect was significantly correlated with father’s angry affect (r=0.45, p<0.05), while boy’s cynicism and aggression were significantly correlated with mother’s cynicism (r=0.36, p<0.05) and aggression (r=0.48, p<0.05). For girls (N=43), there was no association between hostility and mother or father hostility (p>0.05). For both girls and boys, baseline diastolic and systolic BP (DBP and SBP, respectively) were predicted by a significant interaction between the child and parent cynicism. The nature of this interaction is such that low SBP (100.8) and DBP (52.3) were found specifically when both parent and child scored low on the cynicism subscale (using -1 SD from mean). Higher SBP (106.1) was found when both the parent and child scored high on cynicism (using +1 SD from mean), when the child scored high and parent scored low (108.1), and when child scored low and parent scored high (110.3). The same pattern was found for DBP with 56.4, 58.1, and 59.1, respectively. These associations suggest that when the child and/or parent express cynical disposition, the child’s baseline BP is elevated. Future studies should closely consider the relationship between hostility and BP in both parents and children to better recognize the onset of CVD.

223) Abstract 1674

FOS DISTRIBUTION PATTERN OF ACUTE AUTONOMIC, EMOTIONAL, AND BEHAVIORAL RESPONSES TO SOCIAL DEFEAT STRESS

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We exposed rats to a social defeat stress (60 min), which caused an abrupt increase in body temperature by up to 2°C within 20 min followed by a gradual decrease to the baseline temperature. Pretreatment with diazepam (4 mg/kg, i.p.) attenuated the stress-induced hyperthermia. To identify the brain circuitry activated during the response, the distribution of cells expressing Fos, a marker of neuronal activation, in the forebrain and midbrain was examined after the stress exposure. The stress markedly increased Fos-immunoreactive cells in most regions of the cerebral cortex, limbic forebrain and midbrain was examined after the stress exposure. The stress markedly reduced in many, but specific brain regions including the prefrontal, sensory and motor thermoregulatory, autonomic, neuroendocrine, emotional and arousal systems. In rats stressed following the diazepam treatment, Fos-immunoreactive cells were significantly reduced in many, but specific brain regions including the prefrontal, sensory and motor cortices, septum, medial amygdaloid nucleus, medial and lateral preoptic areas, parvicellular paraventricular hypothalamic nucleus, dorsomedial hypothalamus, perifornical nucleus, tuberomammillary nucleus, association, midline and intralaminar thalamus, and median and dorsal raphe nuclei. In contrast, diazepam treatment, Fos-immunoreactive cells were significantly reduced in many, but specific brain regions including the prefrontal, sensory and motor cortices, septum, medial amygdaloid nucleus, medial and lateral preoptic areas, parvicellular paraventricular hypothalamic nucleus, dorsomedial hypothalamus, perilobular nucleus, tuberomammillary nucleus, association, midline and intralaminar thalamus, and median and dorsal raphe nuclei. In contrast, diazepam treatment, Fos-immunoreactive cells were significantly reduced in many, but specific brain regions including the prefrontal, sensory and motor cortices, septum, medial amygdaloid nucleus, medial and lateral preoptic areas, parvicellular paraventricular hypothalamic nucleus, dorsomedial hypothalamus, perilobular nucleus, tuberomammillary nucleus, association, midline and intralaminar thalamus, and median and dorsal raphe nuclei.

224) Abstract 1721

ARE PERSONALITY TRAITS ASSOCIATED WITH WHITE COAT AND MASKED HYPERTENSION?

Antonio Terracciano, PhD, Geriatrics, Angelina Sutin, PhD, Medical Humanities and Social Sciences, Florida State University College of Medicine, Tallahassee, FL Anxiety and other psychological dispositions are thought to be associated with blood pressure and the misdiagnosis of hypertension, particularly white coat and masked hypertension. White coat hypertension refers to elevated blood pressure in a clinical setting that is not confirmed by home or ambulatory monitoring. Masked (or hidden) hypertension refers to normal BP in a clinic setting but elevated BP outside of the clinic. This study tests whether personality traits have long-term associations with white coat and masked hypertension. A community-based sample of 259 adults from Sardinia (Italy) completed a measure of 30 specific facets and 5 broader dimensions of personality (the Revised NEO Personality Inventory). Blood pressure was assessed in the clinic and with 24-hour ambulatory monitoring. Logistic regressions were used to test whether anxiety, neuroticism, extraversion, openness, agreeableness, and conscientiousness predicted white coat and masked hypertension seven years later. Age, sex, and antihypertensive medication use were tested as moderators. Among those taking antihypertensive medication, higher anxiety was associated with a higher risk of white coat hypertension (OR = 1.35, 95%CI = 1.01-1.79). Higher conscientiousness was associated with a lower risk of masked hypertension (OR = 0.66, 95%CI = 0.44-0.98), but only among those on antihypertensive medication. There were no significant interactions with age or sex. Among those on antihypertensive medications, individuals who score higher on anxiety measures are more likely to have white coat hypertension and individuals lower in conscientiousness are at increased risk of masked hypertension. These results highlight the complex dynamics between anti-hypertensive medications, psychological traits, and hypertension. From a clinical perspective, these results suggest that particularly among anxious and less conscientious individuals, pharmacological treatments should rely on ambulatory monitoring.

225) Abstract 1500

EFFECT OF PTSD ON PSYCHOSOCIAL AND FUNCTIONAL OUTCOMES IN YOUNGER VERSUS OLDER VETERANS: FINDINGS FROM THE MIND YOUR HEART STUDY

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Background: Posttraumatic stress disorder (PTSD) is increasingly recognized as a relatively common condition that is associated with poor health and functioning in both civilians and veterans. With a sizable proportion of the population approaching older adulthood, it is crucial to understand how the effect of PTSD on health, functioning, and quality of life varies with age. The present study examined associations between PTSD and several psychosocial and functional outcomes in younger and older veterans from the Mind Your Heart Study. Methods: Participants were recruited from two Bay Area Veterans Administration medical centers and included 380 patients age 60 and over and 365 under age 60. Current PTSD diagnosis was determined by the Clinician Administered PTSD Scale. Outcomes included self-reports of physical functioning as assessed by the Short-Form Health Survey Physical Functioning scale, last month’s physical activity, and perceived overall health and quality of life. Social support was assessed using the Multidimensional Scale of Perceived Social Support, and social connectivity was assessed using the sociability score from the Berkman-Syme Social Network Index. All analyses were adjusted for gender, ethnicity, and depression diagnosis. Results: Thirty-four percent of adults age 60 and over and 29% under age 60 met diagnostic criteria for current PTSD. After controlling for covariates in the 60 and over group, current PTSD diagnosis was associated with lower physical functioning, perceived health, and quality of life. PTSD was also significantly associated with lower overall social support and support from friends, family and significant others, and lower social connectivity. Among those under age 60, PTSD was significantly associated with a narrower group of outcomes, including lower perceived quality of life, overall social support, and support from friends. Conclusions: Study results suggest that PTSD impairs psychosocial and physical functioning particularly of older patients. These findings highlight the importance of examining PTSD across the life course.

Table: Adjusted associations of PTSD and psychosocial and functional outcomes by age.

<table>
<thead>
<tr>
<th>Function</th>
<th>Under age 60</th>
<th>Over age 60</th>
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<tbody>
<tr>
<td>Age 60 and Over</td>
<td>R, p-value</td>
<td>R, p-value</td>
</tr>
<tr>
<td>Age 60 and Over</td>
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<td>N=880</td>
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<td>Physical functioning</td>
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<td>0.96, 0.37</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>0.65, 0.02</td>
<td>0.65, 0.08</td>
</tr>
<tr>
<td>Perceived health</td>
<td>0.15, 0.02</td>
<td>0.20, 0.01</td>
</tr>
<tr>
<td>Quality of life</td>
<td>0.74, 0.01</td>
<td>0.24, 0.02</td>
</tr>
<tr>
<td>Overall social support</td>
<td>0.88, 0.12</td>
<td>0.88, 0.12</td>
</tr>
<tr>
<td>Support from friends</td>
<td>0.15, 0.02</td>
<td>0.20, 0.01</td>
</tr>
<tr>
<td>Support from family</td>
<td>0.74, 0.01</td>
<td>0.24, 0.02</td>
</tr>
<tr>
<td>Social connectivity</td>
<td>0.88, 0.12</td>
<td>0.88, 0.12</td>
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226) Abstract 1531
Dissociable Effects of Fat Mass and Non-Fat Mass on Neuromorphology in Children

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Obesity is associated with reduced cognitive function in otherwise neurologically healthy adults. The increasing prevalence of obesity in children raises concerns about the long-term impact of childhood obesity on developmental trajectories of brain health and function. We examined the relationship between whole brain gray matter integrity and objective measures of adiposity in 116 children (57 female) aged 7-10 years from the Urbana, Illinois community. High-resolution magnetic resonance images were collected on all participants and voxel-based morphometry (VBM) was used to measure voxel-wise integrity of gray matter across subjects. Whole body and regional adipose tissue was quantified by dual-energy X-ray absorptiometry (DXA). We found that, after controlling for age, sex, pubertal timing, and total body mass, there were opposing patterns of association between non-fat mass and fat mass correlations with gray matter integrity throughout the brain (all values FDR corrected to a <0.01). This was particularly evident in several areas linked to emotion and memory. For example, in the ventral amygdala and rostral hippocampus, increased fat mass was positively correlated with VBM values, while increased non-fat mass was negatively correlated with these values. Similar patterns were observed in posterior parietal cortex and the precuneus. An opposite pattern was observed in executive control networks. For example, in medial wall areas like the anterior cingulate and lateral prefrontal areas along the superior frontal gyrus, gray matter integrity increased with non-fat mass and decreased with fat mass. Similar patterns were found in the striatum, ventral lateral prefrontal cortex and medial prefrontal cortex. These findings suggest that changes in adiposity and in children might lead to a complex pattern of effects across a variety of distributed brain networks. Future longitudinal and intervention studies should explore the directionality of these effects and identify potential physiological mediators.

227) Abstract 1536

Proinflammatory Cytokines and Patient-Reported Outcomes in the Context of Surgery for Peritoneal Carcinomatosis

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Background: In the context of peritoneal carcinomatosis (PC) from metastatic cancer, systemic proinflammatory mediators are demonstrated to predict decreased survival. Circulating inflammatory cytokines may also trigger sickness behavior, reflected in increased self-reported depression or fatigue symptoms. The goal of this study was to examine relationships between preoperative inflammatory cytokine levels and patient-reported outcomes among PC patients.

Methods: Standardized measures of depressive symptoms (CES-D), quality of life (FACT-G), and fatigue (FACT-Fatigue) in the past week were administered to 62 patients scheduled to undergo aggressive surgical treatment for PC (M = 54 years old, 66% male, 90% colorectal cancer). Serum samples were collected the morning of surgery, and ELISAs were conducted to quantify circulating TNF-α levels. Data on demographic and medical (e.g., primary cancer site, time since diagnosis) variables were obtained from medical records.

Results: Depression and fatigue were common, with 25% of patients endorsing clinically significant levels of depressive symptoms and 30% endorsing significant fatigue prior to surgery. Depressive symptoms, fatigue, and quality of life were significantly correlated (r >.940). Mean CES-D, FACT-G, and FACT-Fatigue scores were not significantly correlated with TNF-α levels. Examination of sickness-specific items revealed that TNF-α levels were higher among patients who, prior to surgery, reported feeling more ill (r = .31, p = .015), being forced to spend time in bed (r = .25, p = .051), and being less able to enjoy life (r = .29, p = .026).

Conclusion: Clinically significant depressive symptoms and fatigue are common among PC patients prior to surgery. TNF-α levels were not associated with total scores on these measures but were correlated with increased feelings of sickness and anhedonia prior to surgery. Assays to quantify IL-6 and CRP are ongoing, and these results will also be presented at the meeting. Prospective longitudinal research is needed to elucidate relationships between cytokines and symptoms following cancer surgery.

228) Abstract 1532

The Impact of Perceived Stress Reactivity on Salivary Alpha-Amylase Diurnal Profiles Across the Adult Lifespan: Evidence from a Time-Sampling Approach

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Objectives: Salivary alpha-amylase has emerged as an important indicator of autonomic nervous system functioning. However, little is known about systematic changes in this key biomarker across the adult lifespan as well as individual differences therein. We have previously reported on a substantial age effect (Nater et al., PNEC, in press). The current study targets the additional impact of perceived stress reactivity of amylase diurnal profiles in an adult lifespan sample.

Methods: A total of 185 participants (aged 20-81 years) provided time-stamped saliva samples for assessment of cortisol and alpha-amylase 7 times/day over 10 days. Saliva samples were taken upon waking up, 30 minutes later, and then approximately every 3 hours until going to bed. Age and subjective stress reactivity were assessed at baseline along with key control variables (e.g., BMI, sex, smoking).

Results: Multilevel models indicate that higher age was associated with increased daily alpha-amylase outputs, attenuated wake-evening slopes and higher waking values. Subjective stress reactivity was associated with more pronounced rises in amylase across the day and higher waking values.

Conclusions: Findings are in accord with previous work suggesting age-related wear and tear in biological stress systems. Interestingly, psychological factors, for example regarding individual appraisals of stress reactivity, also show amylase diurnal profiles beyond such age-associated factors. Further research is required to shed light on the role of individual characteristics in aggravating or reducing age-related differences in amylase diurnal profiles.

229) Abstract 1426

Childhood Trauma and Metabolic Syndrome in Men and Women

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The long-term effects of childhood trauma on health are documented, but few population-based studies have explored how childhood trauma affects the risk of developing metabolic syndrome (MetS) in adulthood. Using data from 1,234 adults in the second wave of the Midlife Development in the U.S. survey (2004), we investigated (1) the extent to which childhood abuse affects the risk of developing MetS in adulthood; (2) how the severity of different types of abuse (emotional, physical, sexual, or cumulative abuse) affects this risk; and (3) the extent to which adult socioeconomic status (SES), harmful stress responses (e.g., poor sleep quality) and unhealthy behaviors mediate the association. We also test whether there are sex differences in these associations. We find that emotional, physical, and cumulative abuse increases the risk of developing MetS for both sexes, whereas sexual abuse is a predictor for women only. For both sexes, individuals who experienced more cumulative abuse had a greater risk of developing MetS. Adult SES partially explained the association between childhood abuse and MetS. Harmful stress responses and unhealthy behaviors further explained the association. Among the potential mediators, poor sleep quality and stress-induced eating are important pathways connecting childhood trauma with MetS for women, while poor sleep quality is a significant pathway for men. Our findings reveal that the well-documented health consequences of early life trauma may vary by the nature of the trauma, the victim’s sex, and the coping mechanisms that he or she may employ.

Keywords: stress; childhood trauma; sex; metabolic syndrome; coping; life course

230) Abstract 1445

Hypocortisolism: A New View on Coronary Heart Disease Progression Due to Chronic Stress

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Hypocortisolism is a common finding in patients suffering from PTSD but also from other bodily disorders e.g. chronic fatigue syndrome, fibromyalgia or somatoform disorders. This phenomenon has been considered to be related to chronic stress conditions in these patients. Chronic stress factors are commonly related to coronary artery disease (CAD) progression. Mainly depression has been shown to deteriorate other bodily disorders e.g. chronic fatique syndrome, fibromyalgia or somatoform disorders. Hypocortisolism is a common finding in patients suffering from PTSD but also from other bodily disorders e.g. chronic fatigue syndrome, fibromyalgia or somatoform disorders. This phenomenon has been considered to be related to chronic stress conditions in these patients. Chronic stress factors are commonly related to coronary artery disease (CAD) progression. Mainly depression has been shown to deteriorate other bodily disorders e.g. chronic fatigue syndrome, fibromyalgia or somatoform disorders. This phenomenon has been considered to be related to chronic stress conditions in these patients. Chronic stress factors are commonly related to coronary artery disease (CAD) progression. Mainly depression has been shown to deteriorate other bodily disorders e.g. chronic fatigue syndrome, fibromyalgia or somatoform disorders. This phenomenon has been considered to be related to chronic stress conditions in these patients.
ACTH and cortisol significantly increased due to stress (p<0.01) in all groups. ACTH levels were comparable in all conditions, whereas cortisol levels differed significantly at all time points. The D group showed hypocortisolism, whereas CAD + D patients had the lowest cortisol levels at all time points (p<0.01). Cortisol levels were not significantly correlated to HADS depression only in the CAD + D and CAD − D groups (R2 0.11). STAI-S and PASA scores were the highest in the D group followed by the CAD + D group (p<0.001) in comparison to the D and G groups.

Our study demonstrates (i) that the HPA responses to acute mental stress are maintained in all groups. However, (ii) chronic HPA axis functioning seems to differ substantially at cortisol levels as a function of bodily disorder. (iii) Since hypocortisolism is related to depressive symptoms only in the CAD − D group, it may indicate a potential pathophysiological mechanism for CAD progression due to hypocortisolism.

231) Abstract 1542

SELF-REPORTED DRINKING BEHAVIOR PREDICTS CHANGES IN PTSD AND ANXIETY SYMPTOMS IN VETERANS

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Introduction- Research has shown that exposure to traumatic events increases the risk for substance abuse. Alcohol use disorders (AUDs) are common co-morbidities in military Veterans with Post Traumatic Stress Disorder (PTSD). The present study examined the relationship between changes in symptoms of self-reported drinking behavior and PTSD and anxiety in a sample of U.S. Veterans who participated in a 12 week double-blind randomized clinical trial of the efficacy of baclofen to reduce alcohol use. We hypothesized that Veterans who reported hazardous drinking at baseline would show correlations between drinking behavior and symptoms of PTSD and anxiety respectively during the 12 week study period. Methodology- 47 Veterans (99% men) enrolled in the study completed the Timeline Followback (TLFB), PTSD Checklist-Civilian (PCL-C), and Brief Symptom Inventory (BSI) anxiety subscales at baseline and 12 weeks. Change scores were created for each variable by subtracting the 12 week score from the baseline score for both drinking level (based on TLFB), BSI – Anxiety, and PTSD scores. Results- Using a least squares regression, change in PTSD symptoms was regressed onto change in drinking. The model was significant F(1, 44) = 6.19, p = 0.0167, and the change in weekly drinking levels was significantly predictive of PTSD change score (t = 2.49, p = 0.0172, R2 = 0.123). A similar regression model was fit with the BSI Anxiety subscores across 12 weeks, F(1, 45) = 5.65, p = 0.0218, and that the change in weekly drinking levels was predictive of BSI-Anxiety change score (t = 2.38, p = 0.022; R2 = 0.3339). Decreases from baseline to 12 weeks were found for all variables of interest (7 day drinking: 37.91(3.41)‑14.76(2.37); PTSD: 36.96(2.13)‑29.58(1.36); BSI-Anxiety: 4.80(6.90)-2.56(5.66)). Conclusion - Results suggest that decreases in drinking are associated with decreases in PTSD and anxiety symptoms. The relationship between substance use, in particular alcohol use/misuse, and symptoms of PTSD is complex. The results of our study suggest that targeting alcohol misuse in Veterans with significant symptoms of PTSD may have the additional benefit of reducing symptom severity in PTSD.

232) Abstract 1570

EMOTIONAL AND RELIGIOUS WORD CONTENT IN AN EXPOSITIVE WRITING INTERVENTION PREDICTS PHYSICAL SYMPTOMS IN HIV-POSITIVE INDIVIDUALS--FIVE SIX YEARS LATER

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Neuropsychological correlates of cellular aging (as indexed by peripheral leukocyte telomere length [TLT]) are poorly defined. In this study, we investigated the relationship between cognitive performance, TLT and two putative mediators of telomere shortening, inflammation and oxidative stress. We assessed this in healthy controls as well as in unmedicated subjects with major depressive disorder (MDD), a condition associated both with cognitive deficits and telomere shortening. We assessed performance on two markers of neurodegeneration (Mini-Mental State Exam, Dementia Cognitive Scale) and on measures of telomere length. We also examined whether the emotional valence (positive or negative) of word content used in the TLT was related to inflammatory and oxidative stress. We found that TLT was negatively correlated to HADS depression only in the CAD + D and CAD − D groups (β = .235, t(91) = .239, p = .019). Conversely, a higher proportion of negative words predicted greater physical symptoms of HIV at 6 months, controlling for baseline physical symptoms and CD4 count (β = .245, t(91) = 2.46, p = .016). These results support previous findings that EW can exert beneficial effects on physical health and add to the limited research on EW word content as a marker of the impact of HIV. These findings suggest that specific written EW content, and the emotional valence of this content, plays a role in a physical health outcomes in HIV. Future studies should investigate the mechanisms through which these factors exert their effects.

233) Abstract 1222

COGNITIVE PERFORMANCE IN UN-MEDITATED DEPRESSED SUBJECTS AND HEALTHY CONTROLS- ASSOCIATIONS WITH OXIDATIVE STRESS, INFLAMMATION, AND TELOMERE LENGTH

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Neuropsychological correlates of cellular aging (as indexed by peripheral leukocyte telomere length [TLT]) are poorly defined. In this study, we investigated the relationship between cognitive performance, TLT and two putative mediators of telomere shortening, inflammation and oxidative stress. We assessed this in healthy controls as well as in unmedicated subjects with major depressive disorder (MDD), a condition associated both with cognitive deficits and telomere shortening. We assessed performance on two markers of neurodegeneration (Mini-Mental State Exam, Dementia Cognitive Scale) and on measures of telomere length. We also examined whether the emotional valence (positive or negative) of word content used in the TLT was related to inflammatory and oxidative stress. We found that TLT was negatively correlated to HADS depression only in the CAD + D and CAD − D groups (β = .235, t(91) = .239, p = .019). Conversely, a higher proportion of negative words predicted greater physical symptoms of HIV at 6 months, controlling for baseline physical symptoms and CD4 count (β = .245, t(91) = 2.46, p = .016). These results support previous findings that EW can exert beneficial effects on physical health and add to the limited research on EW word content as a marker of the impact of HIV. These findings suggest that specific written EW content, and the emotional valence of this content, plays a role in a physical health outcomes in HIV. Future studies should investigate the mechanisms through which these factors exert their effects.

234) Abstract 1479

ARE ANXIETY AND DEPRESSIVE SYMPTOMS ASSOCIATED WITH INTERNAL HEALTH LOCUS OF CONTROL IN CARDIAC OBT PATIENTS?

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Many psychosocial factors are known to play a role throughout the course of HIV. “Negative” factors such as depression and stressful life events predict faster HIV progression, while “positive” factors such as social support and optimism predict slower HIV progression. The role of religious words in health-related literature has largely been neglected. We hypothesized that religious words would be protective of health in HIV+ and general populations. Many people living with HIV report that religion or spirituality plays an important part in their lives. Many studies have demonstrated health benefits of expressive writing (EW) in general, and several studies report such effects in HIV. As part of a larger randomized trial of an EW intervention, this project (n = 94) examined effects of the emotional valence (positive or negative) of word content used in EW essays relates to and predicts CDC Category B physical symptoms of HIV at 6 months following the EW intervention, in the subset of subjects randomized to write about trauma. The relationship of religious words to HIV symptoms is also analyzed. Word content (as a percentage of total words per essay) was analyzed using Linguistic Inquiry and Word Count (LIWC) software. Linear regression analyses indicated that a higher proportion of positive words in EW essays predicted fewer physical HIV symptoms at 6 months, controlling for baseline physical symptoms and CD4 cell count (β = .203, t(91) = -.204, p = .045). Similarly, a higher proportion of religious words predicted fewer physical HIV symptoms at 6 months, controlling for baseline physical symptoms and CD4 count (β = .235, t(91) = .239, p = .019). These results support previous findings that EW can exert beneficial effects on physical health in HIV+ and add to the limited research on EW word content as a marker of the impact of HIV. These findings suggest that specific written EW content, and the emotional valence of this content, plays a role in a physical health outcomes in HIV. Future studies should investigate the mechanisms through which these factors exert their effects.

235) Abstract 1479

COGNITIVE PERFORMANCE IN UN-MEDITATED DEPRESSED SUBJECTS AND HEALTHY CONTROLS- ASSOCIATIONS WITH OXIDATIVE STRESS, INFLAMMATION, AND TELOMERE LENGTH
the Montreal Heart Institute was recruited (n=494). On the day of testing, patients were administered the Beck Depression Inventory-II (BDI-II), the trait anxiety scale of the State-Trait Anxiety Inventory (STAI-T), and a medical questionnaire to identify historical major adverse cardiac events (MACE). At a scheduled two-year follow-up patients completed the Multidimensional Health Locus of Control (MHLC) internal scale. Results: No associations were observed between the MHLC internal scale and the BDI-II (β=-.04, t=-.92, p=.36), STAI-T (β=-.05, t=1.43, p=.15), or the interaction of BDI-II and STAI-T (β=-.004, t=-.99, p=.32). A second set of analyses was completed, assessing only patients with a past MACE. There was no relation between the MHLC internal scale and the BDI-II (β=-.05, t=-.78, p=.44), STAI-T (β=-.07, t=1.57, p=.12), nor the interaction (β=-.006, t=1.25, p=.21).

Conclusions: As no association was observed between anxiety and depressive symptoms with internal HLOC, it is unlikely these factors share a mechanism that might explain their relationship with health behaviours. Optimistically, it seems that even in patients with a past MACE, higher levels of anxiety or depressive symptoms are not associated with less perceived control over their health, as there was no relation with internal HLOC.

235) Abstract 1791

PERCEIVED STRESS, TRAIT MINDFULNESS, AND MEMORY ASSOCIATIONS AMONG AFRICAN AMERICANS

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Previous research suggests that perceived stress has a negative influence on cognitive function. An enhanced ability to decrease perceived stress can potentially improve cognitive performance. Though findings are somewhat mixed, researchers have documented salutary effects of trait mindfulness, including reduction of perceived stress and enhancement of cognitive function; however, little research exists that examines the benefits of trait mindfulness for reducing psychological stress and enhancing cognitive function in African Americans. Moreover, given that African Americans face unique psychosocial stressors and are disproportionately exposed to psychosocial, behavioral, and biological factors that reduce cognitive function, it is critical to determine if the beneficial effects of trait mindfulness carry over to this at-risk population. The analysis was part of a larger study entitled the HealthPARC Study of Cognitive Aging. The sample consisted of 168 African Americans from the Washington, DC metropolitan area, who completed a battery of demographic, anthropomorphic, psychosocial and neuropsychological measures including Mindful Attention Awareness Scale (MAAS), Perceived Stress Scale (PSS), Auditory Verbal Learning Task (AVLT), and Alpha Span Test (AS). After controlling for age, gender, education, and depressive symptoms, multiple regression analyses showed no significant association between perceived stress and verbal and working memory, nor did trait mindfulness moderate the association between perceived stress and verbal and working memory. Lack of significant associations in the sample may be in part due to low PSS scores. While the current sample was slightly more stressed in comparison to their Caucasian counterparts of a similar age, the sample may not be as stressed as other African Americans in general. These findings may also indicate that the current sample was not experiencing a level of perceived stress high enough to significantly affect verbal and working memory. Future studies should include participants who are currently experiencing acute and/or chronic stress. In addition, measurement of trait mindfulness in this population should be further analyzed.

236) Abstract 1539

THE RELATIONSHIP BETWEEN RESTING HEART RATE VARIABILITY AND INTRA-INDIVIDUAL REACTION TIME VARIABILITY: IMPLICATIONS FOR COGNITION AND HEALTH

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The Neurovisceral Integration Model (Thayer & Lane, 2000) posits that vagally - mediated resting heart rate variability (HRV), a marker of somatic health, predicts mental states, cognitive function, and all-cause mortality. Additionally, intra-individual reaction time variability (IIV), a measure of inattention and impulsivity, has also been associated with all-cause mortality. IIV has been shown to predict various mental diseases, including schizophrenia and depression, characterized by frontal lobe dysfunction. Specifically, dysfunction in frontal brain regions is associated with higher IIV and lower HRV. However, research has yet to examine the direct relationship between HRV and IIV; therefore, we sought to investigate this direct relationship in a healthy college sample of 80 individuals. Continuous heart rate was measured as HF at baseline. During the Simon Effect task, participants were instructed to inhibit distractor items (i.e. arrow) and respond to the correct positioning of a target (i.e. dot). IIV was computed using the standard deviation (SD) of correct reaction times. Controlling for accuracy and reaction time, results showed that resting HRV was negatively correlated with IIV (partial r = - .215, p<.05). These data suggest that cognitive focus, as indexed by IIV, is related to somatic health, as indexed by HRV. Future research should examine both IIV and HRV when assessing cognitive decline, as combining both can potentially lead to more innovative models of mental and physical health.

237) Abstract 1368

CHALLENGES IN DIAGNOSING AND ITS IMPACT ON SIX-YEAR DECREASE IN METABOLIC SYNDROME ABNORMALITIES

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Introduction: Mental disorders, such as anxiety and depression increase the risk of developing aging-related somatic diseases, such as cardiovascular disease (CVD) and diabetes. Lately, accelerated biological aging, as indexed by shortened leukocyte telomere length (TLT), is often reported in these mental conditions, and this might play a role in the underlying mechanism. Metabolic syndrome (MetS) is a clustering of CVD and diabetes risk factors, although large variability exists in the susceptibility and age of onset of MetS, and the deterioration pace towards these diseases. We examined whether shorter LTL is associated cross-sectionally with MetS and its components, and whether shorter LTL predicted the risk of MetS over a six-year follow-up. Methods: Baseline LTL was determined in the Netherlands Study of Depression and Anxiety (N=2948) using quantitative polymerase chain reaction, and MetS was determined at baseline, two and six years (N=2315). The separate MetS components (waist circumference, triglycerides, high-density lipoprotein (HDL) cholesterol, systolic blood pressure and fasting glucose) were also examined. Logistic and linear regressions were used to test the cross-sectional associations between LTL and MetS and its components, while the longitudinal transition was tested using generalized estimating equations. All models were adjusted for sociodemographics and lifestyle. Results: Shorter LTL at baseline was associated with diagnosed MetS (OR=0.84, p=0.002) and with more MetS abnormalities (B=-0.058, p=0.001), as well as with lower HDL cholesterol (B=-0.036, p=0.045), higher waist (B=-0.046, p=0.007), triglycerides (B=-0.073, p<0.001), glucose (B=-0.067, p=0.001). Over the six years, baseline LTL did not predict further increase in the number of MetS components (LTL*time B=0.005, p=0.01). Conclusion: We have found that LTL is part of a dynamic system and a valuable marker for the current metabolic abnormalities, but not able to predict the development of MetS and long-term deterioration of MetS components. LTL might play a role in the link between mental conditions and aging-related somatic diseases, although it should also be measured longitudinally to draw conclusions about causality.
Relative standing in the social hierarchy may underlie the graded relation observed between socioeconomic status (SES) and health. The construct of relative SES may be conceptualized and measured in a number of different ways, including SES relative to others in the community, subjective ratings of SES, and income inequality. The aim of the current study was to examine how these measures of relative SES are associated with a wide range of adolescent health outcomes, after controlling for objective family SES. Participants (aged 13-16 years; N=2,199) from the Quebec Child and Adolescent Health and Social Survey were included. We measured SES at multiple levels including individual (subjective rating of SES), family (parental education, household income), school (education/employment, income), community (income, income inequality). Outcomes were measured across a number of domains of adolescent health, including self-rated health, mental health, diet and exercise health behaviors, substance-related health behaviors, reported physical health, and biomarkers of health. Associations between SES measures and health outcomes were examined using multi-level modelling (participants nested within schools). Results indicated that lower subjective SES was associated with poorer health (self-rated health β=-1.12, p<.001; anxiety β=-.06, p=.01; depression β=-.10, p<.001; general symptoms β=-.08; p<.001; physical activity β=-.08, p<.001). After controlling for family SES, lower school education/employment was associated with a negative effect on health (physical inactivity β=-.11, p<.01; diet β=-.05, p<.01; alcohol use β=-.07, p<.001; blood pressure β=-.10, p<.05), while lower school income (alcohol use β=-.11, p<.001; cigarette use β=-.06, p<.001; body fat β=-.13, p<.001; body mass index β=-.05, p<.05) and lower community income (anger β=-.10, p<.01; diet β=-.07, p<.05; asthma β=-.07, p<.001) were associated with a protective effect. There was little evidence of an effect of community income inequality. These findings contribute to the understanding of relative SES in adolescent health and highlight the need for future research to explore the mechanisms of these associations.

240) Abstract 1553

POSITIVE ASSOCIATIONS OF MINDFULNESS WITH CARDIOVASCULAR HEALTH
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OBJECTIVES: To evaluate whether mindfulness is associated with cardiovascular health, and investigate potential mediating mechanisms such as sense of control and depressive symptomatology.

METHODS AND RESULTS: Study participants (n=382) were from the New Stephen L. Buka, ScD, Epidemiology, Brown University, Providence, RI

BACKGROUND: Mindfulness (the ability to attend nonjudgmentally to ones own physical and mental processes) is receiving substantial interest as a potential determinant of health. However little is known whether mindfulness is associated with cardiovascular health.

OBJECTIVES: To evaluate whether mindfulness is associated with cardiovascular health, and investigate potential mediating mechanisms such as sense of control and depressive symptomatology.

METHODS AND RESULTS: Study participants (n=382) were from the New

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STRESS REACTIVITY IN HUMAN PREGNANCY
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Chronic stress increases the risk for physical and mental illness, but not all individuals exposed to stress will develop disease. Stress vulnerability, i.e., differences in how individuals respond to acute stressors when they occur, has been suggested to explain part of the individual differences in the association between stress and disease. While this concept is well-investigated in the general population, research in pregnancy has revealed mixed results, in part because some studies suggest the absence of cortisol responses to acute stress exposure. The aim of the present study was to investigate the influence of gestational age on cortisol reactivity in pregnancy. A second aim was to explore whether cortisol reactivity early in pregnancy is predictive of placental corticotropin releasing hormone later in pregnancy. Sixty four women with a singleton pregnancy participated in a psychosocial laboratory stressor (Trier Social Stress Test; TSST) at either 15 weeks’ gestation (n = 35) or 25 weeks’ gestational age (GA; n = 29). Twenty one of the women who completed the TSST at 15 weeks’ GA returned to provide a blood sample for the assessment of pCRH at 25 weeks’ GA. Salivary cortisol increased significantly at 15 weeks’ GA, F = 8.62, p < .001, but not at 25 weeks’ GA, suggesting an important timing effect. Furthermore, women with high levels of pCRH (median split) at 25 weeks’ GA were characterized by more pronounced salivary cortisol responses to the TSST at 15 weeks’ GA, F = 1.93, p = .059. Findings suggest, first, that timing of the assessment of stress vulnerability is of critical importance in studies with pregnant women, and second, that increased stress reactivity may contribute to accelerated pCRH trajectories throughout pregnancy. Findings have important implications for the development of negative pregnancy outcomes.

242) Abstract 1488

RISK FACTORS ASSOCIATED WITH SOMATIC COMPLAINTS IN CHINESE POPULATION: FINDINGS FROM A POPULATION-BASED HOUSEHOLD SURVEY
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Background: Somatic symptoms can cause a person to experience psychological distress in the form of physical symptoms. They have been a challenge for clinicians because most of the symptoms were not medically well explained and repeated physical examinations triggered only anxiety in the patients, leading to frequent health care utilization. Large-scaled epidemiology studies conducted in both community sample and clinical sample consistently found that prevalence of moderate to high multiple somatic symptoms was over 20%. However, there was inadequate understanding of the prevalence and risk factors of multiple somatic symptoms in Chinese population. Objectives: To identify the multiple somatic symptoms in a population-based sample and investigate the risk factors in Chinese. Methods: A total of 202 Chinese participants aged 15-95 were recruited in a population-based household survey in Hong Kong in 2013. The primary study outcome was multiple somatic symptoms measured by the Chinese version of PHQ-15. The secondary outcomes included stress level which was measured by Perceived Stress Scale, depression and anxiety which were measured by Hospital Anxiety and Depression Scale, and insomnia measure by Insomnia Severity Index. Descriptive statistics were done and the risk factors of somatic symptoms were analysed by using structured multiphase regression modeling. Results: The prevalence of somatic symptoms in Chinese population is 20%. The most common somatic symptoms are back pain (n=73, 36.2%), feeling tired (n=63, 31.1%) and pain in arms, legs and joints (n=56, 27.7%). From the structured multiphase models, female (estimate=1.47, p<0.001), more adverse childhood experience (estimate=0.41, p=0.023), employed (estimate=0.87, p=0.049), higher level of perceived stress (estimate=0.09, p=0.027), higher severity of insomnia (estimate=1.2, p<0.001), presence of chronic illness (estimate=1.7, p=0.01), higher level of anxiety (estimate=2.2, p<0.001) and lower level of depression (estimate=-0.15, p=0.011) were significantly associated with more somatic symptoms in Chinese. Conclusions: This study concluded that there was a high rate of somatic symptoms in Chinese population. Somatic symptoms, stress and emotional symptoms were interrelated with gender, adverse childhood experience and employment.

243) Abstract 1219

STRESS-INDUCED CORTISOL SECRETION IMPAIRS DETECTION PERFORMANCE IN AIRPORT SECURITY X-RAY BAGGAGE SCREENING
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Background: Aviation security strongly depends on airport screeners' performance in the detection of threat objects such as hidden weapons in x-ray images of passenger bags. Psychosocial stress and stress hormones affect cognitive functions relevant for optimal x-ray screening of passenger bags, but an effect on x-ray screening performance is unknown. We therefore examined the effects of stress and stress-induced cortisol increases on detection performance in an airport security x-ray
Depressive symptoms declined significantly over the year after study entry. Lower PostDXStress and lower NAE interacted with time since diagnosis, such that the two variables predicted lower depressive symptoms shortly after diagnosis but not at 12 months. AE interacted with time since diagnosis such that lower AE was associated with a faster decrease in depressive symptoms over time, although higher AE predicted lower depression even at 1 year post DX.

Conclusions: Chronic stress and acute post-diagnosis stress confer risk for depressive symptoms during the 15 months after breast cancer diagnosis. Although level of emotional awareness did not predict depressive symptoms, dispositional acceptance of emotions served as a protective factor, particularly in the face of chronic stress.

246) Abstract 1406

COST-EFFECTIVENESS OF BRIEF BEHAVIORAL THERAPY FOR INSOMNIA COMORBID WITH DEPRESSION: ANALYSIS OF A RANDOMIZED CONTROLLED TRIAL

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Background and Aims: Although the efficacy of cognitive behavioral therapy for insomnia (CBT-I) has been confirmed, dissemination depends on the balance of benefits and costs.

The study aimed to examine the cost-effectiveness of brief behavioral therapy for insomnia, which was developed modifying traditional CBT-I, in treatment for patients with residual insomnia and concomitant depression.

Methods: Four-week randomized controlled trial with four weeks follow-up was conducted at outpatient clinics in Japan. Thirty-seven patients diagnosed as major depressive disorder with DSM-IV and suffering from chronic insomnia were randomized to either treatment as usual (TAU) alone or TAU plus brief behavioral therapy for insomnia, developed by modifying CBT-I to 4 weekly individual sessions.

Effectiveness was evaluated as Quality-Adjusted Life Years (QALYs) over 8 weeks' time, estimated by bootstrapping of the observed total scores of the Hamilton Depression Rating Scale. Direct medical costs for the psychotherapy and TAU were also evaluated. Thus, the present analysis evaluates the cost effectiveness of adjunctive treatment for insomnia for the purposes of augmenting positive clinical outcomes in relation to depression. The incremental cost-effectiveness ratio (ICER) was calculated by dividing the incremental costs with the incremental effectiveness. Results: Over 8 weeks of the study, the psychotherapy plus TAU group had significantly higher QALYs (P=0.002) than the TAU alone group with an incremental value of 0.019 (SD 0.006), and had non-significantly higher costs with an incremental value of 254 (SD 203) USD in direct costs. The ICER was 13678 USD (95%CI: -5691 to 71316). Adding the psychotherapy demonstrated an approximately 95% chance of gaining one more QALY if a decision-maker was willing to pay for 60,000 USD, and approximately 90% for 40,000.

Conclusions: Adding CBT-I is highly likely to be cost-effective for patients with residual insomnia and concomitant depression.

247) Abstract 1510

MEASURING UNCONSCIOUS STRESS: THE IMPLICIT POSITIVE AND NEGATIVE AFFECT TEST AND CARDIOVASCULAR ACTIVITY AFTER ANGER HARASSMENT

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Introduction: People may be unaware of a large part of their psychological stress responses. In addition to conscious stress, this unconscious stress might partially explain stress-induced increased cardiovascular (CV) activity and eventually contribute to the development of CV disease. Unconscious stress can be assessed by implicit negative affect (INA) tests, just as conscious stress is commonly measured by explicit negative affect (ENA) tests. INA, measured with the Implicit Positive

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and Negative Affect Test (IPANAT), has been shown to predict cortisol response to acute stress. The present study examined whether INA, in addition to ENA, explained CV reactivity and recovery. Method: Students from Leiden University were randomly assigned to a mathematical or an art assignment (n=14) or a mental arithmetic-task (n=14). The IPANAT (Visual Analogue Scale;VAS) was administered. Syntolic (SBP) and Diastolic (DBP) Blood Pressure and Heart Rate (HR) were measured continuously. Results: Increases in SBP, DBP and HR were found during both tasks. Still, in the harassment condition SBP and DBP reactivity was higher (t(27) = 3.38, p < 0.01 and t(27) = 2.13, p < 0.05, respectively), and SBP recovery was slower (t(28) = 2.12, p < 0.05). However, no effects of condition on INA were apparent, but ENA was higher after harassment (t(28) = −2.91, p < 0.01). Additional analyses showed that increases in SBP and HR during both tasks were (marginally) associated with higher INA (r change = 0.08, p = 0.09; r change = 0.13, p = 0.05, respectively) but not with higher ENA. However during recovery, only in the harassment condition higher INA was associated with higher HR (r = 0.17, p < 0.05). Consequently, that INA as measured with the IPANAT does not differentiate between mental stressors with and without harassment, but high INA seems to augment CV responses, especially during recovery after harassment.

248) Abstract 1719
CHILDHOOD SOCIOECONOMIC DISADVANTAGE AND RISK FOR PRE-DIABETES AND DIABETES IN LATER LIFE: A STUDY OF BIOPSYCHOSOCIAL PATHWAYS
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The goal of the present analyses was to examine whether childhood socioeconomic status (SES) influenced risk for prediabetes and diabetes in later life and identify biopsychosocial mechanisms that underlie this relationship. Data came from the MIDUS (Midlife in the U.S.) national sample. Multiple indicators of SES adversity in childhood (parental education, welfare status, financial situation) retrospectively reported at MIDUS I were used to create a childhood SES disadvantage index. Potential mechanisms were measured at MIDUS I and included mental health variables, adult SES, and health behaviors. Glucose and HbA1c were measured approximately 9-10 years later at MIDUS II and were used to create the categorical measure of glucoregulation (no diabetes/prediabetes/diabetes). Ordinal logistic regression analyses showed that childhood SES disadvantage predicted higher risk for prediabetes and diabetes. This association was attenuated and no longer statistically significant after including adult depression, education, waist circumference, and vigorous physical activity. The lack of a direct effect of childhood SES in our study does not negate the importance of early family environment but rather illustrates the idea that early life social and economic factors are a powerful force propelling unequal life-course trajectories that ultimately influence health outcomes. Findings add to the growing literature on the social determinants of chronic disease by identifying key pathways that link childhood SES disadvantage to health.

249) Abstract 1498
DETECTION AND STRESS REACTIVITY OF INTERLEUKIN-10 IN ORAL FLUIDS
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The inflammatory response is tightly regulated by a network of proteins called cytokines. Pro-inflammatory cytokines aid in fighting off invading pathogens, while anti-inflammatory cytokines antagonize pro-inflammatory cytokine synthesis and function. Interleukin-10 (IL-10), an anti-inflammatory cytokine, is often measured in serum or plasma. It is not known if IL-10 can be measured in oral fluids such as saliva and oral mucosa transudate (OMT). This study aimed to determine (1) the feasibility of measuring IL-10 in oral fluids, (2) if IL-10 reacts to acute stress and (3) how IL-10 changes in relation to IL-6, a pro-inflammatory cytokine, after stress. Data collection is ongoing, with IL-10 and IL-6 values available for 39 participants. Healthy persons, ages 18-74 (74% female), were randomly assigned to complete the validated Trained Stress Test (TST) and/or the IPANAT (a modified General health questionnaire) and/or an autobiographical memory test (n = 10). Saliva and OMT samples, taken at baseline and post-stressor (about 50-min apart), were analyzed using high sensitivity kits for cytokines. Salivary measures were flow-rate adjusted. For saliva, IL-10 detection rates (i.e., % participants) were 82% at baseline, and 92% at post-stressor. For OMT, detection rates were 51% at baseline, and 64% at post-stressor. Undetectable values were imputed as the midpoint between 0 and the limit of detection. A non-parametric test was employed, having subthreshold anxiety, having normal BMI and reporting poor self-rated health. In unadjusted analyses the following baseline factors were associated with an increased likelihood of developing anxiety at 1-year: being female, being employed full/part time, having subthreshold anxiety, having a history of diagnosed anxiety, having depression, having normal BMI, having 2 or more chronic conditions and reporting poor self-rated health. When TST was added to the model simultaneously the factors most associated with developing anxiety were being employed, having subthreshold anxiety, having normal BMI and reporting poor self-rated health. To our knowledge this is the first study conducted in people with diabetes which looks at the risk factors for developing elevated anxiety. Some of the factors identified are distinct from those which have been reported to lead to a greater risk of developing other mental disorders such as depression in this population (e.g., in our sample employment predicted anxiety, but unemployment is classically associated with depression). These results provide the first evidence of what factors may be important to consider for clinicians when considering which people with diabetes may be at risk for developing anxiety.

250) Abstract 1506
EFFECT OF COMPUTERIZED DEPRESSION TREATMENT ON ENDOTHELIAL DYSFUNCTION: THE BEATING THE BLUES FOR YOUR HEART PILOT TRIAL
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Depression is an independent risk factor for cardiovascular disease (CVD); unfortunately, past trials of depression treatments have not detected a cardiovascular benefit. A potential explanation is that the interventions were delivered too late in the natural history of CVD. We have begun to test this hypothesis by conducting a pilot randomized controlled trial to evaluate whether depression treatment, delivered before clinical CVD onset, reduces CVD risk. Participants were 29 primary care patients with depression (Patient Health Questionnaire-9 ≥10) and no known CVD who were randomized to usual care or Beck’s® blues, an 8-session, empirically supported, computerized, cognitive-behavioral intervention for depression. At pre-treatment and 12-week post-treatment visits, we assessed brachial flow-mediated dilation (FMD), an ultrasound measure of in vivo endothelial function, and depressive symptoms (Symptom Checklist-20; SCL-20). Twenty-one patients (mean age=51 years, 57% female; 38% African American) had complete pre and post-FMD data. There was no evidence of group imbalance in pre-treatment FMD, SCL-20, demographic factors, or FMD correlates. Among the 21 completers, pre- to post- treatment increases in FMD of BtB patients (M=1.58%) were numerically greater than those of usual care patients (M=0.04%, p=.21). Although nonsignificant, the effect size (d = 0.60) is in the medium range. Pre- to post-treatment decreases in SCL-20 scores of BtB patients (M=0.82) were greater than those of usual care patients (M=0.16, p=.02, d=1.03). Adjusting for post-treatment SCL-20 decreased the treatment effect for FMD by only 12%, suggesting that the FMD improvements are not entirely depression mediated. Because FMD improvements have been associated with reduced anti-inflammatory cytokines, our results provide preliminary support for the notion that treating depression before CVD onset holds promise for reducing CVD risk. A definitive trial is now needed. If our findings are confirmed, it would equip providers with a new tool (computerized interventions) to simultaneously treat depression and manage the CVD risk of depressed patients. This research was supported by the American Heart Association Grant 11CRP880000.

251) Abstract 1720
PREDICTORS OF 1-YEAR INCIDENCE OF ANXIETY IN A COMMUNITY SAMPLE WITH TYPE 2 DIABETES
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Evidence shows that people with diabetes are more likely to be diagnosed with anxiety (Smith et al, 2013). In people with diabetes anxiety is associated with adverse outcomes such as poorer blood glucose control (Anderson et al, 2002) and increased physical complications (Collins et al, 2009). However, there is a lack of research conducted in people with diabetes. The GAD-2 is a validated instrument which has identification criteria that may lead to an increased likelihood of developing anxiety. This study utilised data from the Quebec community-based Evaluation of Diabetes Treatment Study (EDIT). Inclusion criteria for this study included aged 40-75, insulin naive and having a doctor diagnosis of diabetes for less than 10 years. Anxiety symptoms on the GAD-2 and participants, our results provide preliminary support for the notion that treatment depression before CVD onset holds promise for reducing CVD risk. A definitive trial is now needed. If our findings are confirmed, it would equip providers with a new tool (computerized interventions) to simultaneously treat depression and manage the CVD risk of depressed patients. This research was supported by the American Heart Association Grant 11CRP880000.

252) Abstract 1725
CLINICAL CHARACTERISTICS OF PATIENTS WITH PSYCHOLOGICAL AND PHYSICAL TRIGGERS OF ACUTE MYOCARDIAL INFARCTION

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THE EFFECTS OF LIFELONG STRESS EXPOSURE AND FORGIVENESS ON MENTAL AND PHYSICAL HEALTH

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A large literature exists demonstrating that stress affects mental and physical health. However, only recently have researchers approached this issue from a life-course perspective, which posits that stress occurring over the lifespan has a cumulative effect on health. Consistent with this approach, greater cumulative stress exposure predicts multiple health-related outcomes, including systemic inflammation, cancer-related fatigue, and biological aging. An important next step in this line of work is to examine factors that moderate the effects of cumulative stress exposure on health, which could in turn be modified to mitigate these effects. To address this issue, we administered an automated interview for assessing cumulative stress exposure called the Stress and Advocado Inventory, the Heartland Forgiveness Scale, the Patient Health Questionnaire, and the Kessler Psychological Distress Scale to 84 healthy young adults. We focused on forgiveness as a possible moderating factor, given prior research showing that forgiveness is associated with better physical and mental health. Consistent with this research, higher trait forgiveness predicted both better physical (β = 0.266, p = 0.013) and mental health (β = -0.463, p < 0.001). In contrast, greater lifelong stress exposure was associated with poorer physical (β = 0.385, p < 0.001) and mental health (β = 0.316, p = 0.01). Importantly, however, the effects of stress on mental (but not physical) health were qualified by a significant Cumulative Stress Exposure x Forgiveness interaction (β = 0.160, p < 0.001). Specifically, participants with greater cumulative stress exposure who were also high in forgiveness had better overall mental health than their high-stress counterparts with low levels of forgiveness. Parallel analyses that used total count (instead of total severity) of stressors produced similar results. Together, these results indicate that adverse experiences occurring over the life course and individual differences in forgiveness both moderate the effect of stress on mental health. They also suggest that the effects of cumulative stress exposure on mental health are moderated by forgiveness, which could possibly be enhanced to improve overall health.

255) Abstract 1464

RELATIONSHIPS OF CAREGIVER STATUS, PERCEIVED STRESS, AND BODY MASS INDEX ON CORTISOL PATTERNS AMONG OLDER ADULTS

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Alterations in cortisol activity have been associated with adverse health outcomes such as cardiovascular disease, cognitive impairment and metabolic syndrome. While older family caregivers have been shown to have poorer self-reported psychological and physical health outcomes compared to non-caregivers, few studies have examined whether cortisol patterns differ by caregiver status. The current study examined whether caregiver status, body mass index (BMI), and levels of perceived stress were associated with abnormal cortisol activity among 54 older adults (29 caregivers and 25 non-caregivers) participating in a larger study on health behavior change. The majority of our sample were women (70%) and married (77%), with an average age of 64 years and an average BMI of 30 (SD=5). Salivary cortisol was collected by participants at four different times during the day (awakening, 30 minutes after waking, 4 pm, and bedtime) over two consecutive days, and used to assess the diurnal cortisol slope, cortisol awakening response (CAR) and area under the curve (AUC). Independent-sample t-tests showed that older adult caregivers had a flatter diurnal cortisol slope compared to non-caregivers [t (48, 44) = 2.15, p < .05]. Furthermore, older adults with higher BMI and higher perceived stress levels (measured with the Perceived Stress Scale – PSS) had greater total cortisol output across the day (measured by AUC; BMI, r = .31, p < .05, PSS, r = .36, p < .05). These results may suggest that older adult caregivers, particularly those with high levels of BMI and perceived stress, may be at greater risk-stress-related chronic health problems.

256) Abstract 1314

DOES STRESS MEDIATE THE ASSOCIATION BETWEEN BODY PERCEPTIONS AND DEPRESSION DEPENDENT ON GENDER AND AGE?

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Research suggests that the association between body esteem and depression differs in men and women. We found preliminary support for stress being the mechanism linking body esteem perceptions and depression. However, little is known about how stress mediates the association and whether this association may vary for men and women at different developmental stages. To examine these patterns, 186 men (18-25yrs: n=42; 26-40yrs: n=101; 41-65yrs: n=43) and 309 women (18-25yrs: n=66; 26-40yrs: n=144; 41-65yrs: n=99) completed questionnaires assessing stress, depression, and body esteem (perceived body appearance, weight concern, and weight self-esteem) among a diverse sample of college students. Multilevel mediation models were used to test whether the association between body esteem and depression varied by gender and age. Finally, we examined whether age moderated the relationship between stress and body esteem, and whether stress mediated the relationship between body esteem and depression across age groups. Overall, our findings suggest that stress mediates the association between body esteem and depression and that this relationship is influenced by gender and age. These findings provide support for the theory of the mediating effect of stress on the association between body esteem and depression and suggest that interventions targeting stress management may be effective in improving body esteem and mental health in college students.
Our findings support the hypothesis that stress is a mechanism linking body perceptions of their bodies. For women 18-25 with low LF, higher perceived stress was associated with greater AUCAG (β = .40, p < .001). Similarly, greater AUCAG, AUCI, and maximum cortisol was associated with higher perceived stress only among participants with a slopeMax. There were no significant interactions with HF, AUCTG and SlopeMax, respectively. There were no significant interactions with HF, AUCTG and SlopeMax.

Our findings support the hypothesis that stress is a mechanism linking body perceptions and depression among men and women. Variations across age groups suggest that for men, body esteem becomes a health issue only in adulthood and stress becomes a relevant pathway even later in life, whereas for women, low body esteem is a prominent health concern and stress is a central health-relevant pathway at all ages.

257) Abstract 1381
PATTERNING OF THE STRESS RESPONSE SYSTEM IN CHILDREN AND ADOLESCENTS
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Objective. Biological models of how stress “gets under the skin” to affect health outcomes in youth posit that chronic stress results in dysregulation of the stress response system. Most stress physiology studies consider either the autonomic nervous system or the hypothalamic pituitary adrenal axis (HPA) axis; yet, these systems are highly coordinated and physically interconnected. Importantly, existent theories, such as the Neurovisceral Integration Model, suggest that how these two components interact, as well as how they function independently, may contribute to the emergence of health problems. In this study, we examined patterning of the autonomic nervous system and HPA axis and whether their interaction was a better indicator of stress in children and adolescents.

Method. Children and adolescents (n = 201; Mage = 12.69, SD = 2.05) participated in the Healthy Heart Project at Concordia University, Montreal. They completed the Perceived Stress Scale (Cohen & Williamson, 1988). An ambulatory ECG monitor was worn for 24 hours to derive heart rate variability (HRV, LF, HF, LF/HF ratio). Six saliva samples were collected over 2 days to index the diurnal cortisol profile (AUCAG, AUCI, AUCTG, SlopeMax, maximum cortisol).

Results. After controlling for age, sex, pubertal stage, BMI z score, household income, parental education, sleep duration, and wake time, significant cortisol x HRV interaction terms accounted for a significant, unique portion of the variance (2-4%) in perceived stress. Simple slopes analyses revealed that among youth with high LF, higher perceived stress was associated with greater AUCAG (β = .40, p < .001) and maximum cortisol (β = .39, p < .001). There was no relationship between perceived stress and AUCAG (β = .01, p = .91) or maximum cortisol (β = .02, p = .80) for children with low LF. Similarly, greater AUCAG, AUCI, and maximum cortisol was associated with higher perceived stress only among participants with a high LF/HF ratio, β = .32, p = .006, β = .55, p < .001, and β = .41, p < .001, respectively. There were no significant interactions with HF, AUCTG and SlopeMax.

Discussion. Findings suggest that children’s level of autonomic activity moderates the association between perceived stress and the HPA axis. These findings largely support existent theories and are consistent with previous studies that considered the interaction between autonomic and HPA axis activity. Investigating the patterning between the autonomic nervous system and HPA axis may provide a more thorough understanding of the association between stress and health.

258) Abstract 1572
NATURALISTICALLY-OBSERVED TV WATCHING AND DISENGAGEMENT AMONG COUPLES COPING WITH BREAST CANCER
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Viewing TV is a passive activity that comprises an abundance of free time. Though researchers have acknowledged potential links between TV viewing and disengagement coping as a means for escaping a stressor, it has not been directly studied. Fifty-two couples coping with breast cancer wore the EAR over one weekend to unobtrusively record snippets of ambient sounds in their daily lives. Participants also self-reported behavioral and mental disengagement (COPE) immediately before the monitored weekend and two months later. Couples watched TV approximately 38% of their waking weekend. Dyadic analyses revealed that partners watching TV together without interacting was associated with patients’, but not spouses’, higher levels of behavioral and mental disengagement, whereas watching TV while interacting was unrelated to disengagement. Further, watching TV alone was marginally related to both partners’ greater behavioral disengagement, indicating that watching TV without social interaction may be one way couples, particularly patients, disengage from the cancer experience.

259) Abstract 1800
ROMANTIC PARTNERS’ EATING TO REGULATE EMOTION IS ASSOCIATED WITH SHARED HEALTH-COMPROMISING BEHAVIORS
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Eating to regulate emotion (ERE) is a health behavior associated with increased weight, placing those who practice it at risk for various health problems. In individuals, ERE is linked to higher body mass index, and when shared with a romantic partner its impact may be particularly pronounced. For couples in which both partners eat to regulate emotion, ERE may not only become normalized, but also play a role in increasing relationship cohesion or providing comfort during conflict. However, partners who share ERE may also be more likely to support each other’s unhealthy behaviors and undermine efforts to act more healthily. When this pattern occurs, partners may be manifesting a form of symptom-system fit—a relational pattern in which a health-detrimental behavior takes on adaptive functions for the couple’s relationship, at least in the short term. The present study examined the association between partners’ self-reported ERE and couples’ shared unhealthy behaviors. Specifically, we hypothesized that couples with a greater overall tendency to eat to regulate emotion would be more likely to engage in shared health-compromising behaviors. Forty-three committed heterosexual couples provided self-reports of their use of eating to regulate emotion and discussed their health habits during a video-recorded interaction in the laboratory. Teams of trained observers rated evidence of shared unhealthy behaviors (e.g. diet, exercise, sleep) from the video recordings in 20-second segments. As predicted, couples’ average ERE scores were positively associated with shared health-compromising behaviors. Among people with high ERE, those who had partners with high ERE were more likely to share health-compromising behaviors with their partners. Among women with low ERE, partner ERE was not associated with shared behaviors; however, for men with low ERE, those who had partners with high ERE were more likely to share unhealthy behaviors with their partners. These findings provide preliminary evidence of symptom-system fit and suggest a dyadic mechanism that may exacerbate a health-compromising tendency.
626) Abstract 1372

LEPTIN IN RESPONSE TO ACUTE STRESS DURING SMOKING ABSTINENCE AND ITS ASSOCIATION WITH CRAVING: A PRELIMINARY INVESTIGATION

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This study examined patterns of change in circulating leptin in response to stress among smokers interested in quitting. We examined associations of leptin with craving and withdrawal symptoms. Thirty-six smokers (women=14; average age ± SEM = 33.39 ± 2.41) set a quit day and were required to be abstinent for 24 hours. Participants then completed a laboratory session that included performing public speaking and cognitive tasks. Blood samples as well as self-report measures of withdrawal symptoms, craving, and mood were collected six times: before and after the baseline, at the end of a speech task, at the end of a rest period, at the end of a cognitive challenge, and at the end of a final recovery period. After the laboratory session, participants attended a 4-week post-cessation assessments during which smoking status was assessed by self-report and biochemical measures. Smoking relapse was defined as smoking one cigarette post-quit. A series of 2 smoking status (abstained, relapsed) x 6 time periods multivariate analysis of variance (MANOVA) were employed to examine leptin concentrations and self-report measures. Sex was included as a covariate. The results indicated that 27 participants relapsed within the 4 weeks of cessation and 9 participants were able to successfully abstain. There was a significant time effect in leptin levels (p < 0.001); levels exhibiting initial decline, 4 weeks of cessation and 9 participants were able to successfully abstain. There was included as a covariate. The results indicated that 27 participants relapsed within the 3 to 6 months postpartum (T3). Data Analysis: Linear regression models were used to determine if subjective sleep quality at T1 and T2 were associated with maternal depressive symptoms at T2 and T3, respectively, and if these associations were mediated by social support. Depressive symptoms at the first time point of each model were included to control for effects of pre-existing depression. Results: There was a main effect of sleep quality at T2 on postnatal depressive symptoms at T3 (β= −0.87, p<0.05), but not of sleep quality at T1 on depressive symptoms at T2 (β= −0.69, p=0.07). An interaction between sleep quality and social support at T1 showed that sleep quality was a much stronger predictor of depressive symptoms at T2 when social support was low (β= −0.25, p<0.05). The same effect was observed for the association between sleep quality and social support at T2 and postnatal depressive symptoms at T3 (β= −0.01, p<0.05).

Conclusions: Social support during pregnancy moderated the association between prenatal sleep quality and subsequent depressive symptoms. Women who reported lower sleep quality and had lower levels of social support were at greater risk of experiencing depressive symptoms at a later time point than women who reported lower sleep quality and higher levels of social support. Access to effective social support may be an important aspect to the promotion of fertility and maternal health, particularly for women who are sleeping poorly.

624) Abstract 1543

PATTERNS OF DISCRIMINATION AND STRESS IN HISPANIC AND CAUCASIAN WOMEN

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Discrimination is a social stressor and has been consistently linked to a variety of physical and mental health outcomes, including hypertension, breast cancer, self-rated poor health and depression. Sociological and biobehavioral theories posit that there are psychological and physiological pathways through which perceptions of discrimination affect health. Women, especially those that are racial/ethnic minorities, are particularly vulnerable to the negative health effects of discrimination because they experience unfair treatment based on their gender, skin color, national origin, and language. Our study sought to 1) describe the patterns of discrimination and perceived stress and 2) examine whether discrimination was associated with perceived stress among Hispanic and Caucasian women. Data came from the Socio-Economic Status and Obesity (SES) Study. Women aged 30-50 years were recruited to the longitudinal study using a population-based sampling approach. Hispanic (n = 200) and Caucasian (n=330) women completed California Health Interview Survey Discrimination Module and the 10-item Perceived Stress Scale. Results indicated that both Hispanic and Caucasian women experienced discrimination in a variety of settings, including school, work, and medical care. Work was the most common setting in which women experienced discrimination (47% of Hispanic and 62% of Caucasian women). For Caucasian women,
discrimination based on gender was the most common (reported by 44% of those who had experienced discrimination). For Hispanic women, the most common forms of discrimination were based on ancestry/national origin (24%), race (28%) and the way they speak English (29%). Among those that had experienced discrimination, 27% felt that the experience was somewhat or extremely stressful. Perceived stress scores were similar for Caucasian and Hispanic women (M = 14.4, SD = 7.2).

Experiencing discrimination was significantly correlated with higher perceived stress scores across settings, with the strongest correlation between stress and discrimination at work (r = .26, p < .0001). Our results suggest that discrimination is a common experience for Hispanic and Caucasian women and a potential source of stress. Future studies should continue to examine the pathways by which discrimination affects health, including the role of physiological stress responses.

265) Abstract 1407
EFFECTS OF THE CHRONIC PAIN SELF-MANAGEMENT PROGRAM UPON HEALTH STATUS: A RANDOMIZED CONTROLLED TRIAL
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Previous trials found positive effects of adapting and applying the Arthritis Self-Management Program to groups of patients suffering from chronic pain. Though positive outcomes such as reduced pain intensity; reduced pain duration; improved mental health; increased self-efficacy in daily activities and increased quality of life; were not sustainable beyond 3 months. Thus, the current trial examined patients who experienced chronic pain (N = 431; 71% female; mean age = 54.6; mean chronicity = 9 years; and 10% worked full time, 12% worked part time, 13% were on sick-leave, 45% had retired). They were recruited through advertisement in municipality health centers and local media. Participants were randomized to attend either the Chronic Pain Self-Management Program or to continue treatment as usual. The program was taught by volunteer peer leaders and it entailed group sessions with 10-15 participants. Over a period of six weekly sessions a wide range of topics was covered: Medication; exercise and nutrition; managing cognitive symptoms; communication (i.e., with health care professionals); community resources and social support; and managing psychological symptoms. Three-hundred-and-thirty-seven participants filled out the SF-36 health questionnaire at baseline and after six months. Results of repeated measures multivariate analysis showed that while all participants improved on both physical and mental components F(1) = 313.5, p = .001 and F(1) = 14.0, p = 0.001 respectively, there were no main effects of group membership. Thus, this trial indicates that there were no effects of the intervention and that helping this group of patients is difficult. This concern gains relvance as the number of patients increased.

266) Abstract 1437
EMPATHIC RESPONSE TO STRANGERS BASED ON INTEROCEPTIVE experience: An FMRI STUDY
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Introduction: Empathy, or experiencing the affective or sensory state of another (Batson, 2009), is frequently investigated through explicit or implicit instruction. In the present study, bereaved individuals were shown photos of their deceased loved one and of a stranger (i.e., a control condition). Participants were asked to report, in an open-ended format, what they felt while looking at their loved one and at the stranger. Although no information was provided about the stranger, many participants presumed that the stranger was also deceased, like their own loved one. Methods: Twenty-one women who had experienced the death of a mother or a sister to breast cancer were scanned with a 3T FMRI scanner. Ten clinical graduate students rated spontaneously reported feelings from the participants’ open-ended reports, based on the level of empathy conveyed. Averaged empathy ratings were used in second level regression analysis of functional activation. Results: When looking at the stranger, the brain region with activity most strongly associated with empathy ratings was in the right anterior insula (x = 42, y = 26, z = 4; Z = 6.83, p < .05, corrected for multiple comparisons by family-wise error). Empathy ratings did not correlate with time since death, depressive symptoms, grief severity, positive or negative affect. Conclusion: The present data fit with prior meta-analyses that have shown that right anterior insula activation occurred during passive viewing of pain or emotion in others (Fan et al. 2011). However, in the present study, reported empathy was not for the pictured stranger (who was interpreted as deceased), but for the participants’ mental representation of the bereaved relatives of the pictured stranger. One interpretation is that the interoceptive experience of one’s own grief during the presentation of a stranger led to the conclusion that the pictured stranger must also be deceased, and therefore must have grieving relatives with whom the participant could empathize.

267) Abstract 1354
VIGILANT COPING STYLE PREDICTS ENHANCED PAIN EXPERIENCE IN REGULAR SMOKERS
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Evidence indicates that chronic smoking is associated with dysfunction in endogenous opioid and stress regulatory mechanisms. These alterations have been proposed to mediate withdrawal symptoms and pain, which could lead to smoking relapse. Individual differences in coping styles, such as vigilance (VIG) and cognitive avoidance (CAY), also moderate pain sensitivity. However, few studies have tested whether coping styles predict pain perception in smokers. One-hundred and four chronic smokers (mean age=34.9, SD=11.8) were asked to complete a laboratory session including two pain assessment tasks: one after 20 min rest and one after acute stressors (public speaking and mental arithmetic; 20 min). Cold pressor (CPT) and thermal heat pain were used to induce pain. The order of pain conditions were counterbalanced across participants. Dependent measures were pain threshold and tolerance during the tasks, and pain experience after the tasks as assessed by McGill Pain Questionnaire (MPQ). We used the Mainz Coping Inventory to measure levels of VIG and CAY. Smokers were classified into four groups: low anxiety (low VIG, low CAY), high anxiety (high VIG, high CAY), vigilant (high VIG, low CAY), and cognitive avoidance (low VIG, high CAY) based on median splits. A series of 4 coping style x 2 pain condition (rest, stress) MANCOVA with task order as a covariate revealed a significant main effect of coping group in MPQ after CPT (p<.001), with greater pain experience in vigilant smokers than in low anxiety smokers (p<.001). This result was retained when pain tolerance was accounted for. Coping styles were not linked with other pain measures to CPT as well as pain measures to thermal heat pain. These findings suggest that pain perception is moderated by coping styles in smokers. The finding that vigilant coping was associated with greater MPQ scores but not with pain tolerance may suggest that coping styles influence affective component of pain more than psychophysical aspects of pain. While preliminary, this research indicates the importance of considering coping styles when examining pain in this population. Future mechanistic research is to be pursued.

268) Abstract 1392
EFFECTS OF A CBSM INTERVENTION ON PRENATAL SOCIAL SUPPORT DURING PREGNANCY
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Psychological interventions that are conducted within the setting of a supportive environment can allow pregnant women to express their feelings and ongoing stressors in their lives. Cognitive Behavioral Stress Management (CBSM) interventions can strengthen social support which can be beneficial in reducing stress during pregnancy. The current study examined whether women who attended a CBSM prenatal course experienced higher levels of social support. Our sample consisted of 55 low-income pregnant women (44% Spanish speakers) who completed the Medical Outcomes Study Social Support (MOS) questionnaire during their first trimester (baseline) and second trimester (post-intervention) of pregnancy. A Repeated Measures ANOVA analyses showed that women who attended more of the CBSM classes experienced more social support than those that attended fewer classes [F (2, 46) = 5.5, p<.05]. In addition, women with low anxiety (n=25) experienced a greater increase in social support than women with high anxiety [F (2, 46) = 3.9, p=.05]. Finally, no differences were found for social support between...
269) Abstract 1306
DEPRESSIVE AND ANXIETY DISORDERS IN DIAGNOSED AND UNDIAGNOSED DIABETES MELLITUS.
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Background: Depression and anxiety are more prevalent among individuals with diabetes mellitus (DM) compared to the general population. It is unknown whether these increased risks are caused by physiological factors associated with the disease, or by the psychological impact of the diagnosis. We studied this by comparing the prevalence of depression and anxiety in individuals without DM, individuals with DM but unaware of this (UDM), and individuals with diagnosed DM (DDM).
Methods: The sample included 95,412 individuals from the LifeLines (LL) study. Depressive and anxiety disorders were assessed by the mini-international neuropsychiatric interview (MINI). The point prevalence of depression and anxiety was assessed for 3 groups: 1) no DM: self-reported “no DM” and fasting blood glucose (FBG) ≤ 6.0 mmol/L during LL visit; 2) UDM: self-reported “no DM”, but FBG > 6.0 mmol/L; 3) DDM: self-reported “DM”. Logistic regression analyses were used to compare the prevalence of depression and anxiety in the DM groups, adjusting for age, sex, HbA1c, DM-related diseases (coronary heart disease, stroke and renal failure) and comorbid depression or anxiety.
Results: In the total cohort 3025 (2.3%) individuals were diagnosed with depression, 9057 (9.5%) with anxiety, 2290 (2.4%) had DDM, and 3351 (3.5%) had UDM. The prevalence of depression was significantly higher in both DDM and UDM vs. no DM (OR UDM vs. no DM=1.6 (1.3-1.9; p<.001); OR DDM vs. no DM =1.4 (1.1-1.8; p<0.01)). There was no significant difference for depression between UDM and DDM (p=.38). The prevalence of anxiety was significantly higher in DDM vs. no DM and UDM (OR DDM vs. no DM =1.5 (1.3-1.7; p<.001); OR DDM vs. UDM=1.5 (1.2-1.8; p<0.001)). There was no difference for anxiety between no DM and UDM (p=.98).
Conclusion: Depression was increased in individuals with DM (diagnosed and undiagnosed), while anxiety was only increased if individuals were aware of their DM. Results are suggestive of a different etiology of depression and anxiety in individuals with DM, with physiological factors being more important for depression and psychological factors more involved in anxiety.

270) Abstract 1588
PSYCHOLOGICAL STRESS IN THE ELDERLY AND ITS EFFECT ON VISUAL WORKING MEMORY: A PHYSIOLOGICAL AND BEHAVIORAL CORRELATE.
Vogel’s visual working memory (VWM) transiently maintains visual input to be further processed or filtered. The capacity of the VWM is limited and quantifiable using electrophysiological regression analysis indicates that CDA (between 300-1000ms) during the filtering condition (P<.04) was increased in individuals with DM (diagnosed and undiagnosed), while capacity was only increased if individuals were aware of their DM. Results are suggestive of a different etiology of depression and anxiety in individuals with DM, with physiological factors being more important for depression and psychological factors more involved in anxiety.

271) Abstract 1453
RELATING FACTORS OF MAJOR LIFE EVENTS TO HEALTH INDICATORS IN DAILY LIFE
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Major life events [MLEs] are stressful experiences, such as divorce or death of a loved one, that can negatively affect long-term physical and psychological health. Yet, less is known about if MLEs predict health in daily life and whether certain facets of MLEs are more strongly related to daily health than others. This study examined the association between different facets of MLEs and daily psychological and physiological functioning using ecological momentary assessment [EMA] and ambulatory physiological data. A community sample of 124 participants (age: 19-63; 75% female; 75% Caucasian) reported if any of 12 MLEs occurred during the previous 6 months. During each of the 3 subsequent days participants completed 6 EMA reports (morning, midday, and evening) and provided saliva samples. Four distinct facets were calculated from MLE data: 1) total number of exposures to 12 possible MLEs during each of the previous 6 months; 2) number of different types of MLEs experienced; 3) number of distinct content domains (i.e., aspects of the self, one’s relationships, and/or one’s work life) in which MLEs were experienced; and 4) if an MLE was experienced recently (i.e., within the last month). Each MLE facet was tested in a multilevel model predicting ambulatory mood, stress, pain, and cortisol while controlling for demographics, time of day, and work vs. non-work day. Each MLE facet significantly predicted ambulatory stress (p<.05) and all predicted cortisol in daily life (p<.05) except recent MLEs (p>.10). In addition, total exposure of MLEs and recent MLEs predicted sadness in daily life; total exposure of MLEs also predicted ambulatory reported pain (p<.05). These data suggest that facets of MLEs prospectively predict mood, stress, and cortisol in daily life. Future work should explore whether these daily processes underlie the association between MLEs and long-term negative health. Moreover, a more nuanced approach that assesses multiple occurrences, temporal effects, and perhaps other aspects of MLEs (e.g., duration), may further elucidate the relation of MLEs to health.

272) Abstract 1863
ANTICIPATORY COGNITIVE STRESS APPRAISAL MODULATES SUPPRESSION OF MACROPHAGE ACTIVATION BY PSYCHOSOCIAL STRESS
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Anticipatory cognitive stress appraisal can affect the stress-induced release of stress hormones. Stress hormones, in turn, can modulate microbicidal potential of macrophages. We investigated whether anticipatory cognitive stress appraisal modulates the wound-induced activation of macrophage microbicidal potential in relation to stress hormone release in acutely stressed compared to non-stressed men. Thirty-nine healthy men (mean age 35±1.4 years) were randomly assigned to either a stress or non-stress wound-group. After catheter-induced wound infliction, the stress wound-group underwent a standardized short-term psychological stress task, while the non-stress wound-group did not. All participants completed the Primary-Appraisal-Secondary-Appraisal (PASA)-scale before stress/rest. Assessing the microbicidal potential, we investigated PMA-activated superoxide anion production by ex vivo isolated monocyte-derived macrophages (HMDM) immediately before and after stress/rest. Moreover, plasma norepinephrine and epinephrine and salivary cortisol were repeatedly measured. In the non-stress wound-group HMDM superoxide anion production increased over time (p<.006). Compared with non-stressed participants, stressed participants displayed decreased HMDM superoxide anion production and increased stress hormones after stress (p<.016). Higher scores in the PASA scales “primary appraisal” (PA) and “stress index” (SI) were associated with lower levels of superoxide anion production by HMDM following wound-application in stressed participants (PA: p=.04; SI: p=.069), but not in non-stressed participants (p>.18). The norepinephrine stress responses related to these associations (p<.065).
Our data suggest that anticipatory cognitive stress appraisal modulates stress-induced wound-induced macrophage microbicidal potential and that the norepinephrine stress response underlies this effect. Improving coping skills might thus be useful for the prevention of stress-induced wound-healing attenuation.

273) Abstract 1600
PSYCHOLOGICAL MATERNAL ROLE EXPECTATIONS AND FEELINGS OF CONTROL DURING LABOR: IMPACT ON POSTPARTUM HEALTH IN LOW-INCOME MEXICAN AMERICAN WOMEN
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Low-income Mexican American (MA) women are more likely than women in the majority culture to experience poor postpartum health (Walker et al., 2004). Previous studies suggest that high role-specific feelings of control in salient domains (i.e. motherhood) predict better health (Krause & Shaw, 2000). Feelings of control during labor are maternal role-specific and may predict postpartum health. In low-acclimated MA women, cultural values of marianismo place high value on...
motherhood. Positive prenatal expectations about the maternal role (MR) are theorized to protect postpartum health, and may moderate the impact of feelings of control during labor on postpartum health. The current study investigated feelings of control during labor and prenatal MR expectations as protective influences on postpartum mental health in low-income MA women (mean age= 27.64 years; SD=6.50). Prenatal MR expectations were measured using the Prenatal Expectations Scale for Mexican Americans (PESMA; Gress-Smith et al., 2013; e.g., “Becoming a mother will be one of the best things you have ever done”). Feelings of control during labor and self-rated pre- and postpartum health were measured by single items on 5-point Likert scales. Regression analyses predicted maternal health at 6 weeks postpartum from prenatal MR expectations, feelings of control during labor, and their interaction, controlling for prenatal health. The regression accounted for 16% of the variance, R2 = 0.16, p <0.01. Higher feelings of control during labor and more positive prenatal MR expectations predicted better postpartum health (p=0.01 and p= 0.02 respectively). The interaction was also significant (p=0.04); low control during labor predicted poorer postpartum health across the sample, but among women who reported high MR expectations, higher feelings of control predicted better postpartum health. In contrast, women who reported low MR expectations showed little health benefit from increased control during labor. These results suggest avenues for future health interventions for pregnant low-income MA women through promotion of positive maternal role expectations and increased involvement in the labor decision-making process.

274) Abstract 1842

EFFECT OF THE COX-MAZE PROCEDURE FOR ATRIAL FIBRILLATION ON MENTAL STRESS REACTIVITY: A PILOT STUDY
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Objective: In addition to the well-established cardiovascular disease risk factors of family history, obesity, smoking, diabetes mellitus, and hypercholesterolemia, much effort has been devoted to the identification of other potential risk factors. Exaggerated responsiveness to mental stress may provide an important marker of increased risk for clinical cardiac events. However, mental stress reactivity may be affected by various interventions that are used to improve cardiovascular function. Specifically, in atrial fibrillation populations, cardiac surgery (Cox-Maze procedure) is utilized. The effect of this procedure on response to mental stress has not previously been evaluated. The purpose of this pilot study was to examine whether the magnitude of cardiovascular reactivity to mental stress differs before and after the Cox-Maze procedure for atrial fibrillation.

Methods: Five patients who underwent the Cox-Maze procedure for atrial fibrillation participated in two laboratory visits (pre and post-surgery). Each visit consisted of a 30-minute rest period, two 5-minute mental stress tasks (math and speech), and a recovery period. Blood pressure and heart rate were monitored throughout each visit. Repeated measures ANOVAs were used to examine whether changes from rest to mental stress differed between the pre and post-surgery visits.

Results: Mean age of patients was 65±9.3 years and 80% were male. Surgery was Cox-Maze in all patients, with three of the patients also undergoing valve surgery. Analyses showed that SBP (F=48.75, p=0.002) and DBP (F=67.49, p=0.001) increased significantly from rest to MS regardless of visit and changes from rest to MS were similar between pre-surgery and post-surgery visits for SBP (F=0.04, p=0.86) and DBP (F=2.82, p=0.05). There were no main effects or interaction for HR. Although analyses did not reach statistical significance, there was evidence that the sample experienced more irregular beats via Holter monitor during the pre-surgery visit versus the post-surgery visit (t=-2.15, p=0.10). At 6 months following surgery, all 5 patients were in normal sinus rhythm and were off anti-arrhythmic medications.

Conclusions: In this small pilot study, results indicate that patients’ mental stress responsiveness was not modified following heart surgery, which may suggest that it is a trait and not impacted by cardiac surgical procedures. Expansion of this work will with a larger sample size is necessary to adequately understand if cardiac surgery can modify the impact of mental stress on cardiac response.

275) Abstract 1408

LACK OF SECURE ATTACHMENT AND VALUE OF DISMISSING ATTACHMENT AMONG OLDER ADULTS WITH CARDIAC DISEASE
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Mental representations of dynamic interactions in close relationships, as reflected in adult attachment types, are increasingly recognized as predictors of health behaviours and outcomes, including treatment adherence and response to medical symptoms. However, classification strategies that interpret narrative indicators of mental representations of attachment (Adult Attachment Interview, Adult Attachment Projective test- AAP) have rarely been used to study seriously ill adults.

Method: We used the AAP to classify the attachment patterns of 52 adults with heart failure (HF) and 49 age- and gender-matched patients who had heart disease but not HF. We also measured self-reports of illness intrusiveness, perceived support and, among HF patients, HF self-care. Results: The average age was 69.0 (SD 11.1); 27.8% were women; 20.6% living alone. There was an unexpectedly low prevalence of Secure attachment: Secure 2.1%, Dismissing 25.8%, Preoccupied 32%, Unresolved 40.2%. Attachment classification did not differ between cardiac patients with or without HF, or by illness intrusiveness, gender or living alone. Compared to all other types, Dismissing attachment was more prevalent with increasing age (F = 5.9, p = 0.02). Dismissing attachment was also associated with higher social support (F = 5.2, p = 0.03), better HF symptom monitoring and treatment adherence (F = 4.3, p = 0.04), and better HF symptom management (F = 4.5, p = 0.04), but no difference in HF self-care confidence. Discussion: The distribution of attachment types is similar or even more insecure than previous reports of psychiatrically ill adults. Increasing Dismissing attachment with age is consistent with prior research of healthier elderly cohorts, but the prevalence of Preoccupied and Unresolved attachment is extraordinary. Dismissing attachment is associated with markers of better social and healthcare function in older persons with heart disease, possibly because the uncertainty, ambivalence, unresolved mourning and fear which characterize Preoccupied and Unresolved attachment is diminished by the deactivating mental representations that characterize Dismissing attachment.

276) Abstract 1820

RELIGIOUS INVOLVEMENT IMPROVES CARDIOVASCULAR RECOVERY AFTER SOCIAL STRESS
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Purpose of study: There is evidence that religious involvement is associated with better health and lower mortality rates. One possible mechanism explaining this association is better adaptation to stress. It has been shown that religiosity improves recovery after stressful life events. In our study we examined cardiovascular recovery after a mental and social stress test in healthy young individuals.

Subject sample and statement of methods: We investigated 32 healthy young individuals aged between 15 and 30 years. Religiosity was assessed by the Structure of Religion Test (S-R-T, Hunter). A stress protocol including a mental (Color Stroop5) and a social (Trier, TSST) stress test was performed. We continuously measured systolic and diastolic blood pressure using Finometer® PRO.

Summery of results: Mean score in religiosity scale was 3.12 ± 0.50 showing moderate to high religious involvement. Dividing the study group into “low” to “moderate” and “high” religious, recovery after Stroop task was 12.2 ± 6.1 vs. 16.8 ± 11.5 mmHg (not significant, p = 0.174) and after Trier Social Stress Test 15.2 ± 8.4 vs. 25.6 ± 9.1 mmHg (significant, p = 0.003) showing that the higher religious had quicker and more complete recovery after both stress test’s (see table below).

Discussion and conclusion: The results basically support the concept of stress buffering identifying religion as a moderator of the physiological stress response (e.g. blood pressure recovery) in healthy individuals. The main limitation of the study is the relatively small number of participants.

Keywords: religious involvement, blood pressure recovery, stress buffering

Diagram 1: Shows blood pressure recovery after mental and social stress tests for the two religiosity groups.

A-97
The response to CRH injection relates to brain activity during rectal distension. CRH injection induces more fine contractions of the colon in IBS subjects than in controls and bowel syndrome (IBS). We tested the following hypotheses: (1) CRH injection.

Methods: Nineteen subjects with diarrhea and mixed IBS (10 female) and 20 controls (9 females) participated in the study. The mean age was 22.6 and 22.1, respectively. The response to CRH injection is to decrease levels of estradiol following menopause as well as increased inflammation. The impact of depression on oral health in postmenopausal breast cancer survivors is especially relevant considering the widespread use of anti-estrogen therapies among these women. This study investigated the effect of current and past depression on self-reported oral health among 174 breast cancer survivors before and at 6 and 18 months after receiving primary treatment. Postmenopausal breast cancer survivors with histories of depression reported bleeding gums more frequently than those without lifetime histories of depression. Additionally, women using aromatase inhibitors reported bleeding gums more frequently than nonusers. Among women using aromatase inhibitors, those who also had histories of depression reported bleeding gums more frequently than those without depression histories. Analyses controlled for age, cancer stage, tamoxifen use, chemotherapy, radiation, diagnosis of periodontal disease, smoking status and current depressive symptoms. These results suggest that among postmenopausal breast cancer survivors, having a history of depression may increase risk for poor oral health when in combination with decreased bioavailability of estrogen resulting from either menopause or aromatase inhibitor use.

Increased Colonic Response to CRH Relates to Insular Activity in IBS Subjects. Michiko Kano, MD, PhD, Tomohiko Muratsubaki, MSC, Mao Yagihashi, MSC, Joe Moritshita, MD, PhD, Yukari Tsuka, MD, PhD, Motoyori Kanazawa, MD, PhD, Shin Fukudo, MD, PhD, Behavioral Medicine, Tohoku University Graduate School of Medicine, Sendai, Miyagi, Japan

Background: Activation of the corticotropin-releasing hormone (CRH) signalling system is recognized to be involved in stress-related disorders including irritable bowel syndrome (IBS). IBS involves the following three components: (1) CRH injection induces more fine contractions of the colon in IBS subjects than in controls and (2) the response to CRH injection relates to brain activity during rectal distension. Methods: Nineteen subjects with diarrhea and mixed IBS (10 female) and 20 controls (9 females) participated in the study. The mean age was 22.6 and 22.1, respectively. In the first experiment, CRH 2μg/Kg was administrated intravenously and plasma adrenocorticotropic hormone (ACTH) was measured. Colonic motility was measured by barostat placed in rectum 20 minutes before and 120 minute after CRH injection. In the second experiment, blood oxygen level dependent (BOLD) signal among same subjects was acquired by functional magnetic resonance imaging (fMRI) imaging during mechanical distension to the rectum.

Results: There was no significant difference between IBS subjects and controls on elevated response of plasma ACTH after CRH injection. Both IBS subjects and controls demonstrated increased number of phasic volume events (PVEs) per 5 minutes after CRH injection compared to those of before injection (p<0.05). Group of women with IBS showed decreased in the CRH effect on insula than those not. In IBS subjects than controls (p<0.02). In fMRI session, rectal balloon distension induced increased BOLD signal in the visceral pain matrix including the thalamus, insula, cerebellum, supplementary motor area, dorsal anterior cingulate cortex. IBS subjects increased BOLD activity in the right rolandic operculum/insula than controls (p<0.001, uncorrected). Activity of insula was correlated with the number of the PVEs after CRH injection in the first experiment (r=0.001, p<0.05).

Conclusion: These results suggest that CRH injection induces exaggerated fine contractions of the colon in IBS subjects independently with ACTH secretion. Moreover, increased insular activity at visceral perception in IBS subjects is likely to relate to colonic response to CRH.

Approach and Avoidance Coping and Diurnal Cortisol Rhythm in Prostate Cancer Survivors. Michael A. Hoyt, Ph.D., Psychology, Hunter College of the City University of New York, New York, NY, Amanda M. Marin-Chollom, MA, Psychology, Graduate Center, City University of New York, New York, NY, Julienne E. Bower, Ph.D., Psychology, Michael R. Irwin, MD, Cousins Center for Psychoneuroimmunology, Semel Institute for Neuroscience, UCLA, Los Angeles, CA, Kamala S. Thomas, Ph.D., MPH, Clinical Psychology, Pitzer College, Claremont University Consortium, Claremont, CA, Annette L. Stanton, Ph.D., Psychology, UCLA, Los Angeles, CA

Background: Aberrant diurnal cortisol patterns have been linked to a number of physical and psychological outcomes in cancer patients (Bower, Ganz, & Aziz, 2005), including disease progression and earlier mortality in women with breast cancer (Sipotin et al., 2000; Abercrombie et al., 2004). Limited research with breast cancer patients has suggested that diurnal cortisol rhythm may be shaped by individual coping strategies (Giese-Davis et al., 2004). However, no study has examined these associations in men with cancer. The present study examined how approach- versus avoidance-oriented coping strategies affect diurnal cortisol rhythm in prostate cancer survivors. Methods: Men (N=61; M age=65.76, SD=9.04) treated for localized prostate cancer in the preceding two years were enrolled in a study of “health-related quality of life.” Cancer-specific coping was assessed at study entry (T1) with a modified version of the Brief COPE (Carver, 1997) and the Emotional Approach Coping Scales (Stanton et al., 2000). Composite scores of approach and avoidance coping were computed. At T1 and again four months later (T2), participants provided saliva samples (4 times per day over 3 days) for measurement of cortisol output. Results: Hierarchical linear modeling analyses were conducted to test for concurrent associations and relationships over time. Approach coping was not associated with T1 (B = .01, p = .731) or T2 (B = .04, p = .323) cortisol slopes. However, avoidance coping was associated with steeper cortisol slopes both concurrently (B = 1.2, p = .011) and over time (B = 1.4, p = .033). All analyses were statistically controlled for participant age and BMI (other biobehavioral variables were controlled by study design). Diurnal pattern was more blunted with greater use of avoidance coping. Conclusion: Contrary to expectations, avoidance coping was associated with steeper cortisol slopes at T1 and across time. Cortisol rhythms may be one mechanism by which coping affects health-related quality of life in prostate cancer patients, particularly for avoidance-oriented coping strategies. Although previous research with women with cancer has demonstrated a relationship of cortisol and approach coping, avoidance may be more salient in men’s experience.

Additional research is needed to examine these relationships across the disease trajectory and to identify individual factors that might condition the impact of avoidance on stress responses.

Effects of an Expressive Writing Intervention (EWI) with Women Treated for Breast Cancer Related with Recurrence Quantification Analysis (RQA) of Changes in Text Structure - A Proof-of-Concept Study. Marlene S. Lyby, BA, Oncology and Psychology, Aarhus University and Aarhus University Hospital, Aarhus, Julland, Denmark, Sebastian Waltz, PhD, Culture and Society, Aarhus University, Aarhus, Julland, Denmark, Mikael B. Jensen-Johansen, PhD, Center for Health Promotion & Rehabilitation and Education Center for Social Workers, VIA University College, Holstebro, Julland, Denmark, Søren Christensen, MSC, Psych., Oncology and Psychology, Aarhus University and Aarhus University Hospital, Aarhus, Julland, Denmark, Heiddis B. Valdimarsdottir, PhD, Reykjavik University, University of Iceland and Mount Sinai School of Medicine, New York, NY, Ashley B. Samuels, MSC, Clinical Psychology, Aarhus University, Chicago, Illinois, Anders B. Jensen, PhD, Oncology, Aarhus University Hospital, Aarhus, Julland, Denmark, Dana H. Bowyer, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Robert Zachariae, DMSc, Oncology and Psychology, Aarhus University and Aarhus University Hospital, Aarhus, Julland, Denmark.

OBJECTIVE: Effects of EWI on recurrence of breast cancer (BC) following treatment (EWI) are associated with changes in text structure reflecting cognitive restructuring. We explored whether Recurrence Quantification Analysis (RQA) of changes in text structure during EWI could predict changes in depressive symptoms. METHODS: 20 patients were selected from a larger sample of 507 women treated for breast cancer who had been randomly assigned to three 20-min writing exercises, one week apart, focusing on either emotional disclosure (EWI) or a non-emotional topic (controls). The sample of 20 women were selected from the EWI group and included a) the 10 women showing the largest improvements (Group 1) and b) the 10 women with the least improvement (incl. worsening) (Group 2) in depressive symptoms (BDI) before EWI. Results: a total of 3×20 hand-written essays were digitized and subjected to RQA to quantify several aspects of repetitiveness. RM-ANOVA were used to analyze change in text structure from session 1 to 3, and multiple linear regression was used to evaluate changes in RQA measures as predictors of change in BDI scores. RESULTS: Mean BDI-SF change scores at 3 and 9 mo. post-intervention were -7.9 (SD=2.0) and -6.4 (SD=3.2) in Group 1 and -3.9 (SD=3.2) and -3.2 (SD=2.7) in Group 2. When examining change from session 1 to 3, statistically significant time×group effects were found for Entropy (p=0.015) and Determinism (p=0.019) with Group 1 showing a pattern of increased values from session 1-2, followed by a reduction from session 2-3, and Group 2 showing increased values over all three sessions. Furthermore, magnitudes of these changes were significantly correlated with change in depressive symptoms at 3 and 9 mo. post-intervention (β: 0.607 – 0.755; p: 0.003 – 0.053). CONCLUSION: Our preliminary results could indicate that patterns of change in general structural properties of writings of EWI participants may be predictive of changes in symptom severity over time and suggest that RQA may be a useful tool to uncover such properties.
SYNDROMAL DEPRESSION, INTRUSIVE THOUGHTS, AND HEART RATE VARIABILITY AMONG CANCER SURVIVORS

Mariam A. Hussain, B.S., Psychology, Lisa M. Jaremka, Ph.D., Institute for Behavioral Medicine Research, The Ohio State University, Columbus, OH

Objective: Although survival rates for breast cancer are rising, cancer survivors often experience lingering health problems, including cardiovascular disease. Depression is a sympathecically mediated heart rate variability (HRV) dysfunction; it can be measured through parasympathetically mediated heart rate variability (HRV). Thus, understanding risk for lower HRV among cancer survivors is important. Research from non-cancer populations suggests that depression and intrusive thoughts about a stressful life event are two potential risk factors. Methods: Stage 0-IIIA female breast cancer survivors (N = 200) attended a study visit between 2 months and 3 years following the completion of their primary cancer treatment.

282) Abstract 1490
STRESS APPRAISAL AS A HEALTH PROMOTER? EVIDENCE FOR DESSENSITIZATION OF HEART RATE VARIABILITY NEURAL CONTROL: THE SYMPATHETIC ACTIVITY AND AMBULATORY BLOOD PRESSURE IN AFRICANS (SABPA) STUDY

Leone Malan, RN, PhD, Hypertension In Africa Research Team (Hart), North-West University, Potchefstroom, North-West, South Africa, Mark Hamer, PhD, Epidemiology And Public Health, University College London And North-West University, London, WCLE, UD, Markus P. Schlaich, MD, PhD, Hypertension And Kidney Disease, Gavin W. Lambert, PhD, Biological Psychology, Neurovascular Hypertension & Kidney Disease And Human Neurotransmitters Laboratories, Baker Idi Heart And Diabetes Institute, Melbourne, Vic, Australia, Manja Reimann, PhD, Tjafel Ziemssen, MD, PhD, Neurology, Medical Faculty Carl Gustav Carus; Dresden University Of Technology, Dresden, Saxony Land, Germany, Aletta S. Uys, PhD, Nicolaas T. Malan, DSC, Hypertension In Africa Research Team (Hart), North-West University, Potchefstroom, North-West, South Africa

Objective: Stress appraisal responses in urban Africans have been associated with enhanced vascular responsiveness, partly explaining autonomic nervous system dysfunction. We therefore aimed to assess whether defensive coping (DeS) facilitate hypertensive blood pressure responses and early structural vascular disease via disturbed frequency- and time-domain heart rate variability (HRV) responses.

284) Abstract 1692
IS EMOTIONAL IMPACT OF IMPLANTABLE CARDBIOVERTER DEFIBRILLATOR DEPENDENT ON ITS PREVENTIVE OR CURATIVE INDICATION?

Khalida Lahlou-Lafoet, MD, Olivier BAYLE, MD, C-L Psychiatry, Aki OTOMAN, MD, Dept of Cardiology, European Georges-Pompidou Hospital, PARIS, c/o, FRANCE, Thomas LAVERGNE, PhD, MD, Department of Cardiology, European Georges-Pompidou Hospital, PARIS, c/AC, FRANCE, Silla M. CONSOLI, PhD, MD, C-L Psychiatry, European Georges-Pompidou Hospital, PARIS, c/o, FRANCE, Barbara DE GRANDIS, Life-determining rhythm disturbances are frequently initiated by implantable cardioverter defibrillator (ICD), classically after a resuscitated sudden death (curative indication), and more recently in subjects at risk but without any history of sudden death (preventive indication).

285) Abstract 1403
EXAMINATION OF PSYCHOMETRIC PROPERTIES OF MAINZ COPING INVENTORY

Kenta Matsumura, PhD, Science and Engineering, Kanazawa University, Kanazawa, Ishikawa, Japan, Motohiro Nakajima, PhD, Biobehavioral Health and Population Sciences, University of Minnesota Medical School, Duluth, Minnesota, Masato Usuki, MD, PhD, Psychiatry, National Disaster Medical Center, Tachikawa, Tokyo, Japan, Heinz W. Krohne, Dr. Psychologisches Institut, Johannes Gutenberg-Universitaet Mainz, Mainz, Land Rheinland-Pfalz, Germany, Yatuka Matsuoka, MD, PhD, Clinical Epidemiology, National Center of Neurology and Psychiatry, Kodaira, Tokyo, Japan, Mustafa AlAtbi, PhD, Department of Biobehavioral Health and Population Sciences, University of Minnesota Medical School, Duluth, MN
Mainz coping inventory (MCI; Krohne et al. 2000) is a stimulus-response questionnaire which measures two-dimensional stress coping traits: vigilance (VIG: intensified search for and processing of stress-related information) and cognitive avoidance (CAV: averting attention from threat-relevant cues). While these coping styles have been linked with variance in health outcomes, few studies have examined psychometric properties of the scale. Participants (N = 141; aged 33.8 ± 12.1 years, 53% females, 74% smokers, 80% white) completed the MCI. MCI includes 4 ego-threatening (MCI-E; e.g., a job interview) and 4 physically threatening scenarios (MCI-P; e.g., sitting in an airplane with turbulence) scenarios. For each scenario the individual is asked to rate either true or false to 5 descriptions representing VIG strategies (e.g., information seeking) and 5 reflecting CAV strategies (e.g., denial). A sum of responses for each threat type within each coping style (VIG-E, VIG-P, CAV-E, CAV-P) and total scores of each coping (VIG-T and CAV-T) were calculated. Analysis revealed significant correlations between ego and physically threatening items (VIG-E and VIG-P: r = .68; CAV-E and CAV-P: r = .57) while no associations were found between scores of VIG and CAV (VIG-T and CAV-T: r < .05). Cronbach’s α for VIG-T and CAV-T were .85 and .78, respectively. A confirmatory factorial analysis supported an acceptable factorial structure of MCI-E (q2 (19) = 36.26, p < .01, Goodness-of-Fit index (GFI) = .94, Adjusted GFI (AGFI) = .88, Root Mean Square Error of Approximation (RMSEA) = .09) and MCI-P (q2 (19) = 32.45, p < .05, GFI = .95, AGFI = .89, RMSEA = .08). Overall, these results are consistent with those from the original validation study. More research is warranted to elucidate the mediating role of coping styles in psychobiological stress mechanisms and the development of chronic diseases. Our findings add strength to the potential usefulness of the MCI in biobehavioral research.

286) Abstract 1550
CHILDHOOD EXPOSURE TO VIOLENCE AND THE SALIVARY ALPHA AMYLASE RESPONSE TO THE SOCIAL COMPETENCE INTERVIEW
June A. He, BA, Clinical Psychology, Syracuse University, Syracuse, NY, Minakshi Raj, BS, Public Health, University of Michigan School of Public Health, Ann Arbor, MI, Jorge U. Talamantes, BS candidate, Kyung Y. Koo, BS, Amanda R. Canavatchel, BS candidate, Daniel J. Franco, BS candidate, Psychology, Craig K. Ewart, PhD, Clinical Psychology, Syracuse University, Syracuse, NY
Salivary alpha amylase (sAA) is emerging as a promising proxy for assessing sympathetic-parasympathetic (SAM) axis activity. It is assumed that sAA is reactive to physical exercise as well as acute psychosocial stress, such as an evaluative interview (i.e., the Trier Social Stress Test). However, it is not known whether a brief semi-structured behavioral assessment, such as the social competence interview (SCI), also elicits sAA changes. We tested the hypothesis that sAA would increase during the course of the SCI and decrease thereafter. We also hypothesized that social environmental stress (e.g., exposure to violence) would predict the sAA response to the interview.
Participants were college students (n=64, 50% female, age = 18.8 ± 1.2 years; BMI = 23.34 ±3.5 kg/m2) recruited through a university research participant pool. Exposure to violence during childhood was assessed via self-report using the City Stress Inventory and saliva samples were collected at four time points (T1: baseline; T2: during the middle of the interview; T3: at the end of the interview; T4: 10 minutes after the interview) to assess for salivary alpha amylase. As expected, we found a significant increase of sAA in response to the interview, from T1 to T3 (time effect: F (5, 8) =12.48, p<0.001) that did not vary by sex (p>0.05). Furthermore, there was a sex difference with regard to the recovery of sAA (change score calculated by subtracting T4 from T3), with males experiencing a rapid decline in amylase back to baseline levels, and females experiencing a sustained elevation of amylase after the interview. Furthermore, exposure to violence in childhood was positively associated with both peak sAA (T2), r(56) = .357, p<0.01, as well as rise in sAA (T3-T1), r(59) = .296, p<0.028. These findings provide further evidence for the utility of the social competence interview as a behavioral assessment and tool for eliciting sympathetic arousal. Moreover, the data bolster support for the hypothesis that greater exposure to social environmental stress during childhood may lead to potential negative health consequences, for example, a more highly reactive SAM system.

287) Abstract 1307
ANALGESIC SELF-MEDICATION AND HEART RATE VARIABILITY A PRELIMINARY INVESTIGATION
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Background: Changes in heart rate variability (HRV) have been associated with major depressive disorder (MDD) relative to controls, but the relationship of baseline HRV to treatment outcomes in MDD is unclear. Methods: We examined HRV measurements from two depression treatment pilot studies for MDD, in which subjects without cardiovascular disease and free from antihypertensive medication received either escitalopram (ESC, N = 26) or yoga interventions (YI, N = 16). Associations between baseline HRV and treatment outcome were initially analyzed for the ESC study, and confirmed in the YI sample. HRV parameters included root mean square successive difference, and absolute and relative power measures of very low frequency (VLF), low frequency (LF), high frequency (HF), and LF/HF ratio. HRV recording length was 5 minutes in the ESC sample, and 20 minutes in the YI sample. Results: Lower baseline relative VLF power (rVLF) predicted response (p<0.01) for both trials, as well as greater improvement in depressive symptoms when adjusted for age and gender (p<0.05 for both trials). A receiver operating characteristic analysis for antidepressant response utilizing rVLF with the ESC sample yielded a sensitivity of 1.0 and a specificity of 0.67 (AUC 0.87, p<0.01), and the cutpoint ( > 44% of total power) was confirmed in the YI sample (p<0.05). Conclusions: Baseline rVLF is a promising biomarker of depression treatment outcome. These findings should be interpreted with caution due to small sample size and limited recording length, but merit prospective confirmation in larger samples.

How to Cite your Abstract
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Sexual Minority Stress and Risk for Physical Health Problems: Psychosocial and Biological Mediators

Charles Kamen, PhD, Psychiatry, University of California San Francisco, San Francisco, CA, Oxana Palesh, PhD, Mailman School of Public Health, Columbia University, New York, NY, Robert-Paul Juster, PhD Candidate, Integrated Program in Neuroscience, McGill University, Montreal, Canada, Andrew Warren, MD, PhD, Division of Infectious Disease, University of Miami Miller School of Medicine, Miami, FL

Sexual minorities, including individuals self-identified as lesbian, gay, bisexual, transgendered and queer (LGBTQ), experience ongoing and daily stressors based on their sexual orientation that can be unpredictable and uncontrollable. Chronic stressors experienced by LGBTQ individuals are varied, ranging from structural (i.e. government-level policies that limit sexual minority rights) to interpersonal (i.e. unpredictable responses after disclosure to family and friends). Additionally, it is well known that sexual minority stress promotes poor psychological well-being and engagement in unhealthy behaviors. Yet there is a dearth of evidence regarding how sexual minority stress leads to biological and physical health problems-evidenced in other forms of minority-based chronic stress. This symposium examines emerging evidence that LGBTQ adult men and women are at elevated risk for physical health problems and presents the biopsychosocial mechanisms through which sexual minority stress contributes to this risk. The goals of this symposium are (a) to present new research on the varied forms of sexual minority stress that contribute to heightened psychological and biological stress reactivity, and (b) to discuss the implications of this work in informing future research and intervention strategies. The first presentation will report findings that LGBT adults who experience discrimination from family and friends are at increased risk for physical health problems, in part mediated through perceived stress reactivity. The second talk will present supportive evidence that physical health significantly differs in LGBT cancer survivors compared to their heterosexual counterparts. The third presentation will demonstrate that sexual minority stress at the structural level impacts biological stress reactivity. The final presentation will highlight evidence that biological stress reactivity differences between LGBT and heterosexual adults may vary as a function of gender. This symposium will culminate in a discussion that summarizes these findings and offers implications for future work aimed to further understand the relationship between sexual minority stress and health.

Individual Abstract Number: 1455

SOURCES OF DISCRIMINATION AND THEIR ASSOCIATIONS WITH PHYSICAL HEALTH IN SEXUAL MINORITIES

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Objectives: Lesbian, gay and bisexual (LGBT) individuals are at an increased risk for physical health problems compared to heterosexual counterparts. Minority stress - the experience of and response to social stressors unique to minorities – contribute significantly to poor physical health in LGB. Increased experiences of sexual orientation discrimination, a prevailing form of minority stress, has recently been associated with poorer physical health in LGB. However, the source of discrimination (i.e., family and friends [DISC-F] or others [DISC-O]) has not been thoroughly examined with regards to health outcomes in LGB. Purpose: The current study examined discrimination (DISC-F and DISC-O) and its direct and indirect effect via perceived stress reactivity, on self-reported physical health. Methods: 277 LGBT individuals completed an online survey that measured DISC-F, DISC-O, perceived stress reactivity, and physical health (self-reported physical health and physical symptoms). Results: SEM analyses revealed good model fit, χ² = 9.05, DF = 8, p = .34, CFI = .99, TLI = .99, RMSEA = .02, 90% CI[0.00,0.07] PCLOSE = .75. DISC-F directly (B = 14, p < .001), as well as indirectly (B = 13, p = .002) via perceived stress reactivity (i.e., suggesting partial mediation), predicted poorer physical health (B = -3.59, p = .032 for gender and sociodemographics). DISC-O was not associated with poorer physical health. Conclusions: Results provide further evidence for the direct association between discrimination and poor health as well as a potential mechanism, perceived stress reactivity, by which discrimination may indirectly influence poor physical health in LGB. Results also suggest the importance of friends and family acceptance for LGBT individuals, as it was this source of discrimination that was differentially associated with health outcomes.

Individual Abstract Number: 1456

DISPARITIES IN PHYSICAL HEALTH CONCERNS AMONG LESBIAN, GAY, BISEXUAL AND TRANSGENDERED (LGBT) CANCER SURVIVORS

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Background: Recent studies have suggested that following cancer diagnosis, disparities exist between LGBT cancer survivors and their heterosexual counterparts. These studies have focused on disparities related to biologic and psychological distress and substance use. Purpose: Studies have not examined physical health disparities that may affect LGBT cancer survivors. Consequently, we compared prevalence of physical health issues post-cancer diagnosis among LGBT vs. heterosexual survivors. Methods: Data for the current study were drawn from the LIVESTRONG dataset, a U.S. national survey that sampled 207 LGB and 4,899 heterosexual cancer survivors (all cancer types; 63.5% women; mean age = 49 years) in 2010. Physical health concerns were assessed with dichotomous yes/no items in twelve clusters (heart, lung, vision, hearing, dental, lymphedema, throat, neuropathy, thyroid, incontinence, sexual, and cognitive concerns), which were also summed to create a global physical health score. Dichotomous items assessed whether survivors had sought help for each concern. We compared LGB to heterosexual survivors and repeated analyses by gender. Results: Chi-square analyses indicated prevalence was significantly higher among LGBT than heterosexual cancer survivors of heart (17.5% vs. 9.3%; χ²=13.09, p=.001), dental (26.3% vs. 18.7%; χ²=8.37, p=.02), neuropathy (60.6% vs. 48.1%; χ²=2.36, p=.05), sexual (47.6% vs. 38.2%; χ²=6.28, p=.04), and cognitive (42.9% vs. 34.6%; χ²=5.17, p=.02) concerns. LGBT survivors also reported a higher total number of physical health symptoms (t=2.27, p=.02). LGBT survivors were less likely to seek help for neuropathy concerns (t²=6.58, p=.04). The prevalence of some health concerns was different between genders: LGBT men reported more pain and sexual concerns, while LGBT women reported more cognitive difficulties (all p<.05). Conclusions: Significant disparities exist in physical health between LGBT cancer survivors and their heterosexual counterparts. The issues confronted by men and women may also differ. Further research is needed to examine mechanisms underlying these disparities, the long-term impact of these disparities on morbidity and mortality among LGBT cancer survivors, and interventions that could address and ameliorate these disparities.

Individual Abstract Number: 1466

STRUCTURAL STIGMA AND HYPOthalamic-Pituitary-Adrenocortical (HPA) Axis Reactivity in Lesbian, Gay, and Bisexual Youth Adults

Mark L. Hatzenbuehler, PhD, Mailman School of Public Health, Columbia University, New York, NY, Katie McLaughlin, PhD, Department of Psychology, University of Washington, Seattle, WA

Background: Although stigma has been conceptualized as a chronic stressor, there is a paucity of research examining the impact of stigma on hypothalamic-pituitary-adrenocortical (HPA) axis functioning. Those studies that have been conducted have focused on interpersonal (e.g., discrimination, disclosure) forms of stigma. However, stigma can also occur at the structural level, which refers to societal conditions and institutional practices that constrain stigmatized individuals’ opportunities, resources, and wellbeing. The extent to which structural forms of stigma affect HPA axis functioning is unknown. Purpose: To examine whether structural stigma is associated with HPA axis functioning among lesbian, gay, and bisexual (LGB) young adults. Methods: We recruited 74 LGB young adults (mean age=23.68 years) raised in 24 different US states as adolescents. State-level structural stigma was coded based on 4 dimensions (e.g. discrimination; family and friends [DISC-F] vs. others [DISC-O]); (2) proportion of Gay Straight Alliances per public high school; (3) 5 policies related to sexual orientation (e.g., same-sex marriage, employment non-discrimination acts); and (4) public opinion toward homosexuality, derived from aggregated responses from 41 national polls. Because the 4 indicators were measured on different scales, each was standardized; we then summed the transformed score of each item to create an overall index of state-level structural stigma. Substantial variation in structural stigma was found across the 24 states. Participants completed the Trier Social Stress Test (TST); cortisol reactivity was measured by collecting saliva at baseline, just after the TST; and 20 minutes after the end of the acute stressor in order to compute the area under the curve as an index of reactivity. Results: LGB young adults raised in high structural stigma states as adolescents evidenced a blunted cortisol response following the TST compared to those from low-stigma states after controlling for demographic characteristics, factors that affect cortisol (smoking, waking time, exercise, caffeine use), and perceived stigma (F(1,71) = 4.57, p = .037, η² = 0.07). Conclusions: The stress of growing up in environments that stigmatizes gays and lesbians may result in HPA axis dysfunction, consistent with prior studies showing blunted cortisol responses among individuals exposed to extreme adverse life experiences.
Background: Lesbian, gay, and bisexual (LGB) individuals frequently report heightened distress due to stigma-related stressors, yet investigations into their physiological stress reactivity are missing from the literature.

Purpose: The current study investigated whether LGB individuals might differ from heterosexual (H) individuals with respect to cortisol responsivity and sex hormone fluctuations in reaction to a social-evaluative threat.

Methods: Participants included 87 healthy adults (mean age 25 years, 54% men) identifying as LGB (n = 46) or H (n = 41). Stress was induced using the Trier Social Stress Test (TSST) and 10 salivary cortisol samples were collected throughout a two-hour afternoon visit. Two additional saliva samples were collected fifteen minutes before and after stress exposure to assess testosterone, estradiol, and progesterone levels.

Results: Repeated-measures ANOVAs revealed that L/B women had significantly higher cortisol levels than H women only 40 minutes after stress exposure, whereas G/B men had significantly lower cortisol levels than H men throughout testing. L/B women had significantly higher testosterone levels than heterosexual women. Significant inter-correlations between stress and sex hormone dynamics were detected using percent changes and area under the curve formulae in sequential regressions: cortisol was positively associated with testosterone changes and negatively associated with estradiol/progesterone ratio changes in responses to the TSST irrespective of sex, sexual orientation, or age.

Conclusions: Our findings demonstrate that relative to H sex-matched controls: (1) L/B women displayed higher cortisol levels late after stress exposure and manifested higher testosterone levels, while (2) G/B men displayed lower overall cortisol levels throughout testing and did not differ from their H controls in terms of sex hormones. In addition, amongst all participants, we consistently found that time-dependent increases in testosterone and decreases in estradiol/progesterone ratio levels predicted increases in cortisol dynamics. In summary, these novel findings suggest that it is important to include intra-sex variations such as sexual orientation and sex hormones in future psychoneuroendocrine studies of stress reactivity.

Saturday, March 15 from 11:15 am to 12:30 pm
Paper Session: Emotions, Stress and Acute Coronary Events

Abstract 1175
THE MOSAIC STUDY: RANDOMIZED TRIAL OF A LOW-INTENSITY COLLABORATIVE CARE INTERVENTION FOR DEPRESSION AND ANXIETY IN WOMEN WITH NEW ONSET CARDIAC SYMPTOMS
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Background: Depression and anxiety are associated with adverse outcomes in patients with recent acute cardiac events. There has been minimal study of collaborative care (CC) management models in high-risk cardiac inpatients, and no prior CC intervention simultaneously managed both depression and anxiety disorders.

Methods: Patients admitted to inpatient cardiac units for acute coronary syndrome, heart failure, or arrhythmia were evaluated for depression using the Patient Health Questionnaire-9 (PHQ-9) and PRIME-MD modules for generalized anxiety disorder (GAD) and panic disorder (PD). Eligible patients having one or more of these disorders were randomized to a low-intensity multicomponent 24-week CC intervention or enhanced usual care (UC). The primary outcome measure for this study was between-group differences in improvement in mental health-related quality of life, measured using the Short Form-12 Mental Component Score (SF-12 MCS) at 24 weeks, assessed using random effects models. Additional main study outcomes included between-group differences in improvement in depression, anxiety, and function at 24 weeks, along with rates of adequate treatment at discharge.

Results: A total of 183 patients were enrolled (92 randomized to CC). Patients randomized to CC had significantly greater improvements in SF-12 MCS score (estimated mean difference 5.68 points, 95% confidence interval= 2.14-9.22; p= 0.002; effect size 0.61) at 24 weeks. Patients randomized to CC also had significantly greater improvements in depression and function, though not in anxiety, and CC patients had substantially higher rates of adequate treatment by hospital discharge (72% versus 7%; chi-square=88.51; p< 0.001).

Conclusions: A low-intensity CC intervention in a broad cohort of cardiac patients was linked to significant improvements in most main clinical outcome measures. Such a model may become attractive as hospital systems become increasingly responsible for post-discharge outcomes.

Abstract 1036
RELATIONSHIPS BETWEEN DEPRESSION, DIETARY HABITS, AND CARDIOVASCULAR MORTALITY AND EVENTS AMONG WOMEN WITH SUSPECTED MYOCARDIAL ISCHEMIA
Thierry V. Claessens, MB, BCh, MSc, Protea Healthcare System/UC San Diego, San Diego, California, Tanya Kenkre, PhD, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Diane Thompson, MS, Department of Cardiovascular Medicine, Allegheny General Hospital, Pittsburgh, PA, Vera Bittner, MD, Medicine, 4University of Alabama at Birmingham, Birmingham, AL, Kerry Whittaker, PhD, Department of Global and Clinical Health, George Mason University, Fairfax, VA, JoAnn Eastwood, PhD, Nursing-Health Promotion Sciences Section, UCLAC LA, Angeles, CA, Wafia Eteiba, MD, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, Carol Correll, PhD, Health Behavior and Health Education, of Arkansas for Medical Sciences, Little Rock, AR, David S. Krantz, PhD, Medical and Clinical Psychology, Uniformed Services University, Bethesda, MD, Caroline M. FD, Division of Preventive Medicine, University of Florida, Gainesville, FL, B. Delia Johnson, PhD, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, Eileen Handberg, PhD, Medicine, University of Florida, Gainesville, FL, C. Noel Bairey Merz, MD, Medicine, Cedars-Sinai Medical Center, Los Angeles, CA

Background: Although depression is an established risk factor for adverse clinical events in populations with and without ischemic heart disease (IHD), the mechanisms accounting for this relationship remain uncertain but women appear to be affected more than men. Nutritional factors are associated with both depression and clinical events, and may therefore contribute to associations between depression and mortality.

Methods: A subset of women with symptoms and signs of IHD (N=201; mean age= 58.5(SD=11.4) completed a protocol including coronary angiography (CAD) severity and depression assessments (Beck Depression Inventory [BDI] scores, antidepressant use, & depression treatment history). Participants also completed the Food Frequency Questionnaire for Adults (FFQ, 1998 Block). From the FFQ, we extracted daily fiber intake and daily servings of fruit and vegetables as measures of dietary habits. Clinical events included CVD death, heart failure, myocardial infarction, and stroke over a median 5.9-year follow-up.

Results: In separate Cox regression models adjusted for age, smoking, and CAD severity, BDI scores (HR=1.05, 95% CI=1.01-1.10), antidepressant use (HR=2.4, 95% CI=1.01-5.9) and a history of treatment for depression (HR=2.4, 95%CI=1.1-5.3) each predicted time to CVD events. Fiber intake (HR=8.7, 95% CI=.78-.97) and fruit and vegetable consumption (HR=.36, 95% CI=.19-.70) also showed relationships with events. In models including dietary habits and depression, fiber intake and fruit and vegetable consumption remained reliable predictors for clinical events; depression-event relationships were reduced by 20%-25% and non-significant.

Conclusions: Among a sample of women with suspected IHD, we observed consistent evidence of relationships between depression severity, dietary habits, and risk for adverse clinical events. Dietary habits partly explained the depression-CVD relationship. These results suggest that dietary habits be included in future efforts to identify mechanisms linking depression to CVD risk.

Abstract 1668
PERSONALITY FACTORS AFFECTING CORONARY ARTERY DISEASE: TYPE D, THE FIVE-FACTOR MODEL, AND ADVERSE EVENTS
Jordis Demollet, PhD, Nina Kepper, PhD, Medical and Clinical Psychology, Tilburg University, Tilburg, North Brabant, Netherlands

Background. Type D personality has been associated with adverse events in patients with coronary artery disease (CAD). Type D refers to the combined effect of negative affectivity (NA) and social inhibition (SI), but some have argued that Type D may be an example of the tendency to reinvent things in personality research, implying an unjustified novelty of the construct. Therefore, we wanted to examine the incremental predictive validity of the Type D construct beyond the effects of previously established personality traits.

Methods. At baseline, 357 patients with CAD from the University Hospital Antwerp completed the DS14 and NEO-FFI to assess Type D personality and the Five-Factor Model (Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness), respectively. The endpoints at 5 years follow-up were a) major adverse clinical events (MACE, defined as death, myocardial infarction [MI], or coronary revascularization) and b) cardiac death/MI. Results. NA correlated .73 with Type D and SI -.12 with Extraversion (+53% and 35% shared variance); correlations of NA/SI with other Five-Factor traits ranged between -.04 and -.35. At follow-up, there were 66 MACE including 40 cardiac death/MI. A multiple logistic regression model indicated that Type D was associated with an increased risk of MACE (OR=3.01, 95%CI=1.43-6.35, p=.004) and Neuroticism with a decreased risk (OR=.95, 95%CI=0.91-0.99, p=.043), while Extraversion (p=.10), Conscientiousness (p=.29), Agreeableness (p=.26), or Openness (p=.54) were not associated with MACE. These findings were replicated using cardiac death or MI as an endpoint. Type D patients had a higher rate of cardiac death/MI than non-Type D patients (21/116=18% versus 19/241=8%; OR=2.58, 95%CI=1.33-5.03, p=.005). The ‘Neurotic-Introverted’ personality profile, defined by the combination of high neuroticism and low extraversion as measured by the NEO-FFI, was not associated with cardiac death/MI (OR=.64, 95%CI=0.40-1.74, p=.63). Conclusion. After adjustment for the established traits of the FFMI, Type D was associated with an increased risk of MACE and cardiac death/MI at 5-year follow-up. These findings support the incremental predictive validity of the Type D construct in patients with CAD.
Abstract 1575

YOUNG WOMEN HAVE A HIGHER RATE OF MYOCARDIAL ISCHEMIA INDUCED BY EMOTIONAL STRESS THAN AGE-MATCHED MEN AFTER MYOCARDIAL INFARCTION
Viola Vaccarino, MD, PhD, John J. Shah, MD, MSCR, Pratik Pimple, MBBS, MPH, Cherie Rooks, PhD, Epidemiology, Emory Univ. Rollins School of Public Health, ATLANTA, GA, Jonathon Nye, PhD, Radiology, J D. Bremner, MD, Psychiatry, Emory Univ. School of Medicine, ATLANTA, GA, Paolo Raggi, MD, Cardiology, Univ. of Alberta School of Medicine, Edmonton, AB, Canada
Objectives. Young women exhibit higher mortality and complication rates after an acute myocardial infarction (MI) compared with men of similar age, a difference not seen in older patients. The pathophysiology of these findings is unexplained. We hypothesized that emotional stress disproportionally affects ischemic heart disease risk this group. To address this issue, we examined whether mental stress-induced myocardial ischemia, but not exercise-induced ischemia, is more common in young female post-MI patients than males of similar age. Methods. We included 98 patients (48 women and 48 men) 18 to 59 years old with documented MI in past 6 months. Women and men were matched by age, MI type, and months since the MI. Patients underwent SPECT (99mTc)estamibi perfusion imaging at rest, after mental stress, and after exercise/pharmacological stress. Myocardial perfusion defect scores were obtained by observer-independent ratings. A summed difference score (SDS), the difference between stress and rest scores, was used to quantify ischemia under both stress conditions. An SDS ≥3 was used as indication of clinically significant stress-induced ischemia. Results. Women age 50 years or younger, but not older women, showed a more adverse psychosocial risk profile than age-matched men, but did not differ for conventional risk factors or tended to have less atherosclerotic coronary artery disease (CAD) than men. Compared with age-matched men, women age 50 years or younger exhibited a higher SDS with mental stress (3.1 vs. 1.5, p=0.03) and had twice the rate of mental stress-induced ischemia, (52% vs. 25%, p=0.03), while ischemia with physical stress did not differ between groups. In older patients there were no sex differences in mental stress-induced ischemia, while men had more ischemia induced by exercise/pharmacological stress. The disadvantage of young women with mental stress persisted after adjusting for sociodemographic and lifestyle factors, CAD severity and depression. Conclusions. Myocardial ischemia induced by emotional stress is more common in young women post-MI than in age-matched men, and could play a role in the prognosis and perhaps also as a trigger of MI in young women.

Abstract 1645

ANGER AND ANXIETY PRIOR TO MYOCARDIAL INFARCTION AS PREDICTORS OF 10-YEAR ALL-CAUSE MORTALITY
Loes Smeijers, Msc., Medical and Clinical Psychology, CoRPS, Tilburg University, Tilburg, the Netherlands, Elizabeth Mostofsky, MSc, ScD, Cardiovascular Epidemiology Research Unit, Harvard School of Public Health, Boston, MA, Willem J. Kop, PhD, Medical and Clinical Psychology, CoRPS, Tilburg University, Tilburg, the Netherlands, Murray A. Mittelman, MD, DPh, Cardiovascular Epidemiology Research Unit, Harvard School of Public Health, Beth Israel Deaconess Medical Center, Boston, MA, Cherie Rooks, PhD, Epidemiology, Emory Univ. Rollins School of Public Health, ATLANTA, GA
Background: Myocardial infarction (MI) can be preceded by psychological, physical and chemical triggers. High levels of anger and anxiety are associated with a higher risk of MI in the following two hours. Other triggers of MI include physical exertion and coffee consumption. Little is known about the prognosis of patients who were exposed to a potential trigger immediately prior to MI onset. This study examines the association between exposure to a potential trigger prior to MI and mortality during 10-year follow-up. Methods: Based on data from the Determinants of Myocardial Infarction Onset Study, we conducted a prospective cohort study of MI patients (N=180, age=65, age group: women ≥25, 29.2% women). Patients were interviewed to assess exposure to several potential triggers immediately prior to MI, including anger, anxiety, physical activity and coffee consumption. All-cause mortality was assessed using the US National Death Index for 10 years of follow-up. Cox proportional hazards models and 95% confidence intervals were used to examine the relationship between exposure to these potential triggers in the 2 hours prior to MI onset and the rate of all-cause mortality, adjusting for demographic and clinical characteristics.
Results: Exposure to anger, anxiety, physical activity or coffee consumption during the two hours prior to MI was associated with a 30% higher mortality rate over 10 years (HR=1.15, 95%CI=1.06-1.29; p=0.004) and weaker and no longer statistically significant for years 3 to 10 years (HR=1.14, 95%CI=0.88-1.48, p=0.32). In separate analyses for each exposure, we found that anxiety (HR=1.44, 95%CI=1.09-1.90, p=0.011) and anger (HR=1.32, 95%CI=0.97-1.80, p=0.078) were associated with increased mortality rates but there was no association for physical activity (HR=1.15, 95%CI=0.74-1.79) or coffee consumption (HR=0.96, 95%CI=0.69-1.33). Sensitivity analyses showed stronger adverse outcomes for MIs that were preceded by anxiety in women than men, and in patients aged 65 and older compared to younger patients.
Conclusions: Having an MI following episodes of anger or anxiety was associated with a higher rate of all-cause mortality in the following 10 years. This association was strongest for the psychological triggers, anxiety and to a lesser extent anger, whereas no evidence was found for a higher mortality rate among MI patients reporting physical activity or coffee consumption immediately prior to MI.

Saturday, March 15 from 11:15 am to 12:30 pm
Paper Session: Social Relationships

Abstract 1798

SOCIAL ISOLATION, LONELINESS AND PHYSICAL FUNCTION IN OLDER ADULTS
Aparna Shankar, PhD, Anne McMinn, PhD, Panayotes Demakakos, PhD, Mark Hamer, PhD, Andrew Septo, DSc, Epidemiology & Public Health, UCL, London, London, U.K.
Background: Social isolation and loneliness have been associated with poor health and mortality among older adults. However, there is limited research examining their association with physical functioning. The present analysis aimed to evaluate the impact of social isolation and loneliness on gait speed and difficulties with activities of daily living (ADLs) over a 6-year period, in adults aged 60 years and over from the English Longitudinal Study of Ageing. The analysis further examined if these associations were moderated by socioeconomic status.
Method: Data on social isolation, loneliness, gait speed and difficulties with ADLs were obtained at baseline and follow-up. Outcomes on follow-up obtained in an identical manner at follow-up 6 years later. Data were available on 3071 participants. Total wealth at baseline was used as an indicator of socioeconomic status. Regression analyses were used to evaluate associations between social isolation and loneliness at baseline and change in outcome measures. Interactions of wealth with social isolation and loneliness were also examined. Analyses were adjusted for demographic variables, education, health status, depression and health behaviors.
Results: Baseline isolation was associated with a decrease in gait speed (β = 0.04, p < 0.01) while loneliness was associated with an increase in difficulties with ADLs (HR = 1.47, p < 0.05) at follow-up. The effect of isolation on gait speed was also moderated by wealth (p < 0.05) such that the effect of isolation on gait speed increased with decreasing wealth.
Conclusion: Both isolation and loneliness have detrimental effects on physical functioning in older adults. Interventions targeting social isolation may be particularly beneficial for individuals who are more deprived.

Abstract 1413

PATHWAYS TO DEPRESSION IN UNEMPLOYMENT DEPEND ON WHOM YOU COMPAR E YOURSELF TO
Ashley M. Geiger, MA, Psychology, Brandeis University, Waltham, MA, Jutta M. Wolf, PhD, Psychology, Brandeis University, Waltham, MA
Emerging evidence suggests subjective social status (SSS) may be a better predictor of health than objective SES. However, no previous study has examined whether the relationship between SSS and health differs in individuals who experience drastic changes in traditional SES indicators, such as during unemployment. Because unemployment is also a context in which chronic stress may play a particular role in mental health, we aimed to determine the contribution of SSS to depressive symptom severity above and beyond chronic stress. Recruited through MTurk, 138 full-time employed (E; 62 male) and 142 unemployed (UE; 74 male; mean duration of UE: 20±26 months) individuals (35±10.6 yrs.) completed MacArthur SSS ladders to rate their social status relative to U.S., community, family, and friends. Participants further self-reported perceived chronic stress (PSS) and depressive symptoms (CES-D). All analyses controlled for age and sex. As expected, perceived stress was linked to depressive symptoms in both groups (E: r=.81, p<.001; UE: r=.79, p<.001). Furthermore, regression analyses revealed that independent of employment status, subjective social status ratings were negatively associated with both perceived stress and depressive symptoms (E all p<.04; UE all p<.02). Interestingly, for employed individuals, stress mediated these relationships (all p<.30), while this was true only for US status ratings in unemployed individuals (beta=.03, p<.65; confirmed by bootstrapping analysis). SSS rating relative to one’s community, friends, and family were all stress-independent predictors of depression (UE: all p<.04). Our results confirm that lower subjective social status is associated with increased mental health risks. Interestingly, for employed individuals, chronic stress is one pathway underlying this link. In unemployed individuals, however, this is only true for status ratings relative to US, i.e., when comparing oneself to a more distant group linked to traditional SES indicators, while losing status among social groups with closer proximity (family, friends, community) predicts depression by stress-independent pathways. As such, focusing on maintaining status among close social contacts may be a promising approach to improve mental health in unemployed individuals.
dyadic coping model. We employed an intensive longitudinal design to examine the influence of specific approach-oriented spouse support responses on the effects of rheumatoid arthritis (RA) patients’ pain catastrophizing. In particular, we were interested in understanding how the impact of patient catastrophizing on pain intensity was mitigated or exacerbated by spouse responses of love and acceptance, comfort, and helping. Data were collected twice daily for a period of one week from 27 couples in which one spouse was diagnosed with RA. Participants were asked to report morning catastrophizing and both morning and evening pain intensity, while spouses reported morning support provision to patients. Multilevel modeling was used to examine the within day effects of morning patient catastrophizing and morning spouse support on evening pain, controlling for morning pain. A significant interaction was found between morning catastrophizing and spouse love/acceptance such that the effect of patient catastrophizing on evening pain intensity was exacerbated on days when spouses expressed less love and acceptance, which is consistent with previous research on the benefits of emotional support. While comfort from the spouse did not interact significantly with patient catastrophizing to predict subsequent pain, there was a significant main effect such that on days when spouses reported providing more comfort, patients reported increased evening pain. Lastly, the spouse response of helping was found to exacerbate patient pain reports on days when they engaged in more catastrophizing. Findings are discussed within the context of solicitousness, a detrimental support transaction identified in previous research. Findings underscore the importance of examining spouse reports of support within a dyadic coping framework. They further suggest that not all forms of support are created equal, begging for the finer assessment of specific support transactions.

Abstract 1552
SYNCHRONY IN BEDPARTNERS SLEEP-WAKE PATTERNS: A NOVEL APPROACH TO STUDYING CO-REGULATION AMONG COUPLES.
Heather E. Gunn, Ph.D., Daniel J. Buyse, M.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA; Wendy M. Troxel, Ph.D., Behavioral Science, RAND Corporation, Pittsburgh, PA.
Couples’ sleep is associated with relationship functioning and health outcomes. Co-regulation of biological systems is one defining feature of normative attachment in romantic relationships. Sleep is a shared intimate process between couples; however, it is not yet known whether attachment styles predict co-regulation (concordance) of sleep-wake patterns in couples. We examined the association between attachment style and objective sleep patterns using actigraphy-defined sleep-wake concordance (Experiences in Close Relationships) and relationship functioning (Dyadic Style and objective sleep patterns using actigraphy- defined sleep-wake concordance). It is not yet known whether attachment styles predict co-regulation (concordance) of sleep-wake patterns in couples. Mixed modeling was used to account for within a dyadic coping framework. They suggest that not all forms of support are created equal, begging for the finer assessment of specific support transactions.

SOCIAL RELATIONSHIPS ARE INVERSELY ASSOCIATED WITH DEPRESSION AND DEPRESSIVE SYMPTOMS IN A REPRESENTATIVE SAMPLE OF SWISS ADULTS
Steven D. Barger, Ph.D., Psychology, Northern Arizona University, Flagstaff, AZ; Natalie M. Roller-Rigby, Ph.D., Clinical Psychology and Psychotherapy, University of Bern, Jürgen Barth, Ph.D., Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland.
The quality and quantity of social relationships are associated with depression but there is less evidence regarding which aspects of social relationships are most predictive. We evaluated the relative magnitude and independence of the association between four social relationship domains (emotional support, tangible support, social integration, and loneliness) with two outcomes, major depressive disorder and depressive symptoms. Data were collected in a cross-sectional telephone interview and postal survey of a probability sample of adults living in Switzerland (N = 12,286). Twelve-month major depressive disorder was assessed via structured interviews over the telephone; one-month major depressive symptoms were assessed using the Composite International Diagnostic Interview. Depressive symptoms and social relationship variables were assessed in the postal survey. Univariate models each individual social relationship domain was associated with both outcomes, i.e., those with more frequent and better quality social relationships had fewer depressive symptoms and were less likely to have major depression. In multivariate models adjusting for age, gender, education and language use, being lonely and perceiving unmet emotional support had the largest and most consistent associations across both depression outcome measures (incidence rate ratios ranging from 1.55-9.97 for loneliness and from 1.23-1.40 for unmet support, p’s < 0.05). All social relationship domains except marital status were independently associated with depressive symptoms. Husbands whereas loneliness, being unmarried and perceiving unmet support were associated with a higher incidence of 12-month depressive disorder. Thus, both perceived quality and frequency of social relationships were associated with clinical depression and depressive symptoms across a broad adult age spectrum in Switzerland. This study replicates earlier reports showing a strong link between loneliness and depression and extends this work to show that other functional and structural social ties are associated with subclinical depression in the Swiss population.

Saturday, March 15 from 2:00 to 3:15 pm
Symposium 1190
New Directions in Positive Psychology: Measurement, Mechanisms & Interventions
Sarah Pressman, PhD, Psychology & Social Behavior, University of California, Irvine, Irvine, California, CA; Julia K. Boehm, PhD, Psychology, Chapman University, Orange, Orange, CA; Nancy L. Sin, PhD, Center for Healthy Aging, Pennsylvania State University, University Park, PA; Judith T. Moskowitz, PhD, Department of Medicine, Osher Center for Integrative Medicine, University of California San Francisco, San Francisco, Annette Stanton, PhD, Psychology, UCLA, Los Angeles, CA.
There is growing interest in the physiological and health consequences of positive psychological factors. Despite the surge of research on this topic, there are still many important unanswered questions regarding the mechanisms underlying this association, the types of constructs and measurements that are predictive of health, and finally, whether these positive benefits are changeable via intervention techniques. The objective of this session is to present cutting edge work on these critical issues. We will present new research on different types of positive constructs such as life satisfaction, positive events, and positive facial expressions, and how these constructs relate to immune, cardiovascular, pain, and mortality outcomes. Finally, we will explore the feasibility of a positive psychology based intervention for metastatic cancer patients. This will be followed by a discussion of the presentations and an outline of possible future directions for this research area.

Individual Abstract Number: 1371
VARIABILITY ADDS TO LIFE SATISFACTION’S ASSOCIATION WITH PREMATURE MORTALITY IN OLDER ADULTS
Julia K. Boehm, PhD, Psychology, Chapman University, Orange, CA; Ashley Winning, MPH, Social and Behavioral Sciences, Harvard School of Public Health, Boston, MA; Suzanne Segerstrom, PhD, Psychology, University of Kentucky, Lexington, KY; Laura D. Kubzansky, PhD, Social and Behavioral Sciences, Harvard School of Public Health, Boston, MA.
Greater life satisfaction is associated with reduced risk of premature mortality. However, most research has assessed life satisfaction at a single point in time and no research has examined whether variability in life satisfaction is associated with premature mortality. This study investigated whether mean levels of satisfaction and variability in satisfaction across time are associated with premature mortality. We also investigated whether the effects of mean levels of satisfaction depend on variability in satisfaction. We used data analyses of the Household, Income, and Labour Dynamics in Australia Survey. Adult participants were first assessed in 2001 and annually thereafter until 2010. Analyses were limited to 4,458 participants who were initially 50 years and older and who had two or more assessments of satisfaction. Participants were on average 63 years old at baseline. When we tested whether the association between mean levels of life satisfaction and mortality varied depending on variability in satisfaction, we found that the association between mean levels of life satisfaction and mortality was not significant. However, when we tested whether the association between variability in life satisfaction and mortality varied depending on mean levels of life satisfaction, we found a significant interaction such that the variability in life satisfaction was associated with reduced risk of premature mortality (HR=0.81; 95%
CI=0.75-0.88). In a separate model adjusting for age, each standard deviation increase in variability of satisfaction was associated with increased risk of premature mortality (HR=1.20, 95% CI=1.11-1.29). The interaction between mean satisfaction and variability in satisfaction was also significantly associated with premature mortality risk controlling for age (HR=0.92; 95% CI=0.87-0.97); individuals with low mean satisfaction and high variability in satisfaction had the greatest risk of premature mortality. Similar patterns emerged when adjusting for demographics, health, and depressive symptoms. In combination with mean levels of life satisfaction, variability in life satisfaction is relevant for premature mortality. Considering the intra-individual variability of psychological characteristics may provide insight into whether and how such characteristics are associated with health-related outcomes across time.

Individual Abstract Number: 1319

DAILY POSITIVE EVENTS, DAILY STRESSORS, AND INFLAMMATION

Nancy L. Sin, PhD, Center for Healthy Aging, David M. Almeida, PhD, Human Development and Family Studies, Pennsylvania State University, University Park, PA

Background: Inflammation is implicated in the development of chronic diseases and increases the risk of all-cause mortality. People who experience chronic or daily stressors have higher levels of inflammation, but it is unknown whether daily positive events are linked to inflammation.

Objective: To compare the relative associations of daily positive events versus daily stressors with 6 inflammatory markers.

Method: A cross-sectional sample from the Midlife in the United States Study (N = 814) completed telephone interviews for 8 consecutive evenings, providing 6512 observations. Participants rated their affect and reported daily experiences that occurred over the past 24 hours, including positive events and stressors. They subsequently provided blood samples, which were assayed for 6 inflammatory markers: interleukin-6 (IL-6), soluble IL-6 receptor (sIL-6R), fibrinogen, soluble E-selectin (sE-selectin), C-reactive protein (CRP), and soluble intracellular adhesion molecule-1 (sICAM-1). Regression analyses tested the number of days with a positive event (positive event days) and the number of days with a stressor (stressor days) as predictors of each inflammatory marker. Covariates included demographics (age, sex, education), medication use (blood pressure, cholesterol-lowering, corticosteroid), and mean daily positive affect.

Results: Across 8 days, participants had a median of 6 positive event days and 3 stressor days. Experiencing any positive event was associated with higher positive affect that day, but unrelated to negative affect. In a model that included all predictors and covariates, positive event days were associated with lower log IL-6, fibrinogen, and CRP (Table 1). However, stressor days did not predict inflammation.

Conclusion: Frequent positive experiences, assessed at a daily level, were unrelated to negative affect and unrelated to negative affect. In a model that included all predictors and covariates, positive event days were associated with lower log IL-6, fibrinogen, and CRP (Table 1). However, stressor days did not predict inflammation. Covariates included demographics (age, sex, education), medication use (blood pressure, cholesterol-lowering, corticosteroid), and mean daily positive affect.

Table 1. Positive event days and stressor days both predicting inflammatory biomarkers

<table>
<thead>
<tr>
<th>Inflammatory Marker</th>
<th>Positive Event Days</th>
<th>Stressor Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-6 (pg/mL)</td>
<td>693</td>
<td>-0.029</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>0.62</td>
</tr>
<tr>
<td>sIL-6R (pg/mL)</td>
<td>690</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>0.97</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>0.79</td>
</tr>
<tr>
<td>Fibrinogen (ng/dl)</td>
<td>688</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>0.12</td>
</tr>
<tr>
<td>sE-selectin (ng/ml)</td>
<td>693</td>
<td>-0.017</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>0.28</td>
</tr>
<tr>
<td>CRP (µg/mL)</td>
<td>693</td>
<td>-0.048</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>0.95</td>
</tr>
<tr>
<td>sICAM-1 (mg/ml)</td>
<td>693</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
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</tr>
<tr>
<td></td>
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<td>0.42</td>
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</table>

A-105

Individual Abstract Number: 1207

DO POSITIVE FACIAL EXPRESSIONS REDUCE AVERSIVE PHYSIOLOGICAL AND PSYCHOLOGICAL RESPONSES TO NEEDLE INJECTION?

Sam M. Pressman, PhD, Psychology & Social Behavior, University of California, Irvine, Irvine, California, Tara L. Kraft, MA, Psychology, University of Kansas, Lawrence, KS, Amanda M. Acevedo, BA, Alysha N. Chagany, BA, Psychology & Social Behavior, University of California, Irvine, Irvine, California

Positive emotions have been found to buffer stress and improve health across a wide variety of domains. Less is known about the benefits of positive emotional expression, that is, of smiling. We have recently shown that experimentally manipulated smiling, especially the more sincere Duchenne smile, improves physiological recovery to different types of stressors. This is true even when individuals do not know that they are smiling. In the current study, we test this manipulation in the context of a more naturalistic stressor: being injected with a needle. Participants (n = 180, 54% male, 81% white, mean age = 19) were trained to mimic either a non-Duchenne (standard) smile, a Duchenne smile, or a neutral (control) expression by holding a chopstick in their mouth in varying orientations. A cover story was utilized to prevent emotional expectancy effects and knowledge of smiling. Training was followed by the receipt of a saline solution needle injection using a standard 25 gauge needle, and a brief 5 minute recovery period. Heart rate (HR) was recorded throughout the study. Participants also reported anticipated and experienced pain before and after the needle. Results revealed that individuals in both smiling groups anticipated that the needle would be less painful versus those in the neutral control group (F = 5.43, p < .05) and reported that the needle was less painful afterwards (F = 4.90, p = .01). Similarly, smilers had lower HR during the injection (F = 6.34, p < .05) and during the injection recovery period (F = 3.77, p < .05) as compared to the control condition. This study provides further evidence on the psychological and physiological benefits of positive facial expressions, and indicates the possibility of a simple intervention to reduce the aversiveness of vaccinations.

Individual Abstract Number: 1348

LILAC: A POSITIVE AFFECT INTERVENTION FOR WOMEN WITH METASTATIC BREAST CANCER TO ADDRESS STRESS, POSITIVE AFFECT AND QUALITY OF LIFE

Jadith T. Moskowitz, PhD, Department of Medicine, Osher Center for Integrative Medicine, University of California San Francisco, San Francisco, CA

Women with metastatic breast cancer face uncertainty and burdensome treatment regimens, leading to worsening quality of life and depressive symptoms. Positive affect is critical in adaptation to stress and is uniquely associated with lower mortality risk in a number of chronic illnesses. Previously, we developed an 8-skill intervention that specifically targets positive affect, mindfulness, and quality of life. Qualitatively, participants reported good efficacy and positive acceptability of the positive affect intervention. Good efficacy and positive recommendation rates, usefulness, and improved stress management.

In the current study, we designed a new LILAC intervention tailored to metastic breast cancer. women. Women with metastatic breast cancer face uncertainty and burdensome treatment regimens, leading to worsening quality of life and depressive symptoms. Positive affect is critical in adaptation to stress and is uniquely associated with lower mortality risk in a number of chronic illnesses. Previously, we developed an 8-skill intervention that specifically targets positive affect, mindfulness, and quality of life. Qualitatively, participants reported good efficacy and positive acceptability of the positive affect intervention. Good efficacy and positive recommendation rates, usefulness, and improved stress management.

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Fetal development is an interactive and multifactorial process known to be sensitive to a variety of exposures, including psychological experiences of the mother and her nutrient intake. A growing body of research has shown that environmental exposures that occur during pregnancy have extraordinary potency to alter infant and subsequent child development trajectories due to the rapid differentiation of organs and major brain structures. Even small deviations from the normal developmental trajectory can become amplified over time, producing long-lasting functional deficits. Specifically, in utero exposures can cause subtle organ or central nervous system anomalies and may manifest postnatally as cognitive, emotional, or behavioral deficits. This symposium highlights recent findings related to the programming effects of maternal prenatal stress on child development. Two of the talks will focus on the consequences of fetal stress exposure for infant stress reactivity (neonates, 3 months, and 6 months) as measured in the hypothalamic-pituitary-adrenal axis (cortisol) and the autonomic nervous systems (heart rate variability). Two other talks will focus on stress-related morphological and functional alterations in the brain and the consequences of these changes for cognitive, emotional, and behavioral outcomes (elementary age children). Human investigations involve prospective and longitudinal studies of women with ecologically relevant stress exposures. Data from rodent research are presented to provide new insight into possible neurobiological mechanisms. The Discussant, an eminent researcher in the field, will highlight how these findings advance our understanding of the ways that prenatal stress leaves a lasting imprint on children.

Individual Abstract Number: 1244
PREGNATAL CORTISOL EXPOSURE AND EARLY INFANT RESPIRATORY SINUS ARRHYTHMIA REACTIVITY.
Joshua Rash, M.Sc., Psychology, Umarie Sajid, BHSc (Hons), Health Sciences, Tavis Campbell, PhD, Psychology, Nicole Letourneau, PhD, Nursing & Medicine (Pediatrics), Gerald F. Giesbrecht, PhD, Paediatrics, University of Calgary, Calgary, AB, Canada.
Variability in heart rate that is in phase with respiration (i.e., respiratory sinus arrhythmia; RSA) approximates cardiac parasympathetic influence. Exposure to stress in utero may biologically program the fetus (and infant) for responding to stress, indicated by low resting RSA and less RSA withdrawal, to the detriment of efficiency. Methods: Ambulatory assessment of maternal salivary cortisol was repeated in each trimester for 213 pregnant women. Samples were collected 4X/day and averaged across each phase. RSA was quantified as variability between .24 Hz and 1.04 Hz. ΔRSA was calculated by subtracting baseline from each task. RSA was log transformed to adjust for skew. Thirteen infants fussing or crying during each phase were removed from analysis. ΔRSA was calculated for each task.

Individual Abstract Number: 1287
FETAL EXPERIENCES INFLUENCE CHILD BRAIN AND BEHAVIORAL DEVELOPMENT.
Elysa Davis, PhD, Psychology, University of Denver, Denver, CO
The prenatal period is a time of enormous change during which organs and organ systems are forming and are susceptible to both organizing and disorganizing influences. These influences on the fetus have been described as programming. Consistent with the evidence supporting the hypothesis that early life stress affects adult health outcomes, we hypothesized that the fetal programming effects of maternal stress during pregnancy (CortP) and cortisol awakening responses (CAR) would be associated with child cortical thickness.

Individual Abstract Number: 1476
PREGNATAL CHOLINE SUPPLEMENTATION MITIGATES THE DELETERIOUS EFFECTS OF MATERNAL STRESS ON OFFSPRING COGNITIVE AND AFFECTIVE FUNCTIONING.
Kalyn M. Schulz, Ph.D., Psychiatry, University of Colorado Anschutz Medical Campus, Aurora, CO
Brain cholinergic dysfunction is associated with neuropsychiatric illnesses such as depression, anxiety, and schizophrenia. Maternal stress exposure is associated with these same illnesses in adult offspring, yet the relationship between prenatal stress (PS) and brain cholinergic function is largely unexplored. Choline is a precursor to acetylcholine and readily passes through the placenta to the fetus during prenatal development. Hippocampal nicotinic acetylcholine receptors (nAChRs) are important for memory function and are determined by multiple factors including both genetic and environmental factors. In our studies we investigated whether PS influences levels of hippocampal nAChRs, and whether dietary choline supplementation to pregnant female rats buffers the effects of PS on offspring memory function and anxiety-related behaviors. Female Sprague-Dawley rats experienced unpredictable variable stressors during the last week of gestation. In Exp. 1, we measured adult levels of hippocampal nAChRs and found that PS increased

Individual Abstract Number: 1802
CULTURAL STRESSORS INFLUENCE PREGNATAL CORTISOL AND SUBSEQUENT INFANT STRESS REACTIVITY IN THE MEXICAN MOTHER-CHILD DYAD.
Kimberly D'Anna-Hernandez, PhD, Psychology, California State University San Marcos, San Marcos, CA
Mexican-Americans are the most rapidly growing group in the US. Mexican-American women report high rates of psychosocial stressors. Fetal exposure to stress during pregnancy is associated with adverse perinatal outcomes including altered behavioral and physiological (cortisol) stress reactivity in offspring. A potential socio-cultural contributor to increased stress for Mexican-American women is acculturation. Acculturation involves adapting to a new culture and is associated with poor mental health outcomes. Yet, whether levels of acculturative stress contribute to the programming of infant stress reactivity is not clear. This study hypothesized that acculturative stress would be positively related to maternal cortisol during pregnancy as mediated by cortisol levels determined by neonatal hair, and acute prenatal salivary cortisol. Cortisol in mothers and offspring was compared to discrimination, acculturative stress, and cultural values in 52 pregnant women of Mexican descent. Saliva collection occurred 4 times/day over 3 days to obtain an average daily cortisol decline during pregnancy (16-19, 26-29 and 32+ weeks gestation). Within a week of birth, neonatal hair was obtained as well as salivary cortisol in response to a mock medical exam. In early and mid pregnancy, acculturative stress was associated with a dysregulation in daily cortisol decline as well as a blunting of the morning rise. In addition, increased acculturative stress was associated with longer hospital stays more total perinatal complications and low infant birth weight. There was no effect of acculturative or discrimination stress on cortisol levels during pregnancy as determined by neonatal hair. However, low familial support and less identification with Mexican cultural values was associated with a larger cortisol rise in response to the mock medical exam stressor in offspring. Importantly, these associations were not explained by pregnancy-related stress, prenatal depression or anxiety. Data suggest that cultural stressors can influence both the developing fetus and pose a unique underaddressed perinatal risk for Mexican-American women and their offspring.

Individual Abstract Number: 1250
HYPOTHALAMIC-PITUITARY-ADRENAL AXIS DISORDERS IN INFANTS AND TREATMENT OUTCOMES IN PEDIATRIC PREGNANCY.
Samantha Swim, Ph.D., Psychology, University of New Hampshire, Durham, NH
Animal models of stressors early in gestation have revealed that neonatal stress responses are predictive of outcomes in later life, which may be due to fetal programming mediated by the HPA axis. In humans, the available evidence for fetal programming is limited. The aim of this study was to determine whether psychosocial stressors in early pregnancy predict stress reactivity in infancy.

Individual Abstract Number: 1260
RESPIRATORY SINUS ARRHYTHMIA REACTIVITY.
Peggy A-106
levels of αH2 nAChRs in both sexes, but increased α7 nAChRs only in females. Thus, the deleterious sex-specific consequences of PS may be mediated via altered hippocampal nAChR levels. In Exp. 2, half of all PS and nonstressed dams were fed a choline-supplemented diet during pregnancy and lactation, and half were fed a control diet. In addition to offspring sex and diet, dams were divided into tertiles (at 24h). Regardless of sex, individuals with higher levels of IL-1β generally had higher levels of IL-1Ra, IL-6 and IL-8, and this was true at both time points (0h, 24h). Women in the highest tertile (i.e., those with the most inflammation) healed more slowly than women in the lowest tertile (p<.05). This discrepancy was not seen in men. Further, women in the lowest tertile healed at a similar rate to men. Differences in inflammation between tertiles in women could not be attributed to BMI, smoking, sex hormones or psychosocial measures (e.g., stress, depression, anxiety).

Women with higher and/or prolonged inflammatory responses in mucosal tissues appear to heal oral wounds more slowly than other women. These women seemingly account for the gender disparity (in favor of men) that has been reported in oral mucosal wound healing. Possibly this subset of women would benefit the most from anti-inflammatory therapy during oral surgery.

Abstract 1711
THE ROLE OF PRENATAL VITAMIN D & INFLAMMATION IN POSTPARTUM DEPRESSION.
Eynav E. Accortt, Ph.D., Christine Dunkel Schetter, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA, Rosalind M. Peters, PhD, RN, FAAN, College of Nursing, Wayne State University, Detroit, MI, Andrea E. Cassidy-Bushrow, Ph.D., Public Health Sciences, Henry Ford Health System, Detroit, MI
Background: Vitamin D deficiency and elevated pro-inflammatory cytokines have both been associated with depression. African American (AA) women are at increased risk for prenatal vitamin D deficiency, higher levels of inflammatory biomarkers, and prenatal and postpartum depression (PPD). To date, risk factors and mechanisms for PPD in this population are relatively unexplored. The primary aim of this study was to examine associations between prenatal vitamin D, measured as serum 25-hydroxyvitamin D [25-OHD], and PPD symptomatology in a sample of AA pregnant women, and to test moderation by the pro-inflammatory cytokine, IL-6. Methods: Pregnant AA women were recruited from obstetrics clinics of a large health system in the Detroit metropolitan area. This study focuses on 93 women in the third trimester (9-13 weeks) whose 25-OHD levels were established and who provided second trimester blood samples for examination of IL-6. Self-reports of depressive symptoms on the Edinburgh Postnatal Depression Scale (EPDS) were assessed at a postpartum clinic visit. Linear regression models were fitted to examine the association between log 25-OHD and PPD symptoms. We further investigated moderation by IL-6, controlling for potential confounders (specifically age, SMMI, marital status, severity of vitamin D measurement, and history of depression).Results: We found a significant inverse association between prenatal log 25-OHD and PPD symptomatology (β = -4.80, p = .03). For every one unit increase in log 25-OHD, there was an estimated 4.8 unit decrease in EPDS score. Furthermore, IL-6 moderated the relationship between log 25-OHD levels and EPDS scores. Women in higher levels of IL-6, lower prenatal log 25-OHD was significantly associated with higher EPDS scores (p = .02). Conclusions: These findings point to prenatal vitamin D as potentially protective against PPD symptomatology. The results further suggest that when pregnant AA women are high in prenatal IL-6 and low in prenatal 25-OHD, they are at highest risk for development of PPD symptoms. Future research should test the effect of PPD on ADHD individuals and families, it is critical to better understand it and reduce risks. Possible translational implications include prenatal interventions to increase vitamin D and decrease inflammation.

Abstract 1578
GENE EXPRESSION ANTI-STRESS EFFECTS FOLLOWING A MIND-BODY INTERVENTION
Jesper Dahlgaard, PhD, Robert Zachariae, DMSci, Unit for Psychooncology and Health Psychology, Aarhus University, Aarhus, Jutland, Denmark
AIM: To explore gene expression profiles (GEP) following a mind-body intervention (MBI), focusing on expression changes believed to counter or reverse negative health consequences of psychosocial stress (PS).METHODS: Based on a review of the literature on PS-associated molecular changes, testable hypotheses were generated about possible genetic anti-stress effects following stress reduction. We used GEP from the GEO database (GSE10041) consisting of ~1 million gene measurements from a study of 20 healthy individuals in an 8-week MBI with relaxation- and mindfulness training (Dusek et al., 2008). We reanalyzed the data with alternative data-mining algorithms and improved genetic annotations from several databases.RESULTS: Among 989 up-regulated and 936 down-regulated genes found in gene clusters with representation of biological functions that confirmed our a priori hypotheses that MBI would be associated with: an increased respiratory chain activity (e.g. a cluster of genes involved in the function of the respiratory chain, mitochondrial and oxidative phosphorylation, p<0.005); b) increased capacity to respond to oxidative stress (a cluster of genes with anti-oxidant capacity, p=0.04); c) reduced pro-inflammatory environment (e.g. a gene cluster coding for G protein-coupled receptors and regulators, IL-6, and receptors and regulators of IL-11 and IL-17; β=0.012; d) a cluster of genes coding for plasma membrane proteins and IL-25, p=0.04); e) reduced cell aging (a gene cluster coding proteins with increased anti-aging or anti-apoptotic functions, p=0.05); f) reduced stress response (a gene cluster involved in stress responses, p=0.05); and f) reduced NF-κB pathway activity (e.g. a
gene cluster affecting transcription factor activity, including NF-kappa-beta, p=0.04). We also found an increased expression of genes that may be central for attention and awareness, for mind-body communication, and immune system regulation (a gene cluster affecting cerebral cortex – telencephalon, and forebrain). The observed transcriptional expression patterns are implicated in coronary artery disease, neuropathological conditions, and in modifying responses to life events triggering major depression (a gene cluster associated with stress and fear responses, p=0.05). CONCLUSIONS: GEP can detect gene expression changes following MBIs, and could perhaps be used in the development and evaluation of interventions for patients groups where specific genetic anti-stress changes are desired. Strengths and pitfalls concerning the use of GEP in clinical studies will be discussed.

Abstract 1704

ASPECTS OF MINDFULNESS AND THEIR RELATIONSHIP WITH INFLAMMATION IN PRESYMPTOMATIC HEART FAILURE PATIENTS Meredith A. Pung, PhD, Psychiatry, University of California, San Diego, La Jolla, CA, Liane Tomfohr, PhD, Psychology, University of Calgary, Calgary, Alberta, Canada, Kathleen L. Wilson, MS, Laura S. Redwine, PhD, Kelly Chink, BA, Milagros Alvarez, Christopher Prutt, BS, Psychiatry, University of California, San Diego, La Jolla, CA, Navidad Ijbal, MD, Research Service, VA San Diego Healthcare System, La Jolla, CA, Fatima Ijbal, MD, Brian Knight, Kathleen Wachmann, PhD, Paul J. Mills, PhD, Psychology, University of California, San Diego, La Jolla, CA

Mindfulness is a multifaceted construct. Mindfulness-based interventions have been associated with improvements in mood and clinical symptoms in cardiac populations; yet, the mechanisms underlying these changes are not well understood. This study examined whether individual facets of mindfulness were associated with systemic inflammation in a sample of ACC/AHA presymptomatic Stage B heart failure patients. Facets of trait mindfulness ratings were examined using the Five Facet Mindfulness Questionnaire (FFMQ). Subscales of the FFMQ include describing, acting with awareness, nonjudgement of inner experiences and nonreactivity to inner experiences.

The sample consisted of 228 Stage B HF patients (72% white, 95% male) with a mean age of 66.6 years (SD = 10.5) and a mean BMI of 30.0 kg/m2 (SD = 4.8). A series of hierarchical regression equations were constructed in which long-term inflammatory markers (TFN-alpha, TNF-beta, IL-6) were the outcome variables. In the first block of the regression equation, we entered gender, age, education, and ethnicity in one block, followed by one of the FFMQ subscales in the second block. There was a significant inverse relationship between observe (β = -.161, SE = .01, t = -2.40, p < .05), and R2 change = .03) and IL-6 such that higher observe subscale scores were associated with lower IL-6. There were significant inverse relationships between the describe subscale and TNF-alpha (β = -.139, SE = .01, t = -2.10, p = .04, R2 change = .03), and observe subscale scores associated with lower levels of inflammation. No significant associations were detected between any of the inflammatory markers and the subscales acting with awareness, nonjudgement or nonreactivity. Higher trait levels of observing, defined as the act of noticing, or paying attention to internal (e.g., bodily sensations) and external (e.g., smell) stimuli and particularly describing, defined as labeling internal experiences with words, were associated with lower inflammatory markers; specifically IL-6, TNF-alpha, and SAA in this population. Future studies may wish to examine whether interventions that bring about improvement in these trait facets of mindfulness are associated with corresponding alterations in inflammatory markers in order to provide further evidence that these inflammatory pathways may serve one way in which mindfulness affects health-related changes.

Saturday, March 15 from 2:00 to 3:15 pm

Paper Session: Neuroscience

Abstract 1726

SYSTEMIC INFLAMMATION COVARIATES INVERSELY WITH BRAIN STRUCTURE AND ASSOCIATED COGNITIVE FUNCTION IN MIDLIFE ADULTS

Anna L. Marsland, Ph.D, Peter Gianaros, Ph.D., Leiyuan Sheu, Ph.D., Chieh-Hsin Kuan, MS, Kirk Erickson, Ph.D, Psychology, University of Pittsburgh, Pittsburgh, PA, Matthew Muldoon, MD, MPH, Department of Clinical Pharmacology, University of Pittsburgh School of Medicine, Pittsburgh, PA, Stephen Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA

Subclinical volume loss of the hippocampus and prefrontal cortex (PFC) across midlife precede age-related declines in memory and executive function and predict future risk for dementia. Animal findings suggest that peripheral inflammation contributes to this early brain atrophy by activating central inflammatory mechanisms that result in neurodegeneration. In the current study, we examine inflammation and its correlation with associations of plasma interleukin (IL)-6 and C-reactive protein (CRP), relatively stable markers of systemic inflammation, with global and regional measures of brain morphology and with cognitive function across 415 cognitively normal midlife adults aged 30-54 (47% male; 81% Caucasian; 16% African American). Participants underwent a structural neuroimaging protocol and completed neuropsychological tests sensitive to early changes in cognitive function. Brain volume measures were tested using Freesurfer. Higher peripheral inflammation (average of standardized IL-6 and CRP) was associated with reduced total gray and white matter volumes (r’s = -.15 and -.16, p’s < .002), total cortical surface area (r = -.17, p < .001), total hippocampal volume (r = -.12, p = .02) and volumes of medial and lateral orbital PFC regions (r’s = -.14 to -.17, p’s < .004), after controlling for age, sex, and intracranial volume (ICV). These associations withstood adjustment for race, education, physical activity, BP and smoking status. Inflammation covaried inversely with performance on cognitive tasks that engage the hippocampus (r = -.02, p < .005), and short-term memory (r = -.16, p = .002) and spatial reasoning (r = -.18, p < .001) and PFC (e.g., cognitive inhibition (r = -13, p = .02). These associations were independent of age, sex, race, ICV, education, BP, metabolic and lifestyle factors. Cross-sectional mediational models with age, sex and ICV as covariates showed that hippocampal volume was a significant mediator of associations between inflammation and verbal memory, and social withdrawal. IL-6 and TNF-alpha were significant mediators of associations between inflammation and short-term memory and spatial reasoning. Our findings raise the possibility that inflammation-related brain changes begin well before clinically-significant cognitive deficits, supporting the hypothesis that inflammation accelerates age-related cognitive decline in part via its influence on brain morphology. Supported by NII PO1 HD040692

Abstract 1423

NEURAL MECHANISMS UNDERLYING SOCIAL APPROACH AND WITHDRAWAL: THE ROLE OF INFLAMMATION

Tristen K. Inagaki, M.A., Psychology, University of California, Los Angeles, Los Angeles, California, Michael Irwin, M.D., Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, Naomi L. Eisenberger, PhD, Psychology, University of California, Los Angeles, Los Angeles, California

Inflammation, the body’s first defense against infection, has emerged as a critical mediator of mental and physical health. Interpersonal withdrawal in response to social threat may not only lead to a suite of physical symptoms (collectively known as sickness behavior), but also affects social behavior and perceptions of the social world. Thus, we have shown that experimentally inducing an inflammatory response increases feelings of social disconnection and that greater increases in inflammatory activity are associated with increased pain-related neural activity in response to rejection. In addition, we have previously explored the amygdala, a region related to threat detection, as a mechanism underlying social withdrawal behavior (Inagaki, Muscatell, Irwin, Cole, & Eisenberger, 2012). However, little is known about the effects of inflammation on perceptions of our loved ones. Whereas increased inflammatory activity may serve to distance strangers, we may actualize approach into those we are close to when we feel sick in order to obtain help and love. To examine the possibility that inflammation leads to greater social approach behavior toward our closest loved ones, participants were randomly assigned to receive either placebo or endotoxin, which safely mounts an inflammatory response. Pro-inflammatory cytokines were assessed at 7 hourly time points via blood draws. Two hours post-injection, we assessed an MRI scan to assess neural activity to pictures of a self-identified loved one. As hypothesized, endotoxin led to greater activity in affiliation-related regions (e.g. the ventral striatum) to pictures of a caring, trusted loved one vs. placebo and participants reported a greater desire to be around their loved one when under an inflammatory challenge. Furthermore, increases in the proinflammatory cytokine, IL6 (from baseline to after the scan), were associated with greater ventral striatum activity.

Abstract 1826

HEIGHTENED REGIONAL CEREBRAL BLOOD FLOW IN THE AMYGDAŁA COVARIATES WITH PRECLINICAL ATHEROSCLEROSIS

Bechukwu C. Oyenwenuyi, MSc, Lei K. Sheu, PhD, Peter J. Gianaros, PhD, Psychology, University of Pittsburgh, Pittsburgh, Pennsylvania

The amygdala is a brain system that underlies many functions, particularly those related to (a) processing emotionally-salient and threatening environmental information and (b) regulating aspects of peripheral physiology associated with risk for atherosclerotic cardiovascular disease (CVD). Recent work has shown that heightened amygdala reactivity to negative emotional stimuli covaries with greater intra-media thickness (IMT) in the carotid arteries, which is a presumptive and surrogate indicator of preclinical atherosclerosis that predicts clinical CVD events. It is not yet clear, however, whether resting metabolic activity within the amygdala might also covary with IMT. Accordingly, we tested for such an association among 155 middle-aged adults (mean age, 40.7 ± 6.2 years; 78 men) who underwent arterial spin labeling (ASL) to measure arterial blood flow in regional cerebral blood flow (CBF; an indirect measure of brain activity) within the amygdala area of interest. Mean IMT of the carotid vessel wall was assessed by B-mode ultrasonography. A partial correlation analysis demonstrated that individuals with heightened resting rCBF in the amygdala exhibited increased carotid IMT when controlling for age, sex, smoking status, mean inflammatory cytokine, total amygdala CBF, and amygdala grey matter volume (p = 0.18, p = 0.04). Additional adjustment for serum levels of interleukin-6 and C-reactive protein did not affect the above findings (p = 0.03), which suggests that factors other than these inflammatory markers might explain the relationship between carotid IMT and resting rCBF in the amygdala. Ancillary whole-brain (voxel-wise) analyses confirmed these findings, and indicated further that rCBF in the right amygdala was more strongly related to carotid IMT than to the left amygdala. Taken together, these results highlight the potential involvement or association of resting neural activity in the amygdala with preclinical atherosclerosis above and beyond potentially atherogenic physiological parameters. Future research is needed to elucidate the biological or behavioral factors potentially linking amygdala functionality to CVD risk.
REDUCED TALAMIC GRAY MATTER VOLUME IN PREHYPERTENSIVE VS. NORMOTENSIVE ADULTS

Ben Allen, PhD, Psychiatry, University of Pittsburgh, Wilkinsburg, PA - Pennsylvania; Richard Jennings, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania; Peter M. Gianaros, PhD, Psychology, Alicia Heim, BA, Psychiatry, Sean Wu, BS, Medicine, University of Pittsburgh, Pittsburgh, PA

Background: Postmortem and in vivo studies show hypertension is associated with differences in brain morphology. Relative to normotensive individuals, people with hypertension exhibit reduced gray matter volume in 9 specific regions. Significance: The present cross-sectional study compared these 9 regional gray matter volumes in normotensive and prehypertensive. The aim of this study was to determine whether prehypertensive exhibit differences in regional gray matter volume analogous to prior findings with hypertensives. Thus, these results may help to identify differences in brain morphology that are a precursor to those found with essential hypertension. Method: N = 191, mean age = 48 years. A Magnetization Prepared Rapid Acquisition Gradient Echo (MPRAGE) sequence was acquired in the axial plane (3 Tes, TE = 3.1ms, TR = 2100ms, TI = 1050ms, flip angle = 8 degrees, slice thickness = 1mm). Bilateral gray matter volumes were estimated from the MPRAGE using the Automated Labeling Procedure. Gray matter volumes were corrected for total cranial volume, derived from FreeSurfer. Results: Regression analyses indicated that systolic blood pressure was related to only 1 of 9 regional gray volumes. Similar to previous findings with hypertensives, mildly elevated systolic blood pressure (i.e., prehypertension) was associated with reduced thalamic gray matter volume (β = .166, t = −2.492, p = 0.014). Conclusion: The pattern of reduced regional gray matter volume associated with hypertension is emerging in individuals with prehypertension. Reduced gray matter in the thalamus may be an early indicator of changes in brain structure related to mildly elevated blood pressure.

Abstract 1805
A FRONTO-INSULAR BASED INTRINSIC BRAIN NETWORK IS ASSOCIATED WITH THE TELLEGAN ABSORPTION SCALE

Michelle P. Chen, MPH(c), Division of Digestive Diseases, Center for Neurobiology of Stress, University of California, Los Angeles, Los Angeles, CA, Susanna Walters, PhD, Center for Medical Image Science and Visualization, Matt Lowen, MD, Institution for Clinical & Experimental Medicine, Division of Gastroenterology, Linköping University, Linköping, Östergötland, Sweden, Jennifer Labus, PhD, Center for Neurobiology of Stress, Lisa Kilpatrick, PhD, Emeran Mayer, MD, PhD, Center for Neurobiology of Stress, David Geffen School of Medicine, Kirsten Tillisch, MD, Center for Neurobiology of Stress, David Geffen School of Medicine, Division of Digestive Diseases, University of California, Los Angeles, Los Angeles, CA

BACKGROUND: The Tellegan Absorption Scale (TAS) is a commonly used measure of the personality trait of absorption. The neural correlates of absorption are not known. In a sample of women with chronic visceral pain (irritable bowel syndrome), TAS showed a significant correlation to the functional connectivity of the fronto-insular network at 0, 28, 24 (T=3.41, Z=-3.79). This correlation was significant even after controlling for age and body mass index (BMI). AFRONT-INSULAR BASED INTRINSIC BRAIN NETWORK IS ASSOCIATED WITH THE TELLEGAN ABSORPTION SCALE

A-109

HIGH ANXIETY SENSITIVITY IS ASSOCIATED WITH POOR ADHERENCE TO BLOOD PRESSURE MEDICATIONS IN PATIENTS WITH UNCONTROLLED HYPERTENSION

Carmela Alcantara, Ph.D., Donald E. Edmondson, Ph.D., Nathalie Moise, M.D., Ian M. Kronish, M.D., Medicine, Columbia University Medical Center, New York, NY

Background: Anxiety sensitivity—fear of the negative social, physical, or psychological consequences of anxiety-related sensations—has been linked to increased incidence and morbidity from cardiovascular disease (CVD). Patients with high anxiety sensitivity may have increased anxiety due to perceived medication effects, which in turn, may lead to worse medication adherence. Thus, medication non-adherence may account for the association of anxiety sensitivity with CVD. Objectives: To examine whether anxiety sensitivity is independently associated with objectively measured medication non-adherence in a multi-ethnic sample of primary care patients. Methods: Eighty-eight patients with uncontrolled hypertension (BP≥140/90 on 2 consecutive clinic visits, prescribed ≥1 BP medication) completed the Anxiety Sensitivity Index (ASI) and had their adherence to BP medications measured using an electronic pillbox (MedSignals®) during the interval between 2 subsequent primary care visits. Total ASI scores were dichotomized into high (ASI ≥ 36) and low (ASI <36) anxiety sensitivity categories. Patients were categorized as non-adherent if mean adherence to their BP medications was <80%. Multivariable logistic regression was used to determine whether anxiety sensitivity was associated with objectively measured medication non-adherence, independent of age, gender, ethnicity, number of blood pressure medications, and depressive symptoms. Results:
Nearly twice as many patients with high anxiety sensitivity were non-adherent to BP medications compared to patients with low anxiety sensitivity (65.0% vs 36.8%; p=0.03). Patients with high anxiety sensitivity also had higher odds of medication non-adherence than their low anxiety sensitivity counterparts in models (adjusted odds ratio (OR) = 3.29; 95% CI: 1.05 -10.22) that adjusted for demographics and number of blood pressure medications. High anxiety sensitivity remained significantly associated with poor adherence even after further adjustment for depressive symptoms (AOR=4.31; 95% CI:1.27-14.59). Discussion: In this first study of the association between anxiety sensitivity and medication adherence, we found that high anxiety sensitivity was strongly associated with BP medication non-adherence, even after adjustment for known confounders. Our results suggest that teaching patients adaptive strategies to manage their anxiety sensitivity might help them improve their medication adherence, and thereby lower their cardiovascular risk.

291) Abstract 1851
WEIGHT LOSS INTENTION AND BODY COMPOSITION IN HISPANIC ADOLESCENTS: ASSOCIATIONS WITH SELF-RAI TED HEALTH
Marissa D. Alert, AB, Erin N. Etzel, MS, Patrice G. Saah, PhD, Judith R. McColla, PhD, Psychology, University of Miami, Coral Gables, FL, Judy Brown, PhD, Education, Miami Science Museum, Miami, FL
The association of self-rated health (SRH) with body mass index (BMI) and other health indices have been documented. Yet little is known about how SRH relates to other measures of body composition, waist size perception, and weight loss intention among Hispanic youth. This study explored whether body fat percent, waist circumference (WC), BMI, waist size perception, and weight loss intention varied as a function of SRH in Hispanic adolescents.
Participants were 282 Hispanic youth (mean age = 17.6, SD = 56; 55.3% girls). SRH response options were collapsed into three categories: excellent/very good (30.2%), good (37.4%), and fair/poor (32.4%). BMI (M = 23.8, SD = 4.6), body fat percent (M = 21.5, SD = 9.7), and WC (M = 72.2 cm, SD = 4.6) were measured. In addition, self-reports of weight loss intention (trying to lose weight: yes/no), waist size perception (consider self fat around the waist: yes/no), parental education (M = 14.6 yrs; SD = 3.1), and lifestyle habits (physical activity and sedentary time, sport team participation) were obtained. ANCOVAs (sex by SRH) were conducted to assess the differences in body fat percent, BMI, and WC (covariates: lifestyle habits, parental education). Logistic regression was used to examine the association of SRH with waist perception and weight intention (covariates: sex, BMI, lifestyle habits, WC, parental education).
51.4% of the sample were trying to lose weight and 57.1% considered themselves fat around the waist. Body fat percent (F(2, 252) = 11.3, p < .001), BMI (F(2, 252) = 10.3, p < .001), and WC (F(2, 252) = 5.8, p < .05) varied by SRH, with body fat percent, BMI, and WC increasing with lower health ratings. Boys had a lower body fat percent, and higher BMI and WC than girls (ps < .001). Compared to those with excellent/very good SRH, those with good (OR = 2.4, 95% CI = 1.0 – 5.4, p = .04) and poor/fair (OR = 4.2, 95% CI = 1.4 – 12.4, p = .01) SRH were more likely to report being fat around the waist. Also, those with poor/fair SRH were more likely to report that they were trying to lose weight (OR = 3.7, 95% CI = 1.2 – 11.7, p = .03) compared to those with excellent/very good SRH. These results indicate that Hispanic youth with better SRH have lower WC, BMI, and body fat percent. The association of SRH with weight loss intention and indices of measured and perceived body size underscores the ability of a simple rating of health to provide objective and subjective aspects of health. More research is needed, however, to establish whether SRH could serve as an indicator of weight related intentions and perceptions in non-Hispanic adolescents and those of lower socioeconomic status.

292) Abstract 1828
SHYNESY IS RELATED TO LOWER LIFE SATISFACTION, DEPRESSED MOOD, SOCIAL ANXIETY, AND REPORTED ASTHMA AND PANIC ATTACKS
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Background: Shyness is characterized by anxiety and behavioral inhibition in social interactions resulting from fears of interpersonal evaluation. This study examined relationships between trait shyness, self-reported health, social anxiety, and well-being in a comparable, female, adolescent sample. We hypothesized that higher shyness and social anxiety may be predisposed to even greater anxiety in interpersonal situations, the study also evaluated the effects of shyness in combination with sociability.
Method: Participants were 410 female students (mean age = 24 years) from a women’s college in Northern California. They completed the Cheek and Buss Shyness and Sociability scales (CBSS), Satisfaction With Life Scale (SWLS), Multidimensional Scale of Perceived Social Support (MSPSS), Perceived Stress Scale (PSS), Beck Depression Inventory-II (BDI-II), Social Phobia Inventory (SPIN), and a list of health problems including panic attacks, headaches, and GI problems.
Results: Multiple regression analysis revealed that shyness predicted higher levels of perceived stress and depressed mood, and lower life satisfaction, after adjusting for demographic variables and social support (p’s < .03). Shyness remained an independent predictor of lower life satisfaction after adjusting for both social support and depressed mood (change R² = .017, p = .028). Shyness in combination with sociability predicted higher social phobia scores (change R² = .008 p = .018). To examine associations between shyness and health outcomes, individuals scoring in the highest 25% of the distribution on shyness (High Shy individuals, mean shyness = 50.38) were compared with those scoring in the lowest 25% of the distribution (Low Shy individuals, mean shyness = 24.31). The High Shy group reported a higher frequency of medically diagnosed asthma (28.7%) than did the Low Shy group (19.5%, p<.001). This group was also more likely to report a history of more than one panic attack (49% in High Shy group vs. 37.5% in Low Shy group) [X² = 4.07, df= 1, p = .045]. The groups did not differ in reported headaches or GI problems.
Conclusions: Although shyness is considered a heterogeneous trait, these results suggest that it is more than benign. Shyness was associated with higher depressed mood and perceived stress, as well as lower life satisfaction, even after controlling for social factors, medication use, and social support. Individuals who were both high shy and socially had higher social phobia scores. Individuals with extreme shyness may be at greater risk for panic attacks and atopic disorders, such as asthma. These results are consistent with other research relating anxiety and stress to asthma, and extend these findings to young women who are extremely shy.

293) Abstract 1695
FREQUENT SOCIAL INTERACTIONS IN DAILY LIFE ARE ASSOCIATED WITH REDUCED SYSTEMIC INFLAMMATION IN HEALTHY ADULTS
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Objective: Social integration is hypothesized to be associated with reduced systemic inflammation, but results are inconsistent. We examined whether direct measures of daily social interactions using ecological momentary assessment (EMA) may demonstrate more consistent findings.
Methods: Two samples were used for these analyses. The first included middle-aged adults (N=467, 30-55 years of age, 53% females, 16% African Americans) from the Adult Health and Behavior (AHAB) study. The second sample included mid to older adults (N=325, 50-70 years of age, 50.9% female, 18.1% African Americans) from the Pittsburgh Healthy Heart Project (PHHP). In each study, participants completed an electronic diary that time-sampled social interactions throughout the waking day for 4 (AHAB) - 6 (PHHP) days. Assessments included Likert-scaled ratings of the number, type, and duration of social interactions in the past hour, and the type of interaction partner. Social interaction frequency was scored as the proportion of observations during which subjects reported being in a current or recent (past 10 min) social interaction at the time of each prompt. Inflammatory markers (circulating IL-6 and CRP) were collected once in each study during a fasting blood draw during the morning hours. CRF values above 10 mg/L were eliminated, due to the assumption of acute infection. Inflammatory markers were log transformed. Exclusionary criteria for each study included the use of steroid medications, chronic inflammatory disease, and other chronic medical conditions. All analyses adjusted for age, sex, race, education, and BMI.
Results: More frequent daily social interactions were associated with lower plasma CRP (B=-1.64, p<.05) and more frequent interactions with close relations (spouses, friends, family, confidants) were associated with lower IL-6 (B=-0.56, p<.05) in the AHAB sample. These findings were replicated in the PHHP sample, where more frequent social interactions were associated with lower IL-6 (B=-0.34 p=.046), as were more frequent interactions with close relations (B=-0.34 p=.02). No associations were found in regards to CRP in PHHP.
Conclusions: More frequent social interactions with members of one’s social network is associated with reduced systemic inflammation in two middle-aged adult samples. EMA may be a particularly useful tool for capturing social processes that are associated with salutary biological effects. The mechanisms accounting for these associations remain to be determined.
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294) Abstract 1210
RECENT TRAUMATIC EVENTS MAY COMPLICATE ADJUSTMENT TO GYNECOLOGIC CANCER
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Objective: Post-traumatic stress disorder (PTSD) may intensify traumatic stress effects on diagnosis of both psychological and physiological adjustment to illness. Among women with gynecologic cancer we investigated psychobiological correlates of childhood versus recent life trauma, with a focus on physiological measures of chronic stress: circadian disruption and allostatic load. Women within five years of diagnosis (median age = 59 (26-92 years), median education = 12 years) were randomly selected from the Adult Health and Behavior (AHAB) study. Including women with a diagnosis of ovarian (n=21) or endometrial (n=24) cancer provided retrospective reports of childhood and recent trauma (TES), cancer-specific distress (IES), perceived stress (PSS), psychopathology (BDI, POMS), and health behavior (NCI FVS, BRFSS-E). We assessed diurnal salivary cortisol rhythms and calculated an allostatic load summary score using 10 indices including serum cortisol, DHEA, urinary catecholamines, glycosylated hemoglobin, cholesterol, blood pressure and...
waist circumference. Hierarchical regressions adjusting for age, cancer stage and type were used to examine childhood trauma versus recent trauma as predictors of distress, psychopathology, circadian disruption, allostatic load, and health behavior. Childhood trauma was not significantly associated with any outcomes. Frequently reported sources of recent trauma were a) being injured during sports or other activities, b) physical or emotional abuse, and c) personal or familial illness. Women with severe recent trauma reported more cancer-specific distress (r=3.6, p=.016), perceived stress (r=.57, p<.001), and psychopathology (POMS, r=.60, p<.001; BDHI, r=41, p=.006). Recent trauma was not significantly related to physiological variables. Regarding health behavior, women reporting severe recent trauma used more caffeine (r=41, p=.01). Recent trauma was linked to distress and psychopathology, but not physiological stress responses, pointing to a cumulative psychological burden from recent traumatic events coupled with a cancer diagnosis and treatment. Clinical evaluation of distress in recently diagnosed cancer patients is important, and the potential for increased burden imposed by recent trauma should not be neglected.

295) Abstract 1812

INDIVIDUAL DIFFERENCES IN EMOTIONAL AND PHYSIOLOGICAL RESPONSES TO AESTHETIC STIMULI: PERSONALITY, SLEEP QUALITY, AND RESTING RESPIRATORY SINUS ARRHITHMIA

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Prior research has demonstrated that the personality factor Openness to Experience, particularly the Aesthetics facet, is associated with stress resilience. Because aesthetic chill (goosebump) responses are thought to be a marker of Openness, examination of emotional and physiological responses to aesthetic stimuli may shed light on the mechanisms for associations with stress regulation. The current study examined individual differences in affective and physiological responses to an aesthetic film clip (3D Grand Canyon scene) selected to induce aesthetic chill responses and a sense of awe—the hypothesized emotional correlate. Participants were healthy young adults (N = 250; 60% female, 80.2% white, mean age >22.9). Measures included the NEO-FFI to measure five-factor model personality, the Pittsburgh Sleep Quality Index, and a modified version of the Differential Emotions Scale (DES) for affect ratings. Participants were fitted with electrodes to measure cardiac psychophysiology. Resting respiratory sinus arrhythmia (RSA) was calculated from high-frequency heart rate variability after a baseline of 5 min resting baseline. Participants rated positive and negative affect and awe in response to the film clip. Controlling for pre-clip baseline affect ratings, regressions revealed that Openness predicted positive affect, β = .19, p = .001, negative affect, β = -.13, p = .04, and ratings of awe, β = .22, p < .001, in response to the clip. Agreeableness was also associated with awe in response to the clip, β = .19, p < .001. Recent sleep RSA was associated with higher ratings of awe, β = .25 and -.16, respectively, p < .05, but did not predict positive affect or awe response, ps > .05. Consistent with prediction, both the Aesthetics facet and awe ratings were associated with a self-reported goosebump response, ps < .05. Current findings confirm that emotional responses to aesthetic stimuli are primarily predicted by Openness, building on prior research demonstrating that propensity for positive aesthetic experiences confers stress resilience. Specifically, examining affective and physiological responses to aesthetic stimuli that are novel and cognitively challenging may inform our understanding of stress resilience. Findings also demonstrate that depletion (poor sleep quality or poor parasympathetic nervous system functioning) is associated with negative, but not positive emotional experiences to aesthetic stimuli, suggesting implications for understanding stress restoration.

296) Abstract 1388

NON-COMPACTION CARDIOMYOPATHY AS RELATED TO ANXIETY AND DEPRESSION: THE ROLE OF SYMPTOM BURDEN AND GENETIC VULNERABILITY

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Background: Non-compaction cardiomyopathy (NCCM) is associated with physical disease burden; a genetic cause is fortunately uncommon. It is characterized by myocardial hypokinesis combined with a two-layered cardiac structure with a thick noncompacted endocardium and a thin compacted epicardium and deep intertrabecular recesses. The estimated prevalence of NCCM ranges from 4.5 to 26/10,000 adult patients referred for echocardiography. The clinical diagnosis of NCCM is often poor because of progressive left ventricular dysfunction, heart failure, embolic events and life threatening cardiac arrhythmias; the 5-year mortality rate varies between 10%-50%. Because of the symptom burden, the genetic susceptibility and the poor prognosis, the present study examined the presence of anxiety and depression in NCCM and evaluated the extent to which NCCM-related symptom burden versus genetic predisposition contribute to anxiety and depression in NCCM patients. Methods: NCCM patients (N=45, mean age 46.7±15.1 yrs, 38% male) were compared with two age-and sex-matched control groups: (1) patients with familial hypercholesterolemia based on genetic diagnosis (FH: N=43), and (2) patients with idiopathic dilated cardiomyopathy without an identified genetic cause (DCM: N=42). Anxiety was assessed using the Generalized Anxiety Disorder 7-item scale (GAD-7) and depression with the Patient Health Questionnaire 9-item scale (PHQ-9). Results: NCCM patients displayed significantly elevated levels of anxiety (4.6±0.6 vs. 1.9±0.6; F(1,82)=9.63, p=.003) and depression scores (5.2±0.7 vs. 3.0±0.6; F(1,82)=5.4, p=.023) compared to FH patients. These differences remained significant for anxiety after adjusting age, sex, educational level, co-morbidities and cardiac symptoms (P<.001), whereas adjusted findings for depression were non-significant (P=0.20). NCCM patients with minimal or no cardiac symptoms (NYHA class I; N=25/45) also differed from (asymptomatic) FH patients on anxiety (3.8±0.7 vs. 1.9±0.5; F=5.33, p=.02) but not depression (3.9±0.7 vs. 3.0±0.5; F=1.24, p=.27). NCCM patients did not differ from DCM patients regarding anxiety (4.5±0.8 vs. 5.2±0.9; F(1,82)=1.16, p=.28) or depression (5.2±0.8 vs. 6.9±0.9; F(1,82)=1.95, p=.17). Conclusions: Patients with NCCM display elevated anxiety and depression levels compared to patients with familial hypercholesterolemia. NCCM was significantly associated with elevated anxiety levels in multivariable models and when restricting the analyses to those with minimal cardiac symptoms. No differences in anxiety or depression were found between NCCM versus the control group with idiopathic dilated cardiomyopathy. Although, cardiovascular disease, rather than genetic vulnerability, appear to be a primary contributing factor in anxiety and depression symptoms in NCCM. This research was supported in part by a grant (91710393: VIDI) from the Netherlands Organization for Health Research and Development (ZonMw), The Hague, the Netherlands (Dr. Susanne S. Pedersen).

297) Abstract 1657

SOCIAL CONSTRAINTS AND EMOTIONAL PROCESSING AS UNIQUE CORRELATES OF HEALTH STATUS IN WOMEN WITH CHRONIC PELVIC PAIN

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Providers working with women with chronic pelvic pain (CPP) routinely assess depression, anxiety, and pain catastrophizing, which correlate with health status (pain, other symptoms, disability). However, novel psychosocial constructs, such as social constraints (perceived inability to discuss problems with others) and poor emotional processing ability (e.g., suppressing, avoiding), may also be important in explaining health status, particularly if they predict beyond the routine measures. We studied 134 women (age M=46.82) at an initial visit to a multidisciplinary center for the management of CPP. Patients completed measures of depression (PHQ-8), anxiety (GAD -7), catastrophizing (Pain Catastrophizing Scale), and two novel psychosocial constructs: social constraints (General Social Constraints Scale) and poor emotional processing (Emotional Processing Scale). Three health variables were assessed: pain severity and physical disability (Brief Pain Inventory) and pelvic floor symptom distress (Pelvic Floor Distress Inventory-20). As expected, depression, anxiety and catastrophizing were significantly related to poorer health on all three measures (r’s from .20 to .67, p < .05). Zero-order correlations revealed that social constraints were significantly (p < .001) and positively related to poorer health on all three variables (r’s from .31 to .39), and a lack of emotional processing was also significantly (p <.01) related to poorer health status (r’s from .20 to .32). Multiple regressions, simultaneously covarying depression, anxiety, and catastrophizing indicated that social constraints remained significantly related to pain severity (β = .24) and marginally related to pelvic floor symptom distress (β = .17), although not disability (β = .09). Poor emotional processing, however, was no longer a significant correlate of health. We conclude that social constraints are uniquely important in understanding the health status of women with CPP, perhaps because of the private nature of this condition. However, it is also the case that self-report measures, as used in the current study, cannot fully capture emotional processing styles, and objective measures may have revealed different results.

298) Abstract 1622

CONCEIVED VS EVOKED PTSD SYMPTOMS IN A 17-YEAR-OLD BOY

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Introduction: Sports-related concussions (also known as mild traumatic brain injury or mild traumatic brain injury (mTBI)) and their sequelae are now well recognized. They are filed against the NFL by retired players, many of whom report suffering from chronic depression from these injuries. With so much scrutiny focused on these elite athletes, it is easy to overlook the fact that dangerous sports are played at all age levels. Little is known about the frequency and the psychiatric effects of concussions in younger athletes.

Case presentation: The psychiatric, psychosocial, and medical history of this child is described. He experienced a traumatic event at age 14, when he witnessed the unsuccessful attempt to resuscitate a dying man. The temporal relationship will be examined between the initial traumatic event, the football concussions, and the onset of symptoms. He experienced a range of symptoms including poor concentration, fluctuating mood, disrupted sleep, and visual hallucinations. The differential diagnosis will be explored, and the ensuing treatment, which consisted of several sessions of psychotherapy, will be described.

Discussion: A review of the literature reveals no previously reported cases of concussion-induced activation of PTSD from an earlier and unrelated traumatic experience. We postulate two possible biological mechanisms that could explain this
phenomenon. First, concussions and PTSD both involve the anterior cingulate and medial frontal gyri in the frontal lobes, as well as the hippocampus. Second, there is possible shared endocrine dysfunction in PTSD and TBI: namely, alteration in the hypothalamic-pituitary-adrenal axis. These shared biological phenomena might theoretically explain how a concussion might enable full-blown PTSD symptoms to emerge.

Conclusion: Concussions in young athletes is a topic that has recently garnered attention in the medical literature and print media. Given the tradition of machismo and in some sports, many concussions are likely unreported and may never come to the immediate attention of a health care provider. This case serves to remind mental health and primary care providers alike that psychiatric symptoms may, in fact, be the presenting complaint of a concussion-related syndrome. Future research directions are needed.


302) Abstract 1803

DIFFERENT DIMENSIONS OF PERFECTIONISM AND STRESS REACTIVITY TO A PSYCHOSOCIAL STRESSOR
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Personality variables, including perfectionism (PF), have been found to be moderately correlated to a social-evaluative laboratory stress task (TSST). PF also plays a significant role in clinical diagnoses where fear of evaluation is a focal concern. Previous research examining the relationship between PF and cortisol measured PF as a unidimensional construct, but most researchers now view PF as multidimensional. Hewitt and Flett (2004) propose three main dimensions of PF: self-oriented perfectionism (SOP), other-oriented perfectionism (OOP), and other-directed perfectionism (OOP). In the current study, perfectionism is a focal concern. Participants were 54 college students (45 female, 9 male) with a high probability of success in clinical practice (baseline SBP and heart rate, a larger difference between office BP and out of office BP (white coat effect) and sleep disturbance) and each predicted success with device-guided breathing. Adding psychosocial measures such as rumination, hostility, and some level of motivation (less confidence in diet and exercise to control BP) appear to improve the ability to predict decreases in SBP. If replicated with a larger sample, such patterns may help select patients who have a high probability of success in stress-reduction interventions such as device-guided breathing to reduce BP.
303) Abstract 1624

ANTIDEPRESSANT ADHERENCE AND RISK OF CORONARY ARTERY DISEASE HOSPITALIZATIONS AMONG OLDER AND YOUNGER VETERANS WITH DEPRESSION

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OBJECTIVE: The relationship between antidepressant adherence and cardiovascular outcomes may differ by age, given that older adults often have greater antidepressant adherence than younger adults. Greater antidepressant adherence has been associated with greater adherence to medications used in treating risk factors for coronary artery disease (CAD). This study assessed whether the relationship between antidepressant adherence with CAD hospitalizations varied between older and younger patients with depression. DESIGN: Retrospective cohort study SETTING: Department of Veterans Affairs outpatient clinics nationwide STUDY DESIGN: Participants: Patients (n=61,546; ages 20-97 years old) with an outpatient clinic visit for depression (index depression visit) during fiscal years 2009 and 2010 were identified as chronically depressed, if they had prior depression visits and depression treatment within the previous four months (per medical records). Patients were stratified by age into younger (<65 years old) and older (≥65 years old) groups. MEASUREMENTS: After the index depression visit, medication possession ratios were calculated from pharmacy refill data to determine adherence to antidepressant refills during a 6-month treatment observation period. Patients with ≥80% adherence were considered adherent to antidepressant refills. ICD-9 codes were used to derive CAD-related inpatient hospitalizations during the follow-up period. Mean follow-up was 24 months. RESULTS: Cox proportional hazard models indicated that the interaction of adherence and age group was significant for CAD hospitalizations (p<.05). Age-stratified analyses revealed that older patients who had antidepressant adherence showed a 26% reduction in risk of CAD hospitalizations (HR: 0.74, 95%CI: 0.59, 0.92). CONCLUSION: Antidepressant adherence was associated with reduced risk of CAD hospitalizations only among older depressed patients. Results suggest that clinical efforts to increase antidepressant adherence may be especially beneficial to older patients in terms of CAD hospitalizations.

304) Abstract 1671

IMPACT OF MINDFULNESS MEDITATION ON ACUTE STRESS RESPONSE IN BREAST CANCER SURVIVORS

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Objective: Children diagnosed with early stage breast cancer are at risk for depression, behavior problems, and poor quality of life. Exercise has improved mood and self-worth in several studies of adults and children. However, few studies utilized an attention control condition, or reported quality of life. Thus, we tested the effects of a mindfulness meditation intervention on acute stress reactivity and quality of life in children. Method: Participants were 71 children previously diagnosed with early stage breast cancer. All had completed cancer treatment and had no evidence of active disease. Children were randomly assigned to a 6-week mindfulness meditation intervention consisting of one 2-hour mindfulness session per week (n=39), or wait-list control (n=32). Post-intervention, participants completed an anxiety induction task and the Cancer Stress Stroop, which assessed attentional biases towards cancer-related threatening words. Emotional and cardiovascular responses to the two tasks were captured at baseline, post-task, and after a 12 minute recovery period. Cardiovascular responses included heart rate, systolic and diastolic blood pressure (SBP and DBP). Results: Children assigned to the mindfulness group showed a nonsignificant trend of reduced heart rate (p=0.1) and improved trait anxiety at post-intervention, as compared to controls. CONCLUSION: Children assigned to the mindfulness group showed a nonsignificant trend of reduced heart rate and improved trait anxiety at post-intervention, as compared to controls. Future studies should implement a randomized control condition to test the effect of mindfulness meditation on acute stress reactivity and quality of life in children with early stage breast cancer.

305) Abstract 1675

EFFECTS OF REGULAR EXERCISE VS SEDENTARY AFTER SCHOOL PROGRAM ON MOOD AND QUALITY OF LIFE OF OVERWEIGHT CHILDREN

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Overweight children are at risk for depression, behavior problems, and poor quality of life. Exercise has improved mood and self-worth in several studies of adults and children. However, few studies utilized an attention control condition, or reported quality of life. Thus, we tested the effects of a mindfulness meditation intervention on acute stress reactivity and quality of life in children. Method: Participants were 71 children previously diagnosed with early stage breast cancer. All had completed cancer treatment and had no evidence of active disease. Children were randomly assigned to a 6-week mindfulness meditation intervention consisting of one 2-hour mindfulness session per week (n=39), or wait-list control (n=32). Post-intervention, participants completed an anxiety induction task and the Cancer Stress Stroop, which assessed attentional biases towards cancer-related threatening words. Emotional and cardiovascular responses to the two tasks were captured at baseline, post-task, and after a 12 minute recovery period. Cardiovascular responses included heart rate, systolic and diastolic blood pressure (SBP and DBP). Results: Children assigned to the mindfulness group showed a nonsignificant trend of reduced heart rate (p=0.1) and improved trait anxiety at post-intervention, as compared to controls. CONCLUSION: Children assigned to the mindfulness group showed a nonsignificant trend of reduced heart rate and improved trait anxiety at post-intervention, as compared to controls. Future studies should implement a randomized control condition to test the effect of mindfulness meditation on acute stress reactivity and quality of life in children with early stage breast cancer.
that chronic pain patients - due to the inherent visibility of the symptoms and lack of pathological cause - may often encounter is invalidation. Invalidation refers to the lack of understanding and discounting of one's symptoms by others (Kool et al., 2010). As the neural systems that underlie the distress accompanying social rejection and physical pain overlap (Eisenberger et al., 2003), the invalidation of one's complaints may intensify the experience of pain in chronic pain patients. Therefore, we investigated whether the perceived invalidation of one's complaints intensified pain sensation in patients with chronic back pain. In addition, as invalidation by someone whom one values highly is more likely to have a bigger impact, we expected that the effect of invalidation on pain experience was moderated by the importance of the source of the invalidation to the patient. Methods: Seventy participants with nonspecific chronic back pain (> 12 months) completed a questionnaire assessing perceived invalidation (3* I, Kool et al., 2010) by each of five sources (spouse, family, medical professionals, work environment) and one rating of condition scale as well. T-tests, univariate and repeated measures ANOVA were utilized. PACs are often recruited in recognition of familiar items, in response to negative compared to neutral feedback (threshold p<.005, 20 voxels); the HC group showed a negative association between these variables. In the HC group, greater change in anticipatory alpha amylase and increase in the right middle temporal gyrus, an area often recruited in recognition of familiar items, in response to negative compared to neutral feedback (threshold p<.005, 20 voxels); the HC group showed a negative association between these variables. In the HC group, greater change in anticipatory alpha amylase was associated with greater recruitment of the left dorsolateral prefrontal cortex (DLPFC), an area involved in emotion regulation and memory retrieval, in response to positive compared to neutral feedback (threshold p<.005, 20 voxels); the PD group showed a negative association. These preliminary results suggest that, in persons vulnerable for depression, there is a coupling between sympathetic nervous system reactivity in anticipation of social evaluation and feelings of guilt and shame following the evaluation, as well as a recruitment of brain regions implicated in processing socially evaluative feedback.

310) Abstract 1706
TAI CHI CHIH AND AUGMENTATION OF EEG SPECTRAL ANALYTIC ALPHA AND THETA POWER: A RANDOMIZED CONTROLLED TRIAL IN OLDER ADULTS
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BACKGROUND: Increasingly, Tai Chi practice is becoming recognized as a form of biopsychosocial therapy in medical contexts, showing improvements in immune function, cardiovascular health, as well as stress reduction, mood enhancement, and a host of cognitive capacities including attention and memory. However, the mechanisms responsible for many of these comprehensive health benefits—which appear to be independent of physical exercise—are not well-understood. The aim of
the present study was to identify possible neurophysiological patterns associated with 16 weeks of Tai Chi Chih training and determine whether baseline changes in alpha and theta rhythms were consistent with other investigations on meditation using EEG.

METHOD: A total of 123 subjects, randomly assigned to one of three intervention groups, underwent two 10-minute wakeful EEG baseline recordings before and after 16 consecutive weeks of instruction in Tai Chi Chih (TCC), cognitive behavioral therapy (CBT), or education control (EC). Mean power density values were obtained in microvolts squared per octave (μV²) for standard alpha (7.5-12.0 Hz) and theta (4.0-7.5 Hz) bands at rest and during a mental arithmetic task. Repeated-measures, mixed model ANOVAs were performed on usable spectral data.

RESULTS: Non-significant trends were found in the interaction between group and time for alpha power between TCC and CBT at p = .079 such that TCC alpha power increased at posttest. Additionally, increased theta power was observed at posttest between TCC and CBT p = .050 and CBT and EC p = .050 and CBT and EC p = .050. CONCLUSION: Across all results, the TCC group saw increases in band power, supporting the notion that meditation-based practice has a stimulating effect on alpha and theta output. Our results confirm previous published research that shows increases in alpha and theta power associated with alternate forms of meditation.

311) Abstract 1758
SELF-COMPASSION IS ASSOCIATED WITH EMOTIONAL STRESS AND PERCEIVED HEALTH-RELATED FUNCTIONING IN VETERANS
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Self-compassion, which involves extending kindness and understanding towards oneself, may be closely related to previous interpersonal experiences. Recent research suggests that self-compassion, by increasing self-care behaviors and reducing negative affect and stress, may enhance functional well-being. In the present study, we explore the mechanisms through which self-compassion may be associated with previous emotional trauma and current physical health. Self-report assessments were administered at baseline (n = 250) and one-year follow-up (n = 107) to Veterans with PTSD symptoms who served in operations in Iraq and Afghanistan. Self-compassion was assessed only at the follow-up time point. Self-compassion was markedly lower in this sample (M = 26.6, SD = 6.7) relative to civilian populations (M = 18.26, SD = 3.99), with Veterans reporting higher self-judgment and isolation and lower self-kindness. Higher mean self-compassion scores were significantly associated with fewer symptoms of childhood trauma (r = .389, p = .001; r = .326, p = .001, respectively) but was not significantly related to physical or sexual childhood abuse or combat exposure. The relationship of self-compassion to both engagement in negative health behaviors and to health-related functional outcomes were examined. Engagement in negative health behaviors was significantly related to higher self-judgment (r = .220, p = .02), but was unrelated to the other self-compassion subscales. Self-compassion was not associated with self-reported physical capabilities; rather, it was associated with beliefs and behaviors related to the perceived impact of health problems on ability to engage in tasks (role limitations, r = .326, p = .001) and on health-related quality of life (r = .389, p = .001). These findings suggest that emotional forms of trauma and abuse may have an impact on one’s ability to experience self-compassion. Moreover, markedly lower self-compassion in this sample may also be related to stigma towards perceived weakness or disability which may lead to a tendency towards self-criticism and judgment. In turn, these factors may contribute to engagement in negative health behaviors and lower perceptions of health-related quality of life. Meditational analyses exploring the relationship between childhood and deployment related stressors and outcomes as mediated by self-compassion variables will be further explored.

312) Abstract 1736
SOCIAL SUPPORT AS AN ENCOURAGEMENT: TURNING A THREAT APPRAISAL INTO A CHALLENGE PHYSIOLOGICAL RESPONSE PATTERN
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Many stressors are intermittent. Our reactions to prior stressors and the events between stressors can impact how we respond to the following stressor. This study aimed to test the hypothesis that the presence or absence of social support between stressors would moderate an association between first task threat/challenge appraisal and second task stress/health appraisal. We assessed first task appraisal by computing a threat-challenge appraisal ratio (TCR) in which higher scores indicated a stronger threat appraisal. We found significant social support by task 1 TCR interaction effects on prejection period (PEP), F(1, 32) = 9.74, p = .004, partial eta² = .23, and cardiac output (CO) reactivities, F(1, 32) = 4.64, p = .04, partial eta² = .13. Consistent with our hypothesis, when people perceived the first task to be more threatening (i.e., higher TCR), relative to the nonsupport condition, social support lead to significantly greater decrease in PEP (b = -10.47, p = .002) and increased CO reactivity (b = 2347.83, p = .012), a physiological challenge response (Blascovich, Mendes, Hunter, & Salomon, 1999). When the first task was considered more of a challenge, social support had no effect on PEP (b = 3.94, p = .262) and CO reactivity (b = -531.37, p = .606). These findings suggest that participants who appraised the first task as threatening were encouraged by social support after the first task to respond to the second task as a challenge. Therefore, social support between stressors may encourage challenge responses and attenuate harmful threat responses in subsequent stressors.

313) Abstract 1766
SUBLIMINALLY PRIMING HEALTHY EATING: A PRELIMINARY INVESTIGATION
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Obesity contributes to a wide array of health risks, including heart disease, stroke, and diabetes. Unhealthy diet (including both overeating and unhealthy eating) is the leading contributor to obesity. As interventions to improve diet are challenging to implement, innovative approaches to address this effort could prove valuable. Therefore, the current study tested a subliminal priming intervention designed to influence eating behavior in a real-life context.

Healthy undergraduates (N=25) who owned smartphones participated in the study and installed an application on their phone that administered the experimental procedures. On each of four consecutive days, participants were prompted (via text message) approximately 30 minutes before their evening meal and after they had eaten their evening meal (based on timing they provided in advance). The first prompt initiated a one-minute procedure, ostensibly a perceptual task, during which participants rapidly categorized a series of images. Unbeknownst to participants, while completing the task they were subliminally (17ms) exposed to either a set of images of people exercising (e.g., cycling, yoga) or a set of abstract images. The second prompt asked participants to report how much food they ate for dinner (on a slider anchored at “very little food” and “a lot of food”), and how healthy the food was (on a slider anchored at “very unhealthy” and “very healthy”). During the four-day study period, participants received each image set twice; reported health and quantity of meals were averaged across the two reports following the administration of each image set. A paired-samples t-test revealed a nonsignificant trend: participants reported eating slightly healthier food after exposure to the exercise images than after exposure to the abstract images (t = 2.19, p = .08, d = .34). The reported quantity of food consumed did not differ between priming conditions (t = .90, ns). This preliminary evidence suggests that the intervention may be promising, but future research is needed. Specifically, it will be important to employ a larger sample, a longer study, and an objective measure of dietary choice that does not rely on self-report.

314) Abstract 1458
NEURAL BASES OF CENTRAL MODULATION OF PAIN BY INTERPERSONAL CONTEXT: AN FMRI STUDY
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Chronic pain is an alarming public health problem. Central modulation plays a crucial role in the origin and maintenance of several highly prevalent chronic pain conditions (e.g. somatoform pain, fibromyalgia) which are in urgent need of effective treatments. The neural mechanisms underlying these disorders are, however, still unknown. The emerging evidence from developmental neuroscience points to the existence of a shared neural system that underlies physical pain and interpersonal distress. We will present a developmental theory of chronic pain, which is based on this empirical knowledge and suggests that non-optimal development can compromise this shared neural system, leading to heightened sensitivity to pain cues, more frequent emotional reactions to pain, and problems down-regulating pain and interpersonal distress. While numerous clinical and research studies suggest the interpersonal-physical pain overlap, the neural bases of the direct effect of feeling rejected by others on pain sensitivity have not yet been investigated. The goal of our study was to investigate the neural mechanisms of interpersonal rejection-pain interaction by assessing the neural changes underlying processing of painful stimuli in the context of varying levels of interpersonal rejection, and the association of these changes with the behavioral indices of rejection sensitivity and interpersonal functioning. During the fMRI scan, 20 healthy participants received thermal stimulation in the context of experimentally induced social rejection, and in the context of subsequent interaction with those who had just excluded the participant. Rejection-primed rejection pain was associated with changes in the administration of the same pain stimulus that was significantly different across three interpersonal conditions (acceptance, exclusion, and interaction with those who previously excluded the participant). Participants’ pain sensitivity was associated with their sensitivity to rejection during scan, as well as to their overall interpersonal functioning. The implications of these findings for research...
on the mechanisms of central modulation of pain and for treatment of chronic pain conditions will be discussed.

315) Abstract 3423
EARLY CHILDHOOD SOCIOECONOMIC STATUS MODERATES MAGNITUDE OF INFLAMMATORY RESPONSE TO ACUTE PSYCHOLOGICAL STRESS IN HEALTHY ADULT WOMEN
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It has been proposed that socioeconomic conditions in early childhood effect immune programming, with poorer environments engendering lasting phenotypes that are prone to inflammation. Consistent evidence shows that exposure to acute stress is associated with an increase in circulating markers of inflammation; however, individuals vary significantly and consistently in the magnitude of their physiological responses. In the current study, we examined the possibility that early-life socioeconomic conditions contribute to individual differences in stress responsiveness. To test this hypothesis, we analyzed data from 72 healthy women aged 25-49 who completed an acute stress protocol, consisting of a 30-min resting baseline period, the 16-min Trier Social Stress Test, and a 75-min recovery period. Blood was drawn at the end of each period for the assessment of plasma interleukin (IL)-6, a marker of systemic inflammation. Participants also indicated whether their childhood was spent in a blue- or white-collar family as an estimate of economic conditions. Results from repeated measures ANOVA revealed the expected mean increase in levels of IL-6 from baseline to 75 min post task (F(2,71)=8.86, p<.01). Although there was no association of childhood economic conditions with baseline IL-6 levels (β=.016, p=.88), women reared in blue-collar families showed greater post-task increases in IL-6 than their white-collar counterparts (β=.31, p=.01). Hierarchical regression analyses showed that this association remained significant after controlling for age, ethnicity, current occupation, and current education (β=.23, p=.05). These findings raise the possibility that childhood economic circumstances may contribute to increased susceptibility to peripheral inflammation following exposure to acute psychological stress in adulthood. It is tempting to speculate that increased inflammatory response to stress contributes to the vulnerability to inflammatory disease that is known to be associated with a history of lower childhood SES.

316) Abstract 1702
ASSOCIATIONS OF COUPLES RELATIONSHIP SATISFACTION AND ATTACHMENT TO PHYSIOLOGICAL REACTIVITY DURING AN INTERPERSONAL STRESSOR
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We know that couples’ conflicts are related to both physical and mental health. Relationship satisfaction has been shown to be consistently associated with physiological reactivity to stressors. More recent research has attempted to understand how attachment might influence the relationship between conflict and health. However, there has not been a study that examined relationship satisfaction and attachment as it relates to physiological reactivity to date. Based on theories of attachment, we expected to find strong associations between anxiety and avoidance attachment and physiological responses to a dyadic task between couples. Given that prior research has shown an association between attachment and relationship satisfaction we also explored the potential interaction of attachment style and relationship satisfaction as a predictor for physiological reactivity. The study collected data from 70 couples who completed the Dyadic Adjustment Scale (DAS) and the Experiences in Close Relationships-Revised Scale (ECR-R). The study also collected blood pressure and pulse rate measures during a baseline and stressful couples discussion task. After each participant completed the DAS, research assistants identified the top factors that conflicted between the couples and used those factors as discussion topics in a dyadic conflict task. Regressions and multiple regressions by gender were used to assess the potential relations and interaction effects. Results found no direct association between attachment and physiological response to the dyadic stressor. However, there was a significant interaction between attachment and relationship satisfaction as a predictor for physiological response to the task. It should be noted, however, that the interaction was only significant for women and not for men. Theoretical implications, future research directions, and implications for couples’ treatments are discussed.

317) Abstract 1358
DIFFERENTIAL HIV SUPPRESSION AND CD4 CELL COUNT BASED ON COUNTRY OF ORIGIN
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Background: Psychosocial, socioeconomic and cultural factors impact health outcomes in HIV-infected patients. A patient’s country of origin may differentially impact HIV suppression. To examine the effect of one’s birth country, Haitian and Cuban HIV-infected patients were compared on log-transformed HIV viral load and CD4 cell count using ANCOVAs that controlled for age and gender.

Methods: Country of origin data were collected from HIV-infected patients attending the University of Miami/Jackson Memorial Medical Center Adult Outpatient HIV Clinic. In that a substantial proportion of the population of Miami-Dade County originates from Haiti and Cuba, 515 Haitians were compared to 394 Cubans (mean age = 53.76 ± 10.7 years; 65.7% male) on initial and lowest values of log-transformed HIV load and CD4 cell counts using ANCOVAs that controlled for age and gender.

Results: On initial clinic visit, Haitians had significantly greater viral loads than did Cubans (F(1,511)=3.62, p=.05); once engaged in care, however, there were no differences between groups on lowest viral load achieved. Haitians had significantly lower CD4 cell counts at intake compared to Cubans (F(1,863)=14.98, p=.001); lowest known CD4 cell counts were significantly lower in Haitians compared to Cubans even after engagement in care (F(1,871)=17.63, p<.001).

Conclusions: Adult Haitian and Cuban patients attending an inner-city HIV clinic were found to differ on viral load and CD4 cell count upon intake, potentially implicating cultural and socioeconomic factors as barriers to initial engagement in HIV care. The lack of a difference in lowest viral load achieved once in care subsequently underscored how country of origin can differentially impact engagement. Additionally, Haitian patients had lower CD4 cell count at initial visit and throughout treatment compared to Cuban patients that further suggests cultural factors may delay engagement in care after infection. Taken together, future interventions aimed at reducing time between HIV exposure and engagement in care should address culturally-based barriers such as stigma, socioeconomic status, and acculturation.

318) Abstract 1202
CLUES TO MAINTAINING CALORIE RESTRICTION? PSYCHOSOCIAL PROFILES OF SUCCESSFUL LONG-TERM RESTRICTORS
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To combat the obesity epidemic, intervention and clinical efforts often promote a low calorie dieting treatment model. Challenges remain, however, in long-term maintenance of dieting. One potential reason for unsuccessful maintenance is that low calorie dieting model does not take into account individual differences underlying dieting success. To better understand the qualities of those who succeed at long-term dieting maintenance, this study analyzed psychosocial characteristics of 30 long-term calorie restrictors from the Calorie Restriction (CR) Society and followers of the CR way compared to two age-, gender-, ethnicity-, and education-matched comparison groups (normal weight and overweight/obese). We first tested whether the CR group did indeed restrict calories without indications of eating disorder pathology, and second, what crystallized psychosocial characteristics set them apart from their non-restricting comparisons. Results indicated the CR group averaged 10 years of calorie restriction but scored lower than comparison groups on measures of disordered eating and psychopathology. Particularly in comparison with overweight/obese participants, CR participants exhibited lower neuroticism and hostility and had stronger future time orientation. Further, duration of restriction was negatively related to kilocalorie intake, leaving the intriguing possibility that unlike typical dieters, these individuals’ personalities may predispose them to progressively improve at restriction. In aggregate, it appears that individuals who succeed at long-term calorie restriction display distinct personality and demographic characteristics that may predispose them to dieting success. These results have important treatment implications. Rather than recommending the low-calorie dieting model to all individuals, and rather than blaming a failed diet on the unsuccessful dieter, these results indicate psychosocial boundaries to the dieting model, making it a viable and recommendable option only for a unique subset of individuals. Paralleling a movement towards a personalized medicine model, this study suggests that we should also move towards a personalized psychosomatic medicine model.
intervention, which intends to enhance the Emotion Regulation Skills of individuals suffering from mental disorders, and it is based on the ART-Model of Effective Emotion Regulation, which specifically targets self-support as one of the core skills of Emotion Regulation. Method. We assessed CSS and DSS at four times during the first six weeks of treatment in 103 inpatients (40.5% male, Age: M=47.8 years) meeting the criteria for MDD. DSS was measured by Becks Depression Inventory II, and CSS by the Emotion-Specific Regulation Skills Questionnaire. Using a three-step approach, we first evaluated the cross-sectional association of CSS and DSS using Pearson's correlations. Second, we fitted several latent-growth curve models to test whether changes in CSS were negatively associated with changes in DSS during treatment. Third, we used a specific extension of the bivariate latent change score model to analyze the association of the previous changes in CSS with the subsequent changes in DSS. Results. Higher levels of CSS were associated with lower levels of DSS at all time points of measurement, and increasing CSS during treatment was associated with decreases in DSS. Finally, changes in CSS predict subsequent changes in DSS, but changes in DSS did not predict changes in CSS skills. Conclusion. Systematically enhancing CSS skills with ART may help reduce DSS in patients suffering from MDD.

321) Abstract 1838

SKIN TONE, BODY MASS INDEX, AND BLOOD PRESSURE DIPPING AMONG LATINO ADULTS

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Skin tone, a phenotypic attribute is a marker of minority group membership and has been associated with stigmatized status for Latinos in the U.S. Skin tone may be related to social stress for racial minorities. Skin tone has been linked to subjective social stress, and related outcomes, including risk for hypertension (HTN; Harburg, 1978, 1995; Uzoigwe, 2013). Furthermore, darker skin tone has been linked to greater HTN risk in the U.S. (Harburg, 1978). In this study we examine the relationship between skin tone and blood pressure dipping, as lower levels of blood pressure dipping from day to night have been shown to predict HTN risk and future CVD. Additionally, we examined the potential moderating effects of BMI, a well-established CVD risk factor. This sample included 393 Latino adults (mean age = 38.4; 201 men) living throughout the New York City area. Participants wore an ambulatory blood pressure monitor across a 24-hour period. To determine skin tone, participants matched the color of the underside of their own forearm to one of nine skin tone photos. Blood pressure dipping was determined by subtracting daytime systolic blood pressure (SBP) and diastolic blood pressure (DBP) from their respective nighttime values where a higher value indicates greater dipping. Regression models were conducted, adjusting for age, gender, education, and poverty status. Results revealed non significant main effects, however there was a significant skin tone x BMI interaction term predicting SBP, B = 1.6, p < .0001 and DBP, B = 1.2, p < .0001, dipping. Simple effects analyses revealed that among individuals with lower BMI, those with darker skin showed less dipping than those who were lighter, B = -.72, p = .004. Conversely, among individuals with higher BMI, those with lighter skin dipped less than those who were darker, B = 8.4, p < .002. These findings suggest that being of a lower weight and having darker skin increases HTN risk whereas being heavier and darker is associated with lower HTN risk. There may be differences in psychosocial stressors and underlying exposure to discrimination that varies depending on constellations of physical characteristics. It will be critical to examine other potential underlying mechanisms for these effects.

322) Abstract 1772

ANGER AND INCREASED QUALITY OF LIFE AMONG HISPANIC MEN AND WOMEN: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL) SOCIOCULTURAL ANCESTRY STUDY

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Anger may influence disease risk via behavioral and/or physiological pathways. However, associations between anger and illness may be confounded by negative emotions like depression and anxiety. The purpose of this study was to determine if anger is independently associated with mental and physical domains of health related quality of life (QoL) in Hispanic men and women. Data from 5313 adults (62% women, age range 18–75 years) participating in the Hispanic Community Health Study who completed the ancillary sociocultural assessment were included in this analysis. Participants were administered the Center for Epidemiological Studies Depression Scale-10 (CES-D 10), Spielberger Trait Anxiety Inventory (STAI), Spielberger Trait Anger Inventory (STANG), Cook-Medley Cynicism Scale (Ho-Scale), and Short Form Health Survey (SF-12). Demographic, medical history, and anthropometric measures were also collected. In a measurement model, total scores
of psychological measures served as indicators for two latent factors representing psychological distress (CES-D and STAI) and anger (STANG and Ho-scale), which were positively correlated (Std Beta = -0.783 SE = 0.025, p < .001). In a structural equation model, we tested independent associations of psychological distress and anger with mental and physical QOL, while accounting for the observed covariation between these constructs. Anger was associated with better mental (B = .742, SE = .248, p < .01) and physical (B = .374, SE = .150, p < .05) QOL after adjusting for psychological distress. The positive association with physical QOL was no longer significant after adjusting for chronic disease, which was negatively related to anger (B = -0.419, SE = 1.884, p < .001). The positive association between anger and mental QOL remained after adjusting for age or other covariates. Psychological distress was not associated with chronic disease (B = .670, SE = 1.628, p < .05), however, it was negatively related to both mental (B = -1.628, SE = .157, p < .001) and physical QOL (B = -3.05, SE = .107, p < .01) in unadjusted and adjusted models. These findings indicate that anger is associated with better mental QOL, and indirectly related to better physical QOL in this population. Findings also suggest that after adjusting for psychological distress, anger and hostility may serve a protective role. This protective effect of anger may be due, in part, to activation of the approach oriented motivational system which is involved in goal pursuit and conflict resolution. Future research should acknowledge the overlap present among psychological measures and constructs and aim to distinguish between individual and combined influences of emotions on health.

323) Abstract 1773
DIFFERENTIAL RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS AND HPA AXIS STRESS RESPONSES IN COLLEGE STUDENTS AND MIDDLE-AGED ADULTS
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Rationale: It has been shown that in response to acute psychological stress, people with low objective socioeconomic status (SES) have a greater increase in cortisol levels, and also sustain these high levels for a longer time period when compared to individuals with high SES. This effect has also been found to be greater for older individuals. Our aim was to investigate further how the different socioeconomic measures contribute to habituation of acute stress responses upon repeated exposure, based on the individual’s age.
Methods: Fifty-nine healthy adult subjects (n=30 male; n=29 female) aged 18-65 years underwent the Trier Social Stress Test (TSST) twice on consecutive days. Saliva was collected for the measurement of cortisol at time points prior to, and following the TSST. Cortisol levels were analyzed using the education level, income, home ownership status, and employment status of both the participants and their parents.
Results: Repeated stress exposure was found to induce significant increases of salivary cortisol (F=34.76, p=0.001). Results to second exposure were lower on average (day by day interaction: F=5.50, p=0.005) indicating habituation of stress responses. In the collective sample of college students and adults, father’s employment status was related with initial cortisol responses such that individuals with unemployed fathers had greater responses to the first TSST (group effect: F=7.79, p=0.008). In adult participants, but not in College students, lower education level was related with less efficient habituation of cortisol responses to repeated stress (r=0.50, p=0.017). A significant relationship of mothers’ education with cortisol habituation (F=4.05; p=0.049) was only found to exist for college students.
Conclusion: Differential habituation patterns were obtained based on age group when looking at the individual’s own education level and mother’s employment status. One’s mother being the individual’s employed caregiver was associated with lower self-reported physical well-being in women diagnosed with breast cancer. Instability in patients’ perceived stress may be indicative of their lack of ability to consistently feel in control of stressors in their life, and as such, be associated with poorer physical health. When helping patients and their families adjust to a cancer diagnosis, its treatment, and beyond, it may be especially important to address not only the occurrence but fluctuations in stress over time, and its effects on well-being. Additionally, educating patients on the unpredictable ways that cancer will impact their life may promote more stable feelings of stress and better physical well-being.

326) Abstract 1046
PARTNER NEGATIVITY WHEN TALKING ABOUT HEALTH HABITS: GENDER DIFFERENCES AND ASSOCIATIONS WITH BODY MASS
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Purpose: The purpose of this study is to investigate associations between eating to regulate emotion (ERE), gender, and use of eating to regulate emotion (ERE), negative emotion expressed by relationship partners, and body composition. Dietary change might be hard for individuals who eat to regulate their emotions, and particularly hard for those who share this habit with a partner. In such couples, expression of negative emotion by the partner might increase emotional negativity and exacerbate the need to regulate emotion by eating, thereby perpetuating an unhealthy cycle.
Methods: Forty-three committed heterosexual couples (mean age = 32.2, SD = 13.0; mean relationship duration = 6.2 years, SD = 7.1) reported on their height, weight, and use of eating to regulate emotion. During a laboratory session, participants discussed health habits with their relationship partners. We transcribed these conversations, subjected them to Linguistic Inquiry Word Count, and used a dyadic multilevel model to test whether ERE and use of negative-emotion words were association partners' body mass.
Results: The interaction between partner's negative emotion expressed during a health-related discussion, gender, and couple’s average ERE was significant, F(1,32) = 4.49, p = 0.04. For women whose partners expressed a lot of negative emotion, those in couples with high average ERE had significantly higher BMIs than those in couples with low average ERE, b = 2.92, p = 0.004. For men whose partners expressed a lot of negative emotion, those in couples with high average ERE had significantly lower BMIs than those in couples with low average ERE, b = -0.58, p = 0.02. For those whose partners expressed little negative emotion, ERE was not associated with BMI.
When faced with expression of negative emotion from their partner, women with high ERE may eat more to cope with their partners' negativity, whereas women with low ERE may use a different coping strategy to regulate their emotions. The connection between higher ERE and lower BMI among men suggest a gender difference in responding to negative emotion expressed by partners.

327) Abstract 1096
ASSOCIATION BETWEEN COGNITIVE DEPRESSIVE SYMPTOMS AND BLOOD COAGULATION ACTIVATION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION
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Objectives: There is substantial evidence that depression is associated with an imbalance between coagulation and fibrinolysis. A hypercoagulable state is related to coronary artery disease. Little is known about the relationship between depressive symptoms and blood coagulation in patients with acute coronary events. We hypothesized that in patients with acute myocardial infarction (MI), depressive symptoms are associated with increased blood coagulation activity.

Design and Methods: We examined 52 patients with acute MI (84.6% men, mean age±SD = 59.9±10.1) within 48 hours after having reached stable hemodynamic conditions. Patients who suffered a severe depressive episode were excluded. To rule out depressive symptoms patients completed the German version of the 13-items short form (excluding somatic/affective symptoms) of the Beck Depression Inventory (BDI). As a marker of coagulation activity, we measured von Willebrand factor (VWF) antigen in plasma.

Results: Correlation analysis showed an association between cognitive depressive symptoms and higher levels of coagulation activation. A significant positive correlation was found between the sum score of the BDI and the plasma concentration of VWF antigen (r=0.36, p=0.004) with adjustments for age and body mass index.

Conclusions: The results suggest that elevated levels of cognitive symptoms of depression are associated with increased coagulation activity in patients who suffer from an acute coronary event. Further studies are required to explore whether this association impacts on the prognosis of post-MI patients.

328) Abstract 1106
ASSOCIATION BETWEEN SOCIAL SUPPORT AND POSTTRAUMATIC STRESS LEVELS THREE MONTHS AFTER ACUTE MYOCARDIAL INFARCTION
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Objectives: Numerous "risk factors" for the development of posttraumatic stress symptoms triggered by an acute myocardial infarction (MI), such as psychosocial variables and demographic factors, have been identified. Social support has a positive (i.e., "buffering") impact on psychological reactions to acute stress. We hypothesized that social support is associated with decreased levels of posttraumatic stress three months after MI.

Design and Methods: 32 patients with acute myocardial infarction (84.4% men, mean age 59.50 ± SD = 9.47) were examined within 48 hours after the cardiac event and three months after discharge. Social support was assessed using the German version of the self-rated 7-item Enhancing Recovery in Coronary Heart Disease Patients (ENRICHD) Social Support Inventory (ENSS). The incidence of posttraumatic stress symptoms on the 3-month follow-up was assessed with the German version of the Clinician-Administered PTSD Scale (CAPS).

Results: Social support was significantly correlated with decreased levels of posttraumatic stress three months after the traumatic event (r = -0.506, p<0.05) controlling for gender, age, and the prognostic Grace Score.

Conclusions: Data suggest that high social support may predict decreased risk of developing posttraumatic stress after MI and also support the notion that psychosocial variables are important protective factors in acute cardiac events. Future studies should strive to investigate if social support may be a protective factor to prevent recurrent cardiac events and decreases biological risk markers in those with elevated posttraumatic stress levels.

329) Abstract 1109
INFLAMMATORY GENE EXPRESSION FOLLOWING A BEHAVIORAL STRESS MANAGEMENT INTERVENTION FOR CAREGIVERS OF STEM CELL TRANSPLANT PATIENTS
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There have been few studies addressing the question of the reversibility of stress associated physiological changes in caregivers, particularly as influenced by behavioral interventions. We provide pilot data indicating a reduction in pro-inflammatory gene expression in response to a cognitive behavioral stress management intervention for caregivers of allogeneic hematopoietic stem cell transplantation (HSCT) patients. Gene expression was measured sequentially during a three month period following transplantation. Genome-wide transcriptional profiling was conducted on peripheral blood mononuclear cell samples collected prior to transplant and randomization and upon completion of the intervention at 3 months after transplant. Bioinformatics analysis of differently expressed genes indicated reduced activity of transcription control pathways associated with inflammation (NF kappa B), sympathetic nervous system activity (CREB), and oxidative stress (NR2F2) in caregivers receiving the PEPRR intervention compared to TAU. This is consistent with observed reductions in stress, depression, and anxiety in the PEPRR group. These pilot observations suggest that a behavioral intervention which reduces caregiving stress can also partially reverse the pro-inflammatory transcriptional effects observed in stressed individuals. (Supported in part by NIH Grant CA126971)

330) Abstract 1113
TWO-YEAR STABILITY OF HEART RATE VARIABILITY MEASURES IN CHILDREN AND ADOLESCENTS
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Heart rate variability (HRV) is a non-invasive measure of sympathovagal control over cardiac autonomic function. Low HRV reflects augmented sympathetic and/or reduced parasympathetic nervous system activity, and has been associated with increased risk for conditions such as cardiovascular disease and diabetes. While a number of adult studies have explored the psychometric stability of HRV, less is known about HRV stability in children and adolescents. Further, developmentally relevant factors such as age, BMI, and pubertal status limit the ability to generalize stability findings from adults to youth. The aim of the present study was to examine the stability of heart rate variability measures in children and adolescents. The QUALITY longitudinal cohort in Quebec, Canada, included healthy youth (n=632, 54.3% male, Mage=9.6 yr, SD=0.92) who were at risk for obesity (at least one overweight biological parent). Demographic, anthropometric, and heart rate recordings were obtained at baseline and follow-up (Mtime=2.06 yr, SD=0.93). Clinic visits with standardized protocols were identical at both times. Continuous ECG was recorded for 3 hours using a MARS Holter monitor; data were edited by trained technicians, and analyzed using MindWare HRV software. Intra-class correlations (ICC) indicated moderate two year stability across time- (ICCs: SDANN=0.69, SDANN=0.41, RMSSD=0.69, pN50=0.67) and frequency-domain HRV (ICCs: VLF=0.65, LF=0.75, HF=0.75, LF/HF Ratio=0.62). Partial correlations, controlling for developmentally-relevant covariates (sex, age, BMI, height) did not change (Pearson correlation coefficients were (partial: SDANN=0.61, SDANN=0.36, rMSSD=0.57, pN50=0.54; VLF=0.65, LF=0.67, HF=0.69, Ratio=0.63). Results indicated moderate intra-individual stability of HRV across two years in children and adolescents. Controlling for developmentally-relevant covariates yielded similar stability estimates. These findings suggest that autonomic regulation of cardiovascular patterns is stable in youth. Future psychometric studies should consider the stability of HRV with longer recordings conducted in more naturalistic settings (e.g., ambulatory monitoring at home and school) over longer follow-up durations.

331) Abstract 1194
DEPRESSED MOOD MEDIATES THE RELATIONSHIP BETWEEN RUMINATION AND SLEEP QUALITY
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Rumination, or repetitive thinking about one’s past or present problems and feelings in a non-constructive way, is known to contribute to both depressed mood and disturbed sleep. The mechanisms by which rumination can lead to impaired sleep are not fully understood. The present study tested the hypothesis that depressed mood mediates the relationship between rumination and sleep quality in 165 healthy young adults. Participants completed questionnaires on trait rumination, trait anxiety, depressed mood, and sleep quality at two different time points approximately three months apart. The measured variables of trait rumination, trait anxiety, depressed mood, and sleep quality were all significantly correlated at
the p < .01 level. Structural equation modeling revealed that a latent variable of depressed mood fully mediated the relationship between trait rumination and overall sleep quality after controlling for trait anxiety and gender, χ² (112, N = 165) = 187.30, p < .001; RMSEA = .06, TLI = .94, CFI = .96. In a second structural model, depression also fully mediated the relationship between trait rumination and the measured variable of sleep latency, a subcomponent of overall sleep quality, after controlling for trait anxiety and gender, χ² (49, N = 165) = 64.64, p = .07; RMSEA = .04, TLI = .98, CFI = .99. The results of this study indicate that depressed mood may be one of the mechanisms by which repetitive negative thought patterns lead to impaired sleep, which has important implications for developmental processes (e.g. metabolism and neural growth) and for clinical interventions that target improving sleep. This work is funded by the Social Science Research Institute at Penn State University and the National Science Foundation, Grant No. DGE1255832.

323) Abstract 1206
ATTACHMENT ANXIETY IS RELATED TO EBSTEIN-BARR VIRUS LATENCY WHILE UNDERGOING TESTING FOR BREAST OR COLON CANCER, AS WELL AS ONE YEAR LATER
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Objective: Attachment theory provides a framework for understanding individual differences in chronic interpersonal stress. Attachment anxiety, a type of relationship insecurity characterized by worry about rejection and abandonment, is a chronic interpersonal stressor. Stress impacts cellular immunity, including lymphocytes and cytokine secretions.

Method: We investigated whether attachment anxiety was related to the expression of a latent herpesvirus, Epstein-Barr virus (EBV), during a stressful period when individuals were being tested for breast or colon cancer, and during a lower stress period approximately 1 year later. Participants (n=183) provided blood to assess immune function in 2005. Participants were being tested for breast or colon cancer, and during a lower stress period approximately 1 year later. Participants (n=183) provided blood to assess immune function in 2005.

Results: Individuals who were more anxious and anxious-attached had higher EBVVCALgG antibody titers, reflecting poorer cellular immune system control of the latent virus, than their less anxiously attached counterparts. They also had higher levels of general anxiety than those who had lower attachment anxiety, however, the association between attachment anxiety and EBVVCALgG antibody titers remained significant over and above general anxiety. Attachment avoidance was not associated with EBVVCALgG antibody titers or general anxiety.

Conclusions: The current results add to our growing understanding of how individual differences in chronic interpersonal stress influence immune function and health. Indeed, stress-induced alterations in immune function may be an important mechanism linking close relationships to physical health.

333) Abstract 1235
ALTERATION OF AUTONOMIC NERVOUS SYSTEM FUNCTION DUE TO THE PRESENCE OF PAIN - IS IT SYMPTOM FREQUENCY OR INTENSITY?
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Background: A large variety of health conditions is associated with changes in autonomic nervous system (ANS) function due to alterations in heart rate variability (HRV). Reduced HRV is reported in patients with chronic pain such as complex regional pain syndrome or fibromyalgia. Recently, we provided first evidence for reduced HRV in the presence of self-reported symptoms of pain in apparently healthy subjects. However, it is not clear whether these changes correlate with the frequency or intensity of the reported symptoms.

Methods: In a recent study by our group, 24 healthy subjects were used to assess the frequency and intensity of pain symptoms in the most common locations within the last week. A total pain index (TPI100), a pain intensity index (PPI100), and a pain frequency index (FP100) were calculated from the inventory. HRV was measured for 5 minutes in a supine position using a portable device to record inter-beat-intervals (IBIs) at a sampling frequency of 1000 Hz. Device-specific software was used to transfer recordings for further analysis with “Kubios HRV”. The low frequency (LF) and high frequency power spectrum (HF) were derived by use of autoregressive models.

Results: Data from a total of 67 (40 female, mean age 23.1±4.2 years) subjects was available for analysis. 49 subjects reported at least one pain symptom (most frequently headaches 61.2%) compared to 18 subjects free of pain. ANOVA revealed significant differences on HF (F(1, 59)=8.228, p = .006) and the LF/HF ratio (F(1, 59)=6.965, p = .011) between subjects with pain and pain free subjects. The LF/HF ratio was significantly and positively correlated to pain intensity (r = .412, p = .001) and low back pain (r = .407, p < .001) but not with headaches, chest pain or muscle pain in general. Furthermore, the LF/HF ratio was associated with the TPI100 (r = .383, p = .002) and the PH100 (r = .266, p = .032). The observed trend in the positive correlation between LF/HF ratio and pain frequency index missed statistical significance (TPF: r = .235, p = .057).

Conclusion: In line with previous research, our results reveal differences on ANS function in subjects reporting pain and participants free of pain. Furthermore, we extend previous findings and provide first evidence for a unique association that alterations of ANS function due to the presence of pain are more likely driven by the experienced pain intensity than the frequency of symptoms. Greater pain intensity is associated with a shift towards lower vagal activity indexed by HF power of HRV in non-clinical subjects.

334) Abstract 1352
COGNITIVE AVOIDANT AND VIGILANT COPING STYLES ARE ASSOCIATED WITH MOTIVES FOR SMOKING, CRAVING, AND TRAIT NEGATIVE AFFECT IN HABITUAL SMOKERS
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Smoking is often used to manage stress and negative mood. However, whether individual differences in coping styles are linked with smoking motives and traits has not been examined. One-hundred and four habitual smokers (mean age: 34.9; SD: 11.8) were asked to complete a battery of questionnaires including Mainz Coping Inventory (MCI), history and patterns of smoking, the Reasons for Smoking scale, and trait measures such as the State–Trait Anxiety Inventory, the Trait Anger Expression Inventory, and the Cook-Medley Hostility Scale. MCI assessed levels of vigilance (VIG: a coping strategy to focus on the source of threat to reduce uncertainty) and cognitive avoidance (CAY: a coping strategy to inhibit information processing associated with the source of threat to protect the organism) within each individual. A series of regression analyses were conducted to determine whether coping styles predicted smoking variables and motives as well as negative mood. The results indicated that VIG and CAY were not related to one another, suggesting these two coping modes are independent. There were no associations of VIG and CAY with demographic information such as age, body mass index, and years of education. In contrast, increased levels of VIG and CAY were linked with greater motives for smoking such as stimulation (e.g., I smoke to get stimulated) and handling (e.g., fiddling with a cigarette; ps<.05). Higher levels of VIG were related to enhanced motives to reduce craving (e.g., I smoke to reduce craving; ps<.001) but CAY was not linked with this motive. In addition, VIG was positively associated with trait anxiety, anxiety sensitivity, pain catastrophizing, trait anger, and hostility (ps<.05). However, VIG was not related to smoking motives and CAY was not related to these measures. CAY was inversely related to mood disturbance (ps<.05). These results suggest the role of coping style in motives for taking up cigarette smoking and trait negative affect among chronic smokers. The findings of positive relationships of vigilant coping style with smoking motives and negative mood suggest that vigilance may be a risk factor for continuation of smoking and smoking relapse.

335) Abstract 1366
CANCER RECURRENCE AND THE BIG FOUR: NEUROTICISM AT INITIAL DIAGNOSIS PREDICTS LATER DEPRESSION
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Introduction: Over 1.2 million individuals are diagnosed with cancer recurrence each year; more than half experience rapid disease progression and death following diagnosis of advanced disease. The Big Four: neuroticism, anxiety, hostility, and anger are among the most consistently and robustly associated with a variety of negative outcomes. However, little is known about predictors of depression for these patients. Personality variables have been valuable as predictors of depression during initial diagnosis, but have not been examined in the context of recurrent cancer.

Methods: The_SNAP Questionnaire (SNAP) was used to assess personality variables at baseline and at recurrence. At initial diagnosis, SNAP was used to assess the four Big Four factors. At recurrence, SNAP was used to assess the Big Four factors and depressive symptoms. Results: Linear regression analyses were used. Neuroticism at initial diagnosis predicted CESD depressive symptoms (p=.05, R2=.02, mean significantly predicted CESD depressive symptoms (p=.05, R2=.02, mean...
RESULTS: Forty-nine subjects were included in the study. The Spielberger's State-Trait Anger Expression Inventory was used to assess anger dimensions including state anger, trait anger, and anger expression. Anger expression scales (anger-out, anger-in and anger-control) were not associated with the ischemia score with mental stress. None of the anger dimensions were related to the ischemia score during exercise or pharmacological stress.

Conclusion: Anger, both as an emotional state and as a personality trait, is significantly associated with propensity to develop myocardial ischemia during mental stress, but not during exercise/pharmacological stress. Patients with this psychological profile may be at increased risk for silent ischemia induced by emotional stress and this may translate into worse prognosis.

338) Abstract 1555

PSYCHOSOCIAL PREDICTORS OF THE PLACEBO RESPONSE IN A RANDOMIZED CLINICAL TRIAL FOR MAJOR DEPRESSIVE DISORDER (MDD)

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High placebo response rates make it difficult to assess the potential benefit of antidepressant treatments. We sought to determine the contributions of two psychosocial factors to the effectiveness of a pill placebo as compared to antidepressant medication in MDD. These factors were: 1) subjects' expectations of how "helpful" antidepressant medication would be, and 2) the strength of the alliance between patient and supportive care provider. 88 subjects rated their expectations of treatment and the therapeutic alliance during the first three weeks of a double-blinded 8 week trial comparing antidepressant medications to a pill placebo. Subjects (ages 18 to 65) were recruited through community advertisement and met Structured Clinical Interview for DSM-IV diagnostic criteria for MDD, had a baseline score ≥ 17 on the 17-item Hamilton Depression Rating Scale (HDRS) and had no other primary Axis I disorder.

Path analyses revealed a significant relationship between expectations of antidepressant efficacy and the percent change in HDRS over the eight-week study (β = 0.18, p < 0.01). Treatment assignment moderated this relationship (β = 0.16, p < 0.05) over and above baseline symptom severity, such that higher expectations led to a decrease in symptoms for placebo subjects (β = 0.17, p < 0.01), but not for subjects treated with antidepressants.

A regression of symptom change on patient ratings of the therapeutic relationship was significant for both placebo and antidepressant subjects (β = -0.40, p < 0.01, and β = -0.25, p < 0.01, respectively). Separate regressions for each treatment group showed that for subjects assigned to placebo, higher expectations of antidepressant medication and higher ratings of the therapeutic relationship were each associated with a greater decrease in symptoms. In patients treated with antidepressants, however, only the therapeutic relationship predicted outcome. The present results suggest that the relationship between patient and practitioner contributes to both antidepressant and placebo response, while expectations of antidepressant efficacy uniquely amplify the placebo response.
DO RECREATIONAL ACTIVITIES PROTECT UNEMPLOYED INDIVIDUALS FROM DEPRESSION?  
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An increasing body of literature suggest that engaging in exercise and recreational activities can reduce the risk for depression. One period in life associated with increased risk for depression is unemployment. Hence, for the current study, we aimed at assessing whether exercise and recreational activities still serve depression-protective effects to individuals when facing unemployment. We thereby hypothesized that unemployed individuals engaged in recreational activities (leisure activities) from self-defined recreational activities may show differential employment status-dependent link to depression.

Utilizing Amazon Mechanical Turk website to oversample unemployed participants, we assessed depressive symptoms (CES-D), exercise and recreational behaviors (HPLP), as well as psychological traits (EDI-3). Psychological traits did not mediate nor moderate the relationship between leisure activities and depression. The second order, we explored how unemployment impacts depressive symptoms in different racial and ethnic groups. The results showed that unemployed individuals engaged in leisure activities showed higher rates of depressive symptoms (β=0.25, p<.001). Depression analyses revealed that exercise (β=0.26, p=.001) as well as leisure activities (β=0.46, p<.001) showed beneficial effects in terms of reducing depressive symptoms independent of employment status (interaction effects: β=0.73, p=.47; β=0.12, p=.14). However, when participants were able to self-define recreational activities, we found that engaging in those activities no longer provided protective effect against depressive symptoms in the unemployed group, while it still did in employed individuals (β=0.15, p=.046).

Our findings indicate that although unemployed individuals in general show less exercise and leisure behaviors, those who do engage in these behaviors benefit in terms of reducing depressive symptoms. Interestingly, however, when letting participants self-define recreational activities, these behaviors did not protect unemployed individuals from depressive symptoms. This suggests either differences in defining recreational activities between employed and unemployed individuals or it may reflect that during the transition to unemployment, activities that once were recreational may no longer be viewed as recreational even though the activity remains the same. These findings may have direct implications for designing depression prevention programs for unemployed individuals.

PREDICTING MEDICAL TEST RESULTS AND INTRA-O CCUPATORY FINDINGS IN CHRONIC PAIN PATIENTS USING THE ON-LINE PAIN VALIDITY TEST  
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Previous reports indicated The Pain Validity Test (PVT) can predict the presence of abnormalities on medical testing (X-rays, MRI, 3D-CT, provocative discograms, EMG, nerve conduction studies, bone scans, nerve blocks and other medical tests) with 94% accuracy. (Hendler, N., Mollett, A., Talo, S., A Comparison Between the MMPI and the Mensana Clinic Back Pain Test For Validating the Complaint of Pain, J. of Neurol. Orthop. Med., Vol. 30, No. 4, 1999.)

A, An Internet questionnaire to predict the presence or absence of organic pathology in chronic back, neck and limb pain patients, Pan Arab Journal of Neurosurgery, Vol. 12, No. 1, pp: 15-24, April, 2008. It also predicts the absence of abnormalities on medical testing with 85% accuracy, in patients with chronic back, neck or limb pain. In the current research, results of medical tests were graded in terms of severity of the abnormality. The Pain Validity Test (PVT) significantly correlates with the presence or absence of abnormalities on objective testing (r = 0.554; p < .0001). Of the original 149 patient studied in the original report, 74 patients had surgery. Prior to surgery, The Pain Validity Test identified 69 of the 74 who received surgery (93.2%) as having a valid complaint of pain, and predicted abnormal medical testing, which was found. Additionally, moderate or severe pathology was found intra-operatively in 69 of the 69 patients with the valid complaint of pain (100%). Two of the remaining 5 patients in whom the Pain Validity Test predicted no pathology, did have abnormal medical testing, and intra-operatively did have pathology. Three of the remaining 5 patients in whom the Pain Validity Test predicted no pathology, did have abnormal medical testing, however no one of the 5 patients in whom the Pain Validity Test predicted no pathology, did have abnormal testing, but intra-operatively, were found to have moderate pathology. Therefore, The Pain Validity Test can predict who will have a) abnormal medical testing with 94% accuracy, and b) who will have intra-operative pathology if surgery is indicated with 93% accuracy.

ASSESSING THE RELATIONSHIP BETWEEN BINGE-EATING BEHAVIOR AND AFFECTIVE MODULATION OF PAIN AND SPINAL NOCICEPTION  
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Background: Bulimia nervosa (BN) is an eating disorder characterized by binge eating and purging, as well as excessive concern over body weight and shape. Interestingly, there is evidence suggesting BN is associated with affect dysregulation, as well as decreased sensitivity to pain. Although the mechanism(s) behind these effects are currently unknown, a disruption of emotional modulation of pain and spinal nociception may contribute. Evidence supporting this notion includes the following: 1) pain is modulated by emotions; and 2) BN is associated with emotion dysregulation. Because prior studies have relied exclusively on subjective reactions to thermal and mechanical pain stimuli, the present study employed a different modality to assess pain processing in BN; the nociceptive flexion reflex (NFR), a pain-related withdraw reflex, was used as a physiological measure of spinal nociceptive processing. During the procedure, supratherapeutic electric stimuli were delivered to the sural nerve while participants viewed emotionally-charged pictures varying in content (erotic, food, neutral, mutilation). Prior studies have shown that unpleasant (mutilation) pictures enhance pain/NFR, whereas pleasant (erotic) pictures inhibit pain/NFR. To the best of our knowledge, it was hypothesized that BN would show disrupted emotional modulation of pain/NFR, relative to controls. All procedures were IRB approved. Results: Linear mixed model analyses indicated both groups modulated pain similarly (p <.001); mutilation pictures enhanced pain and erotic pictures inhibited pain, but pain was not modulated by food pictures in either group. Interestingly, food and neutral pictures elicited larger NFRs in the BN group compared to controls (p <.05), suggesting that these stimuli enhanced spinal nociceptive processing in BN. Conclusions: This group difference may stem from emotional dysregulation in BN and may contribute to differences in pain processing in this group, suggesting that individuals with BN are more vulnerable to disruptions in affective modulation of spinal nociception.

ENDORSEMENT OF AFRICAN AMERICAN CULTURAL IDEAS IS ASSOCIATED WITH LOWER INTERLEUKIN-6 AMONG AFRICAN AMERICANS  
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Compared to Whites, African Americans are at greater risk for a variety of illnesses, including alcoholism, heart disease, and lung cancer (Dasa & Co1, 2010). Some evidence suggests that ethnic identification and connection to one’s racial/ethnic community and culture may help to buffer against some of these poor health outcomes (Abdou et al., 2010; Ratner, Halim, & Amodi2, 2012). Using data from the Midlife in the United States (MIDUS) project, we show that for African Americans, defining a “good life” as success in domains of particular importance to African American culture is associated with lower levels of interleukin-6 (controlling for education, gender, age, and BMI). Further analyses suggest that this relationship is mediated by sense of control. The same pattern does not hold among Whites (i.e., among those for whom the same cultural ideas, practices, and values may be less relevant). These results suggest that working towards goals of cultural meaning may have positive health implications.

PROCESSING OF EMOTIONAL INFORMATION IN THE CONTEXT OF PREMENSTRUAL SYNDROME  
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Introduction: Premenstrual affective and physical symptoms affect millions of women during their reproductive years, with most symptoms occurring during the premenstrual phase and subsiding a few days after menses begins. From the symptomatic association between affective disorders and premenstrual syndrome (PMS) it can be concluded that changes in processing emotional information, which were demonstrated in affective disorders, are also present in PMS. In the current study this hypothesis should be tested with the Emotional Stroop Test (EST). Methods: By online screening, telephone interviews and prospective daily records over two months we recruited participants who fulfilled criteria of PMS and did not show any comorbid mental disorders. N=55 women suffering from PMS and N=55 healthy controls completed the EST with neutral and negative word, picture and facial stimuli twice: during follicular and during luteal phase of menstrual cycle. Results: The analysis of the index of emotional interference effects for words did not reveal any significant effect of neither cycle phase nor group. For picture and facial stimuli a significant interaction of group x menstrual cycle phase was found. For picture stimuli this interaction effect indicated that women with PMS showed a greater emotional interference effect in the luteal menstrual cycle phase and that healthy controls showed a greater emotional interference effect in the follicular premenstrual phase. Discussion: Our results are in line with the hypothesis that alterations in cognitive processes are associated with premenstrual symptoms. This is consistent with proposed multifactorial models of development and maintenance of PMS. Further research in PMS should emphasize more the role of cognitive-affective factors in PMS.
344) Abstract 1852

THREAT APPRAISALS OF PANDEMIC INFLUENZA BUT NOT SEASONAL INFLUENZA EXPLAIN DAYTIME SOMNOLENCE DURING H1N1 2009
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Previous research has found that cognitive threat appraisals of the 2009 H1N1 pandemic were associated with overall life stress and intentions to obtain vaccination early in the pandemic. Here we examined if threat appraisals of seasonal influenza (SF) or H1N1 might further impact health risk through associations with daytime somnolence during the 2009 H1N1 pandemic. We expected that threat appraisals of the novel H1N1 situation would account for greater variance in daytime somnolence than threat appraisals of SF because of the greater objective threat associated with H1N1 early in the pandemic.

In October 2009, web-based surveys were completed by 1183 adults (ages 18-65, M=25.6, SD=11.8; male: 47%; female: 53%; Caucasian) affiliated with a mid-sized university in the Mid-Atlantic U.S., prior to H1N1 vaccine distribution to that region. A web link was sent by university email that alternately deployed a survey assessing threat appraisals (Stress Appraisal Measure, Peacock & Wong, 1991) of either the SF or the novel H1N1 influenza situation. Respondents also completed the Perceived Stress Scale (PSS; Cohen, 1998) as an index of general life stress over the past 30 days. Daytime somnolence was assessed with the following question on a 0 (Never) to 10 (Constantly) scale: Over the past month, how often have you felt sleepy enough to doze off or nap during the daytime? After controlling for PSS scores and age, greater threat appraisals of H1N1 were associated with greater daytime somnolence (R2=.02, B=.14, p<.01), but threat appraisals of SF were not (R2=.00, B=.01, p=.91).

Insofar as daytime somnolence may reflect poor sleep quality, the present findings suggest that cognitive threat appraisals of novel influenza situations may have physical health impacts through their effect on sleep. However, these data do not address the possibility that poor sleep or daytime somnolence might negatively impact cognitive appraisals of novel pandemic events.

345) Abstract 1846

SELF ESTEEM IS DIFFERENTIALLY ASSOCIATED WITH ANTICIPATORY STRESS APPRAISAL AND STRESS RESPONSE TO A STRESS TASK IN OLDER AND YOUNGER ADULTS
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Rationale: Dysregulation of hypothalamic-pituitary-adrenal (HPA) axis is hypothesized to contribute to negative health outcomes across the lifespan. Anticipatory cognitive appraisals have been associated with stress hormone release. The role that self-esteem may play in this relationship is unclear. We set out to test whether self-esteem is related to stress appraisals and HPA axis responses in younger and older adults.

Methods: Fifty-four adults (27 male, 27 female; mean BMI=24.429; mean age=33.53) were exposed to the Trier Social Stress Test (TSST) on two consecutive days. Cortisol was measured one minute before the TSST as well as +1, 10, 30, 60, and 120 minutes after exposure. To assess appraisals, participants completed the Primary Appraisal Secondary Appraisal (PASA) scale during the TSST. Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSE).

Results: Analysis showed a significant cortisol response to both TSSTs’ day 1 time effect; F=8.38, p<.004; day 2 time effect; F=10.88, p<.001. In young adults RSE was not significantly associated with PASA (r=.335, p=.075) or its subscales (primary; r=-.230, p=.229; secondary; r=.355, p=.058), but was associated with day 2 corticosterone (r=.469, p<.01). In older adults RSE was associated with PASA (r=.594, p=.020, secondary appraisals (r=.547, p=.039), and primary appraisals at a trend level (r=.472, p=.075), but were not associated with either cortisol response (D2; r=-.073, p=.773; D3; r=-.034, p=.896).

Conclusions: This data showed that self-esteem is related with aspects of stress response differently across age groups. Self-esteem in younger adults was not related with anticipatory stress appraisals, but was related with subsequent stress hormone release. Self-esteem in older adults was predictive of stress appraisals but not associated with their stress hormone releases across exposures. This could show that the associations between self-esteem and how individuals appraise and react to stress is not static across the lifespan.

346) Abstract 1841

DISEASE SPECIFIC KNOWLEDGE, COGNITIVE ABILITY, CARDIAC DENIAL AND THE ASSOCIATION WITH QUALITY OF LIFE IN ADULTS WITH CONGENITAL HEART DISEASE: A PILOT STUDY
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Congenital heart disease (CHD) is among the most common birth defects and is the leading cause of birth defect-related death (AHA, 2000). Most patients with CHD require lifelong specialized cardiac care. Research shows that adult patients with CHD have a complex relationship with their heart condition. To examine this relationship, we invited patients with CHD to participate in a cognitive assessment and to complete a series of questionnaires after an outpatient visit with their cardiologist. At present, 32 adults with CHD (67% male, AgeM=47.4+/-18 years) have participated. Fifty-eight percent (58%) work full-time, 12.9% are unemployed. The range of cognitive ability in this sample is large. Average education-corrected mean abstract impairment score was 91.5 (SD = 14.15) on the Shipley-2 with 28% demonstrating impaired cognitive function. Cardiac denial in this sample was 20.19 (SD = 5.24) based on responses to the Cardiac Denial of Impact Scale. This is lower than the mean for patients seeking emergency care for a myocardial infarction (M = 25.5, SD 4.9) and comparable to that of in-patients with acute coronary syndrome ACS. Preliminary data show that total cardiac denial of impact is associated with significantly lower physical functioning (-.43, p = .020) and general health perceptions (-.60, p = .001). This presentation will report complete data on the pilot sample of patients through examination of CHD knowledge (including the Leuven Knowledge Questionnaire) and its association with denial and quality of life (SF-36). We will test whether accurate self-knowledge about one’s CHD is associated with less denial and higher health-related quality of life and are these effects modified by cognitive ability. Implications for optimal transition to adult care of CHD will be discussed.

347) Abstract 1836

SOCIOCULTURAL FACTORS RELATED TO ELEVATED HEALTH RISK OF FAMILY CAREGIVERS OF PATIENTS WITH COLORECTAL CANCER
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Family caregivers of cancer survivors are at elevated risk for diverse health problems, as are caregivers of people with other diseases. Little information exists about why this is so for cancer caregivers. Little information also exists regarding the generalizability of such findings to ethnic minorities. This pilot study explored the relationships of sociocultural factors that are relevant in cancer caregiving context with biomarkers in family caregivers of patient with colorectal cancer.

Family caregivers were nominated by patients who had been newly diagnosed with colorectal cancer (stage I to IV) about 2 months prior to participating in the study (n = 22 in the pilot phase of a larger study). Caregivers (age M = 46 years old, 68% Hispanic) completed a questionnaire that includes measures of ethnicity, hours spent providing care to the relative with cancer, perceived caregiving stress (Pearlin Stress Scale), autonomous motivation for caregiving (Reasons for Caregiving), loneliness (UCLA Loneliness), and general health (MOS SF-12). Plasma interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-α), vascular endothelial growth factor (VEGF) and CRP were assayed.

Caregivers reported an average 10 hours per day spent for providing care to the relative with cancer, and mild to moderate levels of perceived caregiving stress and loneliness. They endorsed high levels of autonomous reasons for caregiving. They evaluated their health as good to very good. General linear modeling revealed that longer hours of caregiving related to higher levels of IL-6 and CRP (ps < .045). In contrast, longer hours of caregiving among Hispanics marginally related to greater levels of VEGF (p < .057).

Findings suggest objective indicators, such as longer hours of caregiving, rather than perceived caregiving stress and loneliness, and ethnicity may play significant role on the caregivers’ elevated health risk. Larger sample size and follow-up data will help further elucidate the role of sociocultural factors in cancer caregivers’ health.
positive associations between Depression and ABP only for the DS group (SBP, β=0.56, SE=0.23, p<0.05; MAP, β=0.48, SE=0.18, p<0.01). The simple slope for the DS group was significantly more positive compared to the AS or TS groups (SBP, t=2.46, p<0.05; MAP, t=2.30, p<0.05).

These results shed new light on the DS motive profile and its potential associations with CV risk mechanisms. Difficulty in forming action goals for managing persistent stressors may increase risk in individuals who have symptoms of depression.

349) Abstract 1832

A DYNAMICAL SYSTEMS EXAMINATION OF AUTONOMIC NERVOUS SYSTEM ACTIVATION IN THE PRE-SLEEP PERIOD

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Pre-sleep arousal (PSA) is associated with poor overnight sleep quality, as well as the development of chronic sleep disturbance. Research examining pre-sleep psychophysiology, particularly autonomic nervous system dynamics, would inform understanding of mechanisms for risk associations and targeted intervention. The current study utilized a dynamical systems approach to examine associations between sympathetic nervous system activation, quantified as pre-ejection period (PEP), and parasympathetic nervous system activation, quantified as high-frequency heart rate variability or respiratory sinus arrhythmia (RSA), during the pre-sleep period. Participants were healthy community adults (mean age = 27.3) without current diagnostically sleep disorder. Resting RSA, hypothesized to reflect self-regulatory capacity, was measured during a baseline assessment session. Participants then wore an ambulatory cardiac impedance monitor and actigraph during the day and overnight, and completed the Pre-sleep Arousal Scale (PSAS) before bedtime. Initial analyses examined minute-to-minute PEP and RSA for the 2 hours prior to actigraph-identified sleep onset among the 24 participants with the highest and lowest PSAS scores. RSA and PEP data were used to build two simultaneous change equations using a latent difference score approach for each consecutive time point. A piecewise linear modeling was used to identify multiple patterns, allowing each PEP-RSA vector across participants to go into different groups. This analysis identified 3 attractor patterns: a high PEP-high RSA pattern (69% of vectors), a high PEP-low RSA pattern (12 %), and a low PEP-low RSA pattern (19%). All three patterns evidenced a coupling relationship between changes in PEP as predicted by RSA, only attraction to the high PEP-low RSA pattern showed evidence of changes in RSA as predicted by PEP. Of the PEP-RSA groups, the RSA group is of particular interest as it represents a coupled relationship characterized by parasympathetic withdrawal strongly influencing sympathetic activation, t(2824.547) = 5.75, p<0.001— an undesirable state during the pre-sleep period. Individuals with higher resting RSA evidenced a higher probability of having vectors in the “healthy” high PEP-high RSA group and lower probability of having vectors in the low PEP-low RSA group, t(22.001) = 3.65, p<0.001. Findings suggest that targeted intervention to address autonomic dynamics during the pre-sleep period, a critical time period for stress restoration, may be useful in preventing chronic sleep disturbance in vulnerable individuals.

350) Abstract 1829

PSYCHOLOGICAL INTERVENTIONS AND IMMUNITY: A META-ANALYSIS

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Psychological factors, such as coping and affect, have been associated with alterations in immune system function, raising the possibility that psychological interventions (e.g., relaxation, meditation, conditioning) might causally affect immune system function. Yet in 2001, Miller & Cohen reported only modest evidence that psychological interventions alter the immune system in their meta-analytic review of 59 studies. Here we describe a rigorous meta-analysis of the psychological interventions and immunity literature (N=130 randomized controlled trials). Random effects models indicate significant small positive effects of psychological interventions on increasing T-lymphocyte counts (Hedge's g=0.17), trials). Random effects models indicate significant small positive effects of psychological interventions and immunity literature (N=130 randomized controlled trials). Here we describe a rigorous meta-analysis of the evidence that psychological interventions alter the immune system in their meta-analysis of 59 studies. Here we describe a rigorous meta-analysis of the evidence that psychological interventions alter the immune system. Yet in 2001, Miller & Cohen reported only modest evidence that psychological interventions (e.g., relaxation, meditation, conditioning) might causally affect immune system function.
of MIB follows, guiding clinical intervention. A quadrant model organized along qualitative and quantitative axes is proposed. Results: As MIB has been correlated with psychotic comorbidity and interpersonal dysfunction in previous studies, a quadrant model for classifying MIB subtype allows for nuanced classification of MIB subtype in turn allowing for more rapid and unambiguous implementation of patient-tailored interventions. Clinical vignettes are offered to illustrate this model’s application. Conclusion: A quadrant model for classifying MIB is described that provides measurable utility in addressing variables driving MIB. Future directions are discussed, including relevance to clinician education, behavioral health consultation, and potential feasibility testing via pre- and post-classification assessment. Desired outcomes include reduced financial burden/cost and improved clinical outcomes, ranging from increased adherence to indicated medical care to decreased non-indicated medical care and iatrogenic harm.

354) Abstract 1810
MOOD AND SLEEP RECIPROCALLY REINFORCE EACH OTHER OVER THE COURSE OF TREATMENT FOR MAJOR DEPRESSIVE DISORDER.
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Introduction: Depressed mood (DM) and sleep problems (SP) are defining features of Major Depressive Disorder (MDD). Current theories on depression hypothesize that these symptoms mutually reinforce each other. Moreover, preliminary evidence indicates that targeting sleep problems with specific interventions may positively influence affective symptoms of depression. This exploratory study assessed the temporal effects of affective and sleep symptoms of MDD in 160 patients meeting criteria for MDD, we assessed self-reports of DM and SP at four weekly intervals over the first three weeks of inpatient treatment. Based on structural equation modeling, we used bivariate latent change score (LCS) models to clarify reciprocal associations between DM and SP. Results: Significant cross-lagged effects from SP to subsequent changes in DM (γSP = -2.5, p = 0.04) indicated that SP negatively predicted subsequent improvement in DM. Conversely, significant cross-lagged effects from DM on subsequent changes in SP (γDM = 1.6, p = 0.04) indicated that DM positively predicted subsequent improvements in SP. Conclusion: Affective and sleep symptoms of MDD mutually influence each other over the course of treatment. Effectively reducing sleep problems helps reduce DM in patients suffering from MDD.

355) Abstract 1807
WORK STRESS IS RELATED TO CIRCADIAN CORISOL SECRETION AND MODERATED BY SOCIECONOMIC STATUS: FINDINGS FROM THE MANHEIM INDOURAL COHORT STUDY (MICs)
Maren E. Thole, MD, MSc, Mannheim Institute of Public Health, Heidelberg University, Mannheim, Baden-Württemberg, Germany Background: Psychosocial work stress and cardiovascular disease (CVD) are linked. Studies have suggested stress exerts its adverse effect by causing alterations to the body’s allostatic systems. The association between work stress and CVD may be influenced by impairment MPA axis functioning. Salivary cortisol secretion is suitable to resemble HPA axis malfunctioning. The literature on salivary cortisol remains inconsistent with respect to suitable cortisol parameters to indicate psychosocial stress. Few studies have addressed moderators in the relationship between psychosocial work stress and cortisol secretion. Methodology: The design of the study was cross sectional. The research population was drawn from the MIPH Industrial Cohort Studies (MICS) and included 792 employed employees (58% male, 42% female). Participants underwent a medical examination, provided demographic, psychosocial and further information by 3 validated questionnaires. Work stress was operationalized by 2 models (Job-demand-control; Effort-reward-imbalance). 7 salivary samples were collected from two consecutive days and analyzed using the IBL assay. Numerous cortisol secretion parameters were calculated and linear regression analyses performed to determine relationships and moderators, whilst controlling for confounders of cortisol secretion. Results: In blue collar workers effort-reward-imbalance was associated with steeper diurnal cortisol decline (β = 0.208, p = 0.05) and higher education buffered the effect of unfavorable scores of job- demand-control on the cortisol awakening level (β = 0.231, p < 0.01). There were no significant associations nor moderators in white collar workers. Conclusion: The study links impaired HPA axis functioning to unfavorable work stress conditions and provides evidence for higher vulnerability among lower socioeconomic status and employment grade.

356) Abstract 1799
A META-ANALYSIS OF SEX DIFFERENCES IN HEART RATE VARIABILITY
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The study of heart rate variability (HRV) has surged exponentially in recent decades. While sex differences in HRV are widely reported, the nature of those differences are not clear; some authors report higher vagally mediated HRV in women while others report the same in men. To clarify the nature of the sex difference, an extensive quantitative review was undertaken of original studies reporting sex differences in HRV in healthy populations. Studies that examined long-term tonic HRV by sex in biomedically healthy human samples were retrieved using keywords “sex,” “gender” and “heart rate variability” from the Web of Knowledge and PubMed databases from 1949 to 2013. The present analyses included a total of 122 studies across 25 nations and over 39,000 individuals. Random effects sub-analyses were performed by autonomic influence (parasympathetic versus combined) as well as by time and frequency domain index (RMSSD, SDNN, high frequency (HF), low frequency (LF), and LF/HF ratio). Age, ethnicity, and EKG recording length were analyzed as moderators. Women showed greater vagally mediated HRV [corrected d = 0.49, 95% CI = (0.21, 0.77)] while men showed greater relative sympathetic dominance [corrected d = -0.74, 95% CI = (-0.51, -0.97)]. Effects varied depending on age, index used, as well as length of recording. In particular, 24-hour EKG recordings attenuated sex differences in vagally mediated HRV (k = 26, d = 0.17, 95% CI = (-0.40, 0.74)) compared to short-term recordings (k = 79, d = 0.58, 95% CI = (0.26, 0.90)). Considerations with respect to HRV modulation, recording, and differences across age and ethnicity are discussed, as well as important recommendations for researchers.

357) Abstract 1795
THE TRAJECTORY OF CPAP USE AND THE INFLUENCE OF DEPRESSION DURING THE FIRST 12 WEEKS OF TREATMENT
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Introduction: Obstructive sleep apnea (OSA) is a breathing disorder which is characterized by repeated cessations of the upper airway occurs during sleep. The primary treatment of OSA is continuous positive airway pressure (CPAP) which many patients are unable to tolerate. The biggest impediment to adequate treatment of OSA is CPAP adherence. Those with depression may be even less able to tolerate CPAP. Our interest in this study was to 1) determine the trajectory of CPAP use during the first 12 weeks of treatment and 2) determine the influence of depression on CPAP adherence. Methods: Consecutive OSA patients over a four month period (n=142) returned to the Miami VA CPAP clinic following a diagnostic sleep study and PAP titration to receive CPAP and complete questionnaires. Diagnoses of depression were obtained from the electronic medical record (0=no mood disorder, 1=mood disorder). After beginning treatment, patients returned to the clinic for follow up within 3 to 6 months. At follow-up objective usage data was downloaded from CPAP. Weekly averages in minutes for the first 12 weeks following CPAP initiation were obtained. We used mixed modeling to characterize the trajectory of CPAP use and to determine if mood disorder influenced the trajectory.
Results: Both linear and quadratic models were tested. Results indicated that the quadratic model provided the best fit. The estimated unconditional quadratic model is (superscript ‘a’ indicates significant coefficient): Adherence(min)= 194a – 17a(Weeks) + 0.85a(weeks2). In the unconditional model patients used CPAP for 194 min which was reduced by 17 min after the 1st week. The weekly reduction in use decreased over time and by the 12th week patients used CPAP for 117 min. The estimated conditional model with mood disorder as a level 2 predictor is: Adherence=184a + 20 (mood) – 11a (weeks) – 13a (weeks*mood) + 0.46 (weeks2) + 0.89a (weeks2*mood). In the conditional model those without a mood disorder started using CPAP for 184 min at week 1 which was reduced by 11 min after the 1st week. The weekly reduction in use decreased over time at week 12 non-depressed patients were using CPAP for 123 minutes. Patients with a diagnosed mood disorder started using CPAP for 184 min which was reduced by 24 min after the 1st week. The weekly reduction in use also decreased over time and by the 12th week depressed patients were using CPAP for 113 minutes.

Discussion: These results indicate that CPAP usage follows a curvilinear, decelerating pattern over the first 12 weeks of use. Furthermore, those diagnosed with depression reduce their CPAP use at a more rapid rate and are using CPAP for less time than non-depressed patients.

358) Abstract 1790

BODY MASS INDEX MODERATES THE RELATION OF DIARY NEGATIVE MOOD TO AMBULATORY BLOOD PRESSURE IN URBAN BLACK AND LATINO ADULTS

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Body mass index (BMI) is a strong indicator of poor physical health and the rates of overweight status and obesity among adults in the U.S. is over 69%. The positive relation of BMI to ambulatory blood pressure (ABP) – a gold standard in blood pressure measurement and a predictor of hypertension risk – is well established. Whether this physiological marker influences the relation of daily negative mood to ABP is unknown. In the current study, we sought to examine the main effects of negative mood and BMI on ABP and whether negative mood and BMI interacted to predict ABP. A sample of 645 African American and Latino adults (mean age = 39.4, SD = 9.7) living throughout New York City completed a daily diary and ABP monitoring across a 24-hour period. The diary assessed anger, sadness, and nervousness from which a composite negative mood variable was created. Hierarchical regression models were conducted and adjusted for age, gender, and race. Significant main effects were found for BMI only, with higher levels of BMI associated with higher ABP across the 24-hour period, daytime, and nighttime (p’s all < .006). The Negative Mood x BMI interaction term statistically predicted 24-hour SBP (B = –.02, p = .0003) and DBP (B = –0.1, p = .0003) and daytime SBP (B = –.03, p = .0001) and DBP (B = –.02, p = .0003). In simple effects analyses conducted across these four significant interaction terms, the slope was always significant for lower BMI with p values < .0006. Specifically, among individuals with lower BMI, greater negative mood as reported on the daily diary was associated with higher 24-hour and daytime ABP. These effects were not observed in those with higher BMI. Further research is needed to understand the ways in which health behavior and physiological pathways associated with BMI buffer the effects of negative mood on ABP.

359) Abstract 1788

BASELINE DEPRESSIVE SYMPTOMS MODERATE THE EFFECTIVENESS OF EXPRESSIVE WRITING ON SUBJECTIVE AND BIOLOGICAL OUTCOME MEASURES FOR PATIENTS WITH RENAL CELL CARCINOMA

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Expressive writing (EW) is an effective approach to improve quality of life (QOL) in cancer patients. We previously reported that EW improved cancer-related symptoms (MASDI, fatigue (BFI), and physical function (SF-36) in renal cell carcinoma (RCC) patients. Based on a recent meta-analysis demonstrating that pre-intervention depressive symptoms moderated the effectiveness of behavioral therapies, we examined if those with elevated depressive symptoms (CES-D) at study entry would benefit more from the EW intervention on subjective measures of QOL as well as immune outcomes than those with low levels. Patients (n=277) with RCC scheduled to receive surgical or systemic treatment were randomly assigned to write about either their deepest thoughts and feelings about their cancer (EW) or neutral topics (NW) on four separate occasions over 10 days. Patients completed self-report measures (MASDI, BFI, SF-36, and CES-D) at baseline, and 1, 4, and 10 months after the writing sessions. Blood samples were also collected at these time points to examine immune outcomes (phenotype enumeration).

The mean age of participants was 58 years, and 41% were female with tumors staged I-IV. After controlling for baseline levels of the outcome variables, multilevel modeling analyses revealed that participants with elevated depressive symptoms at baseline (mean±1 SD) had worse outcomes in the EW group compared their counterparts in the NW group. Specifically, at 4-month post-intervention, participants in the EW group reported more cancer-related symptoms (MASDI, P<.01) and worse physical function (SF-36; P<.01) and fatigue (BFI; P<.01) compared to those in the NW group. There were no group differences for those low in baseline depressive scores. Regarding the immune outcomes, compared to those in NW group, participants with elevated depressive symptoms in the EW group had significantly lower levels of percent natural killer cells (P<.05) and percent cytotoxic T cells (P<.01), indicating worse immune param.

These findings suggest that patient baseline characteristics may moderate the effectiveness of EW. Those with elevated depressive symptoms at study entry do not appear to benefit from an EW program and, in fact, EW may result in worse outcomes.

360) Abstract 1784

LIFE STRESS AND MERCURY EXPOSURE INTERACT TO ALTER MATERNAL CORTISOL PRODUCTION DURING PREGNANCY

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Cortisol is a critical hormone in development. Disruptions in maternal prenatal cortisol production influence offspring programming of developmental disorders in children. Previous research has shown that the hypothalamic-pituitary-adrenal (HPA) axis is disrupted by both prenatal stressful life events and toxic metals. Methymercury (MeHg) is a common contaminant of fish and exposure is widespread in the US. However, no prior study has examined joint effects of exposure to psychosocial stress and methymercury on maternal cortisol profiles in pregnancy. We hypothesized that stressful life events and MeHg exposure interact to influence maternal prenatal ambulatory cortisol rhythms. To investigate these associations 815 pregnant women (average age: 27.42 ± 5.55 years) were recruited into a Mexico City birth cohort. Maternal MeHg exposure was measured in toe nails during the second trimester of pregnancy. Also in the second trimester of pregnancy, mothers collected five saliva samples on two consecutive days for the assessment of daily cortisol output and completed the Crisis in Family Systems questionnaire to indicate life stressors they experienced in the past six months. Using linear regression, we found no significant main effects of either toe nail mercury or life stress on maternal cortisol (ps >0.10). However, life stress and mercury interacted to predict maternal cortisol slopes averaged across both sampling days (B = -0.006, SE = 0.003; p = 0.024). Specifically, when exposed to more MeHg, women also experiencing more stressful life events showed evidence of flatter cortisol slopes across the day, indicative of a synergistically disrupted cortisol pattern compared to low MeHg/low stress women. These data suggest that the social and physical environments we live in interact to influence maternal peri-pregnancy cortisol, with potentially critical implications for their offspring. Research focusing solely on stressors in either the social or physical domain may miss important synergistic effects.

361) Abstract 1780

DOES TRANSCENDENCE STRIVING BUFFER THE CARDIOVASCULAR STRESS OF SOCIAL INTERACTIONS IN PERSONS WITH HYPERTENSION?

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We have shown that implicit (nonconscious) social control motives predict higher levels of ambulatory blood pressure (ABP) during daily activities, especially during social interactions. Adolescents with a “transcendent” motive profile (TS; seeking to control the self) exhibited lower ABP compared to peers with an “agonistic striving” profile (AS; seeking to control others) or a “dissipated striving” profile (DS;
inability to assert control). We now report a new study of adults testing the hypothesis that the TS profile is associated with lower ABP levels during daily social interactions in persons with hypertension. Participants were 222 adults (average age = 32.1 ± 3.4 years, 72% female, 63% African American), 36% who had previously participated in previous studies while in high school. Motive profiles were assessed with the Social Competence Interview (SCI); AS, TS, and DS profiles were identified with cluster analysis. ABP was measured during normal activities over two 24-hr intervals. Hypertensive status was defined by resting BP >130 mmHg/85 mmHg. GLM regression analyses tested the hypothesized interaction between hypertensive status and motive profile group in predicting ABP levels during social interactions. Results disclosed that hypertensive individuals with the AS profile (b=8.63, SE=3.66, p<.01) and the DS profile (b= 9.7, SE=3.7, p=0.04) exhibited significantly increased levels of ambulatory diastolic blood pressure during social interactions compared to individuals with the TS profile (b=0.3, SE=2.82, p=0.05). Additional model findings show that the regression slopes for the AS and DS groups were significantly elevated compared to the TS group (b=8.12, SE=3.24, p<.01). Results of analyses utilizing the same model in normotensive individuals were not statistically significant. Results suggest that the TS motive profile may contribute to lower levels of ABP in persons with prehypertension, especially during social interactions. Further, the finding that hypertensive adults with the AS profile had the highest DBP during social interactions is consistent with our previous findings in studies of adolescents.

362) Abstract 1777
ETHNICITY AND CANCER CAREGIVER STATUS AS PREDICTORS OF SLEEP DISTURBANCE: A PILOT STUDY
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Cancer caregiving is an important aspect of cancer survivorship that has been understudied. Prostate cancer (PC) is the most common cancer diagnosed in men. Although spouses and partners typically serve as caregivers for these patients, no studies have examined the impact of caregiving for a mate with PC on sleep. This pilot study examined differences in objective (actigraph) and subjective (Pittsburgh Sleep Quality Index-PSQI) sleep in an ethnically diverse sample of women whose mates had PC relative to women in relationships with men with no cancer history. Women who self-identified as African American, Hispanic, or Asian American were classified as “ethnic minority.” Participants included 23 female partners of men with PC (9 ethnic minority, 14 Caucasian) and 28 women in the non-caring comparison group (11 ethnic minority, 17 Caucasian). Recent findings suggest that ethnic minority individuals have more sleep disturbance than their Caucasian counterparts. Thus, we hypothesized that ethnicity and caregiver status would interact to predict sleep, with ethnic minority partners of men with PC having worse sleep than both the PSQI and actigraphic sleep parameters. Participants completed the PSQI to measure self-reported sleep in the past week and wore an actigraph continuously for 24-hours across three days. Results of actigraphic sleep analyses showed that ethnic minority partners of men with PC had less sleep efficiency and more nighttime awakenings than Caucasian partners of men with PC as well. Ethnic minority partners of men with PC also showed less sleep efficiency than Caucasian partners of men with PC. Further, findings are consistent with our previous findings in studies of adolescents. Although spouses and partners typically serve as caregivers for these patients, no studies have examined the impact of caregiving for a mate with PC on sleep. This pilot study examined differences in objective (actigraph) and subjective (Pittsburgh Sleep Quality Index-PSQI) sleep in an ethnically diverse sample of women whose mates had PC relative to women in relationships with men with no cancer history. Women who self-identified as African American, Hispanic, or Asian American were classified as “ethnic minority.” Participants included 23 female partners of men with PC (9 ethnic minority, 14 Caucasian) and 28 women in the non-caring comparison group (11 ethnic minority, 17 Caucasian). Recent findings suggest that ethnic minority individuals have more sleep disturbance than their Caucasian counterparts. Thus, we hypothesized that ethnicity and caregiver status would interact to predict sleep, with ethnic minority partners of men with PC having worse sleep than both the PSQI and actigraphic sleep parameters. Participants completed the PSQI to measure self-reported sleep in the past week and wore an actigraph continuously for 24-hours across three days. Results of actigraphic sleep analyses showed that ethnic minority partners of men with PC had less sleep efficiency and more nighttime awakenings than Caucasian partners of men with PC as well. Ethnic minority partners of men with PC also showed less sleep efficiency than Caucasian partners of men with PC. Further, findings are consistent with our previous findings in studies of adolescents.

364) Abstract 1767
MODERATORS AND MEDIATORS OF A RANDOMIZED, CONTROLLED TRIAL OF YOGA FOR WOMEN WITH BREAST CANCER UNDERGOING RADIOTHERAPY
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It is important to identify factors that predict who benefits most from mind-body interventions in cancer populations, as well as mechanisms by which such interventions take effect. This study examined pre-treatment moderators and treatment-related mediators of the effects of yoga (YG, n=53) compared to stretching (ST, n=56) and a waitlist control group (WL, n=54) on quality of life (QOL) for women undergoing radiotherapy for breast cancer. Self-report measures of fatigue (BFI), depression (CES-D), QOL (SF-36 MCS and PCS), sleep (PSQI), intrusive thoughts/avoidance behaviors (IES) and benefit finding (BF) were completed at baseline, end of treatment and 6 months later. Due to the physical nature of the intervention, baseline SF-36 physical functioning subscales (general health-GH; physical functioning-PF) were examined as potential moderators of the intervention’s effect on 6-month outcomes. Change in IES and BF from baseline to the end of treatment were examined as potential mediators. All analyses covaried for age, race, demographic and respective baseline psychosocial measures. Moderation analyses indicated that women in YG who reported high baseline GH reported higher PCS and lower PSQI scores at 6-month follow-up compared to women reporting high baseline GH in the WL group (p’< 0.02), with ST having a non-significant intermediate effect. Conversely, women in ST who reported low baseline PF had higher CES-D scores at 6-month follow-up compared to women with low PF who were assigned to the WL group (p = 0.02), with YG having a non-significant intermediate effect. The Preacher and Hayes’ mediation analyses of the indirect effects of group indicated that IES-avoidance scores significantly mediated the effect of group on PCS, MCS, CES-D, and BF. Women in YG did not report a decrease in IES avoidance from baseline to immediately post treatment, which was found for the ST and WL groups, and this mediated YG’s beneficial effects on long-term outcomes. BF did not mediate the effect of group. Possible reasons for the indirect effect of YG on QOL via IES avoidance are discussed.

365) Abstract 1759
MEETING OTHER CHRONIC PAIN PATIENTS FOR THE FIRST TIME - DOES IT INCREASE THE BENEFITS OF A CHRONIC PAIN SELF-MANAGEMENT PROGRAM (CPSMP)?
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BACKGROUND: CPSMP is a structured 6-session patient education program. Two instructions teach groups of 8 -16 chronic pain patients in managing pain. Instructors are pain patients themselves and act as positive role models. In addition to delivering information and introduce exercises, sharing experiences with other chronic pain patients is facilitated. On this background it may be hypothesized that chronic pain

hypertension, with effects observed among those ages 51-64, but not those ages ≥65. In this sample of older adults, negative social interactions were associated with increased hypertension risk in women and the youngest older adults.

Figure 1. Association of Total Average Negative Social Interaction Scores With Hypertension By Sex.
methods: A total of 424 pain patients enrolled in a RCT of CPSMP (27% men), of these 216 were randomized to intervention. Questionnaire data regarding pain, disability, depression, and somatic symptoms were collected before and after the intervention. Baseline data revealed that meeting other pain patients for the first time did not moderate the effects of the CPSMP on disability, pain, catastrophizing, or distress. After the CPSMP participants who had not met others with pain before reported lower pain catastrophizing compared to others (t= -2.76--2.03, p<0.05). CONCLUSION: Some chronic pain patients do not know others who suffer from chronic pain. Participating in the CPSMP may therefore be their first opportunity to meet and share experiences with other patients. This subgroup differs from other participants in their cognitions about their pain condition (i.e. catastrophizing, benefit-finding, stigmatization) and in their level of somatic symptoms. However, knowing or not knowing others with pain did not influence the effect of the CPSMP, and meeting others with chronic pain for the first time did not make participants perceive the program more positively.

366) Abstract 1755

SELF-REPORTED FATIGUE IS RELATED TO HEART RATE VARIABILITY CHANGES IN RESPONSE TO A CONTINUOUS PERFORMANCE TASK

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Background: Fatigue is a common complaint in healthy and diseased individuals. Previous studies suggest that fatigue is associated with vagal withdrawal and/or attenuated sympathetic activity. It is not known to what extent these associations reflect transient cardiovascular states or sustained chronic fatigue. This study assessed whether acute fatigue and chronic fatigue are related to altered ANS activity in response to a high-demand continuous performance task (CPT). Methods: Healthy adults (N=32, mean age 20±2.1 yrs; 61.8% women) completed a 14-min computerized CPT preceding by a 10-min baseline period. Continuous ECG and ICg were obtained to calculate measures of vagal withdrawal (root mean squared successive differences RMSSD) and sympathetic activation (pre-ejection period; PEP – higher values indicating attenuated sympathetic activation), and heart rate (HR) at baseline and during CPT. Acute fatigue responses to the CPT were measured on a 7-point Likert scale at the end of the baseline period and at completion of the CPT. Sustained chronic fatigue levels were measured using the 5 subscales of the Multidimensional Fatigue Inventory (MFI; general fatigue, physical fatigue, physical fatigue, reduced activity, reduced motivation, and mental fatigue). Paired t-tests were performed to examine reactivity to CPT in RMSSD, HF-HRV, PEP and HR. Pearson correlations were used to estimate the associations between CPT-induced acute fatigue response and chronic (MFI subscales) fatigue with ANS measures. Results: The CPT induced an increase in acute fatigue levels (baseline mean 2.2±1.0; CPT 3.4±1.4; p<0.001). ANS responses to CPT included a decrease in the RMSSD (p=.002) and HF-HRV (p=0.07), a trend towards increased PEP (p=0.63), partially by an increase in HR (p=0.05). Higher CPT-induced acute fatigue responses were associated with a CPT-induced increase in PEP (r=0.43, p<0.02). The acute fatigue response to CPT was associated with CPT-induced withdrawal of RMSSD. The correlations were statistically significant: (r RMSSD=-.127; r=0.489; r HF-HRV -.129; r=0.483, and r HR -.152; r=0.406). The pre-CPT fatigue level was correlated with the MFI general fatigue subscale (r =0.317; p=0.041) the MFI physical subscale (r =0.347; p=0.024), but CPT-induced acute fatigue responses did not correlate with the MFI, MFI-based chronic fatigue levels were not consistently associated with baseline ANS measures (p values >0.043) or ANS responses to the CPT (p values >.113). Discussion: The CPT resulted in increased levels of acute fatigue, vagal withdrawal and a trend towards attenuated sympathetic activity. Acute fatigue responses to the CPT were associated with less sympathetic activity in response to the CPT. No associations between these variables were found between ANS responses to the CPT. Transient increases in sympathetic nervous system activity in fatigue states may be of particular interest to future biobehavioral studies on fatigue.

367) Abstract 1753

VASCULAR MORTALITY IN PARTICIPANTS OF THE BIOPOLAR GENOMICS STUDY

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Methods: We conducted a mortality assessment using the National Death Index for 1,716 participants from the National Institute of Mental Health Genetics Initiative Bipolar Disorder Consortium. We assessed the relationship between the duration of the most severe depressive and manic episodes and time to vascular mortality (cardiovascular or cerebrovascular) using Cox Proportional Hazards Models, adjusting for potentially confounding variables.

Results: Mortality was assessed a mean of 7 years following study intake at which time 18 participants died from vascular causes. These participants were depressed much longer than their counterparts (Z=2.30, p=0.02) and the duration of the longest depressive episode in years was significantly associated with time to vascular mortality (Z=1.79, p=0.03). Vascular mortality was positively associated with age, gender, vascular disease equivalents, and vascular disease risk factors. The duration of longest mania was not related to vascular mortality. Vascular risk factors, which were largely identified based on treatment received, paradoxically appeared to be marginally protective. Conclusion: The duration of the worst depression is independently predictive of vascular mortality, lending further support to the idea that mood disorders hasten vascular mortality in a dose-dependent fashion. Treatment of cardiovascular risk factors may mitigate risk in this high-risk and neglected patient population that is at an underappreciated high risk for vascular events.

368) Abstract 1747

ASSOCIATION BETWEEN BODY MASS INDEX AND SLEEP DISTURBANCES IN BREAST CANCER PATIENTS UNDERGOING CHEMOTHERAPY

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Sleep disturbances are common among cancer patients. In the general population, a higher body mass index (BMI) is associated with worse sleep quality as assessed from both subjective and objective sleep measures. Extensive research in cancer has examined the association between sleep quality and fatigue, yet the role of BMI is underexplored. The current study hypothesized that BMI would be associated with subjective and objective measures of sleep quality and fatigue levels. Data presented are baseline measures collected from a study of Tibetan yoga to decrease fatigue and sleep disturbances during chemotherapy. Participants completed measures of objective (Actigraphy) and subjective (PSQI) measures of sleep disturbance, depression (CES-D), fatigue (BFI), and BMI (BMI). Of the 1,323 participants, 855 (65%) had not met other cancer patients previously. This group had only lived with pain 5.5 yrs. compared to 9.3 yrs in other participants (t=2.86, p<0.001). They reported less anxiety (t=2.86, p<0.001) and less depression (t=2.03, p<0.05). CONCLUSION: Some chronic pain patients do not know others who suffer from chronic pain. Participating in the CPSMP may therefore be their first opportunity to meet and share experiences with other patients. This subgroup differs from other participants in their cognitions about their pain condition (i.e. catastrophizing, benefit-finding, stigmatization) and in their level of somatic symptoms. However, knowing or not knowing others with pain did not influence the effect of the CPSMP, and meeting others with chronic pain for the first time did not make participants perceive the program more positively.

369) Abstract 1746

RECOGNIZING RELATIVE ADRENAL INSUFFICIENCY OF NEONATES (RAIINS) WITH CONGENITAL HEART DISEASE (CHD)

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Background: Over the past decade the concept of RAIN in intensive care unit (ICU) was proposed. However, this stress related phenomenon is not well studied in infants with CHD. The hypothalamus-pituitary-adrenal (HPA) axis regulates metabolism and energy which is essential during stressful or disease states seen in ICU. Cortisol is critical to the maintenance of normal homeostasis. Its deficiency can lead to hypoglycemia, hypotension, shock & death. RAIN is based on the inability of a neonate with CHD to mount an appropriate elevation in a random serum cortisol >15 µg/dL during stress.

Methods: We utilized a retrospective examination of a neonatal intensive care unit (NICU) cohort of babies with CHD who were admitted between 10/2009 to 6/2013 and descriptive analyses to identify potential stressors and whether cortisol levels were drawn pre and post first surgery. We abstracted and reviewed cortisol data from medical and electronic data bases. We hypothesized that in this high stress population that the incidence of RAIN will be higher than 20%.

Results: We found 290 babies with CHD with biophysiological stress immediately upon delivery that required immediate intervention (e.g. oxygen (50%), intubated (10%), CPR (5%), and also in the NICU (e.g. mechanical ventilation (85%), surgery (54%), and Death (13%). Of the total sample, half (134) had at least 1 cortisol test between birth and 61 days of life, and 64 (48%) had more than one cortisol test. There were 57 babies who had pre surgery cortisol levels, of these only 16 babies had cortisol levels >15 µg/dL. The majority 41 (72%) had cortisol < 15 µg/dL. We identified a subgroup (n=30) and found 53% had very low cortisol levels < 10 µg/dL and 26% had levels < 6 µg/dL. Pre and post surgery cortisol were identified (n=19) with 7 (37%) classified as RAIN as their post cortisol levels did not increase > 10 µg/dL.
Conclusions: These findings cannot be extrapolated beyond this retrospective study, however we speculate this high incidence of RAIN in babies with CHD may be unrecognized due to lack of standard testing. Future clinical trials are needed to rigorously examine RAIN in CHD babies and to standardize stress testing and interventions to improve short and long term health outcomes.

370) Abstract 1745 
CHRONIC STRESS MEASUREMENT METHODS AND THEIR COMPARABILITY 
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Background: Specific laboratory methods such as hair cortisol concentration (HCC) analysis and allostatic load indices open new possibilities in the evaluation of chronic stress. Still, the reliability and validity of these biological methods and their comparability to psychometric scales is unknown.

Purpose: To investigate the test-retest reliability of an HCC, an 18-biomarker (ALI) and a 2-biomarker allostatic load index (ALI-HPA); to analyze the correlations between HCC, ALI, and ALI-HPA with different psychometric measures. 
Method: Psychometric and physiological data were obtained from 12 participants (10 f, 3 m; age = 28.2 ± 2.1 yr; ethnicity: white = 100%). Subjective stress was documented at M1 using the Perceived Stress Scales (PSS). 

Results: Single biomarker ICCs were found to range from ICC = 0.74 – 1.0. Correlations of single biomarkers were established to range between r = 0.74 – 1.0; p < 0.001. Only four biomarkers (e-selektin, fasting glucose, CRP, BPDIA) were attenuated. Significant correlations were found between the biomarker indices and psychometric test scales: ALI-HPA and POMS subscales (Vigor-Activity, r = -0.63, p = 0.02; Vigor-Hosility, r = 0.57, p = 0.007). ALI-HPA and PSS total score = 0.67, p = 0.01, ALI-HPA and TICS subscale social recognition (r = 0.65, p = 0.03) as well as ALI and TICS subscale social isolation (r = -0.59, p = 0.04). 

Conclusions: HCC, ALI, and ALI-HPA showed good to excellent test-retest reliabilities. HCC and ALI provide information concerning long-term consequences of stress and represent probably better the primary and secondary stress system. In contrast, ALI-HPA depicts only HPA-activity – a possible explanation for the strong correlations with the mood scales. Further research is needed for a better understanding.

371) Abstract 1742 
DEPRESSION AND LOW BODY ESTEEM: EXPLORING A STRESS MEDIATION MODEL 
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Low body esteem, a measure of how one’s view one’s body, has consistently been linked to symptoms of depression. Interestingly, prior studies in our lab showed that low body esteem is also associated with increased levels of perceived chronic stress as well as exacerbated acute stress responses. The current study aimed to link these findings by proposing stress as a mediator between low body esteem and depression. To test this hypothesis, we assessed perceived chronic stress (PSS), depressive symptoms (CES-D), as well as body esteem (BESAA: self-perceptions of appearance and weight, attributes others make about their appearance) in 57 healthy participants (28F, 20±3yrs.). Furthermore, participants were exposed to the Trier Social Stress Test (TSST) and maximum cortisol stress responses were compared.

For men, both negative body perceptions as well as negative attributions they felt others make about their appearance were linked to more depressive symptoms (r = .47, p<.01; r = .38, p<.05, resp.) as well as higher levels of perceived chronic stress (r = .68, p<.001; r = .48, p<.01, resp: max cort: all p<.048). Stress thereby fully mediated these relationships (all p<.001). Interestingly, for women, negative body perceptions were not linked to depressive symptoms (r = .40, p<.04), but not to stress (PSS: r = .23, p=.25; max cort: r=.50, p=.03). Contrary, attributions others make about their appearance were linked to both self-reported chronic stress (r = .40, p<.04) as well as cortisol stress responses (r=.52, p<.01), but were not associated with depression (r=.14, p=.48).

Our findings suggest that for men, having low body esteem contributes to feelings of chronic stress, which in turn lead to higher risk for depressive symptoms, supporting our mediational model. For women, however, negative body perceptions were directly and stress-independently linked to depressive symptoms. Contrary, attributions others make about their appearance led to increased perceived and physiological stress but were not a risk factor for depressive symptoms. As a whole, our findings suggest that stress may be one gender-dependent mechanism by which body esteem gets ‘under the skin’ to affect health outcomes.

372) Abstract 1737 
DOES HOSTILITY REDUCTION ALTER SYMPATHETIC REACTIVITY TO AND RECOVERY FROM CHALLENGE? 
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Background Both trait hostility and autonomic nervous system (ANS) dysfunction have been implicated in coronary artery disease (CAD). Because evidence suggests that hostility is associated with ANS dysfunction, we tested the hypothesis that a cognitive behaviour therapy (CBT)-based hostility reduction treatment program would and in so doing, reduce the risk of CAD associated with hostility. We predicted that exposure to treatment would reduce SNS responses to and improve recovery from challenge. We also predicted that, irrespective of group assignment, subjects with the greatest reduction in hostility would have the greatest improvement in sympathetic reactivity and recovery.

Method 158 participants who scored over 1 standard deviation above national norms on the Cook-Medley and Spielberger Trait Anger scales were randomized to either 12 weeks of CBT or a wait-list group. Before and after treatment, participants were exposed to a series of stressful laboratory challenges while we measured low frequency blood pressure variability (LF-BPV) and pre-ejection period (PEP) as indices of vascular and myocardial SNS drive respectively. For each index, separate 3-way (group x session x period) analyses of variance were conducted while controlling for sex and age.

Results Although CBT treatment significantly reduced anger and hostility, the predicted 3-way interactions failed to achieve significance for either PEP or LF-BPV. That is, hostility reduction treatment failed to influence SNS responses to or recovery from challenge. Furthermore, there was no relationship between hostility or anger reduction and SNS reactivity or recovery.

Conclusion In this study, we found no support for the hypothesis that hostility reduction would reduce SNS myocardial or vascular responses to or enhance recovery from challenge. These results are consistent with our previously published finding that hostility reduction failed to enhance cardiac parasympathetic reactivity or recovery. Taken together, these data indicate that the ANS may not be the link between hostility and CAD. Further studies should focus on other mechanistic pathways between hostility and CAD.

373a) Abstract 1733 
SELF-REPORTED DEPRESSIVE SYMPTOMS ARE SIGNIFICANTLY ASSOCIATED WITH METABOLIC SYNDROME IN ADULTS 
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Metabolic Syndrome (MetS), a cluster of disorders that predicts higher risk of negative health outcomes including Type II diabetes and cardiovascular disease, affects an estimated 25% of the United States population. In the growing effort to create models of health linking psychological and physiological states, psychological researchers have investigated MetS in relation to mental health. Research into psychological factors and their association with metabolic health has been implicated in coronary artery disease (CAD). Because evidence suggests that hostility is associated with ANS dysfunction, we tested the hypothesis that a cognitive behaviour therapy (CBT)-based hostility reduction treatment program would and in so doing, reduce the risk of CAD associated with hostility. We predicted that exposure to treatment would reduce SNS responses to and improve recovery from challenge. We also predicted that, irrespective of group assignment, subjects with the greatest reduction in hostility would have the greatest improvement in sympathetic reactivity and recovery.

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Results Although CBT treatment significantly reduced anger and hostility, the predicted 3-way interactions failed to achieve significance for either PEP or LF-BPV. That is, hostility reduction treatment failed to influence SNS responses to or recovery from challenge. Furthermore, there was no relationship between hostility or anger reduction and SNS reactivity or recovery.

Conclusion In this study, we found no support for the hypothesis that hostility reduction would reduce SNS myocardial or vascular responses to or enhance recovery from challenge. These results are consistent with our previously published finding that hostility reduction failed to enhance cardiac parasympathetic reactivity or recovery. Taken together, these data indicate that the ANS may not be the link between hostility and CAD. Further studies should focus on other mechanistic pathways between hostility and CAD.
Objective: Hostility has been associated with coronary artery disease (CAD) in numerous studies and one candidate mechanism linking these may be autonomic nervous system (ANS) dysregulation. In a randomized controlled trial (RCT), we tested the hypothesis that cognitive behavior therapy (CBT) would lead to improvement in hostility-related dysregulation. While CBT successfully reduced hostility, it had no impact on cardiac vagal control. Here, we report the effect of the CBT intervention on resting sympathetic nervous system (SNS) regulation. We also examine whether interview-based methods of hostility reduction are more sensitive indices of SNS change than self-report measures.

Methods: This RCT included 158 healthy young adults, high in hostility measured by the Cook-Medley (CM) Hostility and Spielberger Trait Anger (TA) scales. Participants were also interviewed using the Interpersonal Hostility Assessment Technique (IHAT). They were randomized to a 12-week CBT program for reducing hostility or a wait-list control group. Resting levels of pre-ejection period (PEP) and low-frequency blood pressure variability (LF-BPV), indices of SNS activity, were the main outcome measures. Repeated measures analyses were modeled separately for each SNS outcome, examining the prediction by group and session, while controlling for age and gender. Similarly, hostility and anger change scores replaced group as predictors of SNS outcomes for secondary analysis.

Results: Although treatment significantly reduced anger and hostility, the group X session interaction failed to achieve significance for either PEP or LF-BPV (both p > 0.05). Secondary analyses of the individual hostility change scores also revealed no significant effect on SNS indices.

Conclusion: Reduction in anger and hostility did not alter resting levels of SNS activity. Further, neither interview-based nor self-rated hostility predicted changes in sympathetic indices. In healthy young adults, the link between hostility and CAD is not likely to be explained by altered resting SNS activity. These findings raise questions about whether autonomic dysregulation at rest represents a pathophysiological link between hostility and heart disease.
self-righteousness subscale (r= .41). Although rational coping and distancing are regarded as healthy coping strategies compared to vengeance, seeking justice, rational coping, these data indicate that all cognitive activity related to anger correlates positively with hostility. Further exploration of the correlation between cognitive and behavioral aspects of anger and hostility may provide an avenue through cognitive restructuring of intervening on hostility, a known marker of morbidity among cardiac patients.

379) Abstract 1708
SLEEP DEPRIVATION AND INTRA-INDIVIDUAL VARIABILITY IN SLEEP SCHEDULES ASSOCIATE WITH DIFFERENCES IN HIPPOCAMPAL AND AMYGDALAR VOLUME
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Sleep deprivation is important in terms of functional alterations in subcortical brain structures, including the hippocampus and amygdala, as well as to impaired hippocampal neurogenesis in animal models. Here, we examined whether individual differences in sentinel sleep characteristics (sleep duration, bedtime and time of awakening) and intra-individual variability in these indexes associate with differences in hippocampal or amygdalar volumes among 435 healthy midlife volunteers (mean age 42.7 ± 7.3 yrs [range: 30-54]; 53% Female; 84% White). Sleep duration (hrs), bedtime, and awakening time were averaged over 7 nights of actigraphy monitoring, and variability was quantified as the within-person standard deviation over 7 nights for each sleep parameter. FreeSurfer was used to derive volume measures via a priori segmentation of anatomically defined hippocampal and amygdalar regions. Hierarchical regression analyses controlling for age, sex, race and intracranial volume showed shorter sleep duration associated with reduced amygdalar (β = -0.09, p = 0.027), but not hippocampal volume (p > 0.5). No effects were seen for either the mean bedtime or mean awakening time (p’s >0.5). However, greater bedtime variability related to reduced amygdala volume (β = -0.15, p = 0.002). More so, greater bedtime variability and variability of awakening time were each associated with reduced hippocampal volume (β = -0.11, p= 0.003; β = -0.08, p= 0.03, respectively). Finally, night-to-night variability in sleep duration was unrelated the volume of either brain region. Length of sleep and regularity of sleep schedules covary with the morphology of subcortical regions important for emotion processing and memory, which are known to be affected by disrupted sleep dynamics.

380) Abstract 1701
A MOLECULAR APPROACH TO THE STUDY OF DEPRESSION: MODULATING DNA BINDING OF STAT1 TRANSCRIPTION FACTOR BY SITE-DIRECTED MUTAGENESIS
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Numerous clinical studies have shown that interferons (IFNs) administered to patients frequently cause severe depressive symptoms, which usually resolve after withdrawal of the drug. Because major depressive disorder is associated with elevated serum levels of inflammatory cytokines and, in addition, IFNs as prototypic inflammatory cytokines signal predominantly through STAT1 (signal transducer and activator of transcription 1), we aimed at investigating the role of the STAT1 linker domain in IFN-induced transcriptional responses. Upon stimulation with IFN, STAT1 becomes phosphorylated on a single tyrosine residue and translocates to the nucleus as a dimer, where it sequence-specifically binds to promoter elements in IFN-regulated genes, termed gamma-activated sites (GAS). In the STAT1 linker domain, we identified a highly conserved sequence motif which includes surface-exposed residues in close proximity to the bound DNA. Using site-directed mutagenesis, we exchanged two glutamic acid residues within this sequence for alanine and observed that the resulting mutants showed remarkably elevated levels of tyrosine phosphorylation and prolonged nuclear accumulation upon stimulation of cells with IFN-gamma. The mutants displayed significantly reduced dissociation rates from GAS sites, indicating that they are DNA-binding mutants. Real-time PCR in extracts from STAT1-reconstituted cells showed that the exchange of the two glutamic acid residues had no impact on the IFN-gamma-induced activation of the gbp1 and irf1 gene. However, as compared to the wild-type protein, expression of the mgi1 gene was slightly decreased by the two hyper-phosphorylated STAT1 mutants, which induction of the mcp1 gene was much higher in cells expressing the glutamic acid-to-alanine mutants. In summary, we have characterized two mutations in the STAT1 linker domain resulting in a decreased dissociation rate from DNA and a rather complex profile of endogenous target gene activation. These mutants appear to be valuable tools for the study of inflammatory reactions and IFN-induced depression.

381) Abstract 1694
THE RELATIONSHIP OF EMOTION REGULATION TO HEALTH: CROSS-SECTIONAL AND LONGITUDINAL ANALYSES IN A COMMUNITY SAMPLE
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Emotion regulation is considered central to health and well-being. The ability to identify, label, and express emotions (e.g., low alexithymia) and cognitive styles of regulating emotional conflicts (defenses) need further study, especially in a heterogeneous community sample that is followed longitudinally. In this study, we recruited a sample of 423 community-dwelling adults, recruited specifically for a balance of gender (53.6% women), and ethnicity (60.9% European American, 39.1% African American), and to represent every age decade from the teens to 80’s (M = 48.9, SD = 18.9). At baseline, participants completed the CES-Depression, Ryff Well-Being Scales, and PANAS. Emotion regulation measures were the Toronto Alexithymia Scale-20 and Defense Mechanism Inventory; the latter presents multiple emotionally provocative scenarios and categorizes responses into 5 defenses: principalization and reversal (which are considered more mature or adaptive), and projection, turning against self, and turning against others (considered less adaptive). Six years later, 229 of the participants (54%) completed the depression and well-being measures again. Age, race, and negative affect were covaried in all analyses. Significant (p <0.05) partial correlations indicated that alexithymia predicted greater depression and lower well-being well both cross-sectionally (pr = .23 and -.49) and longitudinally (pr = .18 and -.45). Principalization and reversal predicted greater well-being both cross-sectionally and longitudinally (pr’s from 0.14 to .18). The use of both principalization and reversal predicted greater well-being at both baseline and 6-year follow-up (pr range .15 to .23), but only reversal predicted less depression at baseline (pr = -.11). Final regressions examined both alexithymia and defenses simultaneously. Well-being at 6 years was predicted significantly by both low alexithymia (B = - .49, p <.001) and less turning against others (B = -.16, p =.002) or greater reversal (B = .15, p =.04). These findings suggest the value of affect regulation processes in predicting long-term health. Both alexithymia and defenses make independent contributions and should be considered when studying adaptation and health outcomes.

382) Abstract 1697
THE UNCOUPLING OF EMOTIONAL AND CARDIOVASCULAR REACTIVITY IN RESPONSE TO PSYCHOLOGICAL STRESS: THE ROLE OF PERSONALITY FACTORS
Lotte van Dammen, BSc., Nina Kapper, PhD, Loes Snoeijers, Msc., Willem J. Kop, PhD, Medical and clinical psychology, CoRPS, Tilburg university, TILBURG, Netherlands Background Cardiovascular hyper-responsiveness to psychological stress tasks has been associated with a lower cardiovascular disease risk. However, the correlation between the magnitude of emotional responses to these tasks with concurrent cardiovascular reactivity is weak; with an aggregate r = 0.16 based on prior meta-analysis. This “uncoupling” of emotional and cardiovascular reactivity is not well understood and may in part be explained by personality factors. This study examined to what extent personality factors play a role in the association of emotional and cardiovascular responses to psychological stress tasks.

Methods Participants (N=216; mean age 19.8±2.5 years, 78% female) performed the Trier Social Stress Test (TSST), involving a structured speech and math task. Repeated blood pressure (SBP/DBP) and heart rate (HR) measures were obtained during rest (10 min) and during the TSST (9 min). Emotional responses were measured using 6 items measuring negative affect on 7-point Likert scales (total score range = 6-42). Personality factors were assessed using the NEO-FFI-3 five-factor personality questionnaire. Data were analyzed using multivariate regression analysis, examining main effects and interaction between negative affect responses and personality factors as related to blood pressure reactivity, adjusting for sex.

Results The TSST produced significant increases in negative affect (r=0.01) and cardiovascular measures (r=0.001). The correlations between emotional and cardiovascular reactivity were small and not statistically significant (r-values between r=0.089 and +0.039), with the highest correlation between Δ negative affect and Δ SBP during the math task (r=0.039; p=0.670).

Regression analyses were then used to investigate the influence of personality factors on the coupling between emotional and cardiovascular reactivity. No main effects were found for any of the personality factors on Δ SBP (β ranging from -0.076-0.089) and there were no significant interactions between personality factors and emotional factors as related to blood pressure reactivity, adjusting for sex.

Conclusion This study supports prior research on the uncoupling of emotional and cardiovascular reactivity to psychological stress tasks. The “big five” personality factors did not influence the association between negative affect and blood pressure reactivity.

383) Abstract 1693
ANGER EXPRESSION IN CHRONIC PAIN: EVALUATING THE CONSTRUCT VALIDITY OF EMOTION REGULATION MEASURES
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The expression of emotions, particularly anger, modulates pain. Several self-report measures of emotional expression exist, but their validity to predict objective emotional expression is unclear. We tested the validity of three emotion expression measures to predict objective anger expression in 88 adults with chronic pain (M age =46.9; 52% women) who engaged in an anger induction / expression paradigm. After completing the Anger Expression Inventory (AEI), Toronto Alexithymia Scale-20 (TAS-20), and Emotional Approach Coping scale (EAC), participants
attempted to solve a difficult 5-minute computer maze blindly; i.e., by following the instructions of a confederate (posing as another patient), who angered the participants by being demanding and unjustly rude or critical of their performance. Patients were randomized to 1 of 2 expression conditions (unguided or guided anger expression), with encouragement to express their feelings about their difficulties during a 5-minute videotaped expression session. Independent raters coded the videos for the amount of anger expressed in words, facial expressions, and para-linguistics.

Relationships between self-report measures and objective anger expression were not moderated by condition, so the full sample was analyzed. Controlling for baseline self-reported negative affect, analyses indicated that the AEI Anger Out scale predicted greater anger expression, as expected (β = .22, p = .04), but Anger In did not (β = .07). Surprisingly, the TAS-20 predicted greater anger expression (β = .37, p < .001), suggesting it assesses general negative emotion, including expression, rather than a "lack of words for feelings." The EAC Emotional Expression scale was unrelated to anger expression (β = -.01), but the Emotional Processing scale predicted greater anger expression (β = -.22, p = .04), suggesting that adaptive emotional processing might attenuate anger. Overall, findings support the validity of the AEI Anger Out scale and perhaps part of the EAC, but raises questions about the other scales. It may be difficult to assess emotion regulation and expression by self-report because scores are confounded by general emotional experience. Performance or objective measures of emotion regulation are needed.

384) Abstract 1637

PSYCHOBIOLOGICAL VALIDATION OF A DISCRIMINATION PARADIGM IN THE LABORATORY

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Perceived discrimination is associated with impaired mental and physical health. In Turkish immigrants living in Germany everyday experiences of discrimination are frequently reported. As perceived discrimination is known to exert physiological stress, the question arises how the experience of discrimination translates into negative health consequences in immigrants. No study has been undertaken to examine the mechanisms that underlie the potential relationship between perceived discrimination, stress, and negative health outcomes in immigrants. This might be due to a lack of available laboratory discrimination paradigms. Thirty healthy Turkish immigrants randomly underwent a control (imagined patient-doctor interaction, no discrimination cues) and a discrimination condition (actual patient-doctor interaction, with discrimination cues). They repeatedly rated perceived discrimination and stress on a visual analogue scale. Heart rate, skin conductance levels, and salivary alpha-amylase as indicators of the autonomic nervous system (ANS) and salivary cortisol as an indicator of the hypothalamic-pituitary-adrenal axis were assessed at multiple time points during both conditions.

There was a significant time by condition effect in the subjects’ ratings of discrimination (F(2,53, 45.51) = 9.523, p < .001) and stress (F(1,53, 44.37) = 9.18, p < .005) during the discrimination but not during the control condition. Similarly, the subjects’ heart rate (F(3, 66) = 19.28, p < .001) and alpha-amylase levels (F(1,69, 49.08) = 6.35, p = .005) increased over time during the discrimination but not during the control condition. No differences were found for skin conductance levels. We observed a small but significant time by condition effect in cortisol levels (F(2,01, 58.35) = 3.26, p = .045) in response to the discrimination condition, but not in the control condition.

Our paradigm proved successful in mimicking experiences of discrimination and in inducing an acute subjective and physiological stress response. Our paradigm thus seems to qualify as a means to investigate stress resulting from discrimination and its physiological consequences.

385) Abstract 1649

INCREASE IN COPING SKILLS AND THEIR RELATION TO REDUCING DYSFUNCTIONAL THOUGHTS AMONG LOW-INCOME WOMEN DURING PREGNANCY

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A key aspect of treating depression is changing one’s dysfunctional thoughts, which is a core component of cognitive behavioral treatments for depression. However, there have been limited studies examining the coping skills that individuals learn in such programs and how they help reduce their dysfunctional thoughts, particularly during pregnancy when risk for developing depression and other stress-related disorders is high. The purpose of the current study was to determine whether increasing women’s self-efficacy to engage in and use coping skills (MOCS, COPE) was related to reductions in dysfunctional thoughts (DAS-SF1) during pregnancy. Our sample included 100 low-income, pregnant women (75% annual income < $19k), 55 of whom participated in an eight-week CBM (10) (β=.34; p<.001) which provided pregnant cognitive-behavioral stress management program (CBSM) designed to help reduce levels of stress, and 45 women who were part of an attention-control (AC) group (i.e., received standard prenatal health information). Independent samples t-test analyses found that women in the CBM group showed significant increases in their confidence to use coping (t(89) = 2.469, p = .015) and assertiveness skills (t(89) = 2.7, p<.05), suggesting that the CBM group showed increased self-efficacy to engage in coping and their confidence in their coping in their feelings about their difficulties during a 5-minute videoed expression session. In the CBM group, women showed increases in their confidence to use coping (r = .30, p < .05) and their assertiveness skills (r = .22, p < .05), as well as those who used more positive reframing (r = .20, p = .035), had fewer dysfunctional thoughts. These results suggest that prenatal CBSM programs may be effective in producing fewer dysfunctional thoughts among low-income pregnant women by increasing their confidence in various coping skills.

386) Abstract 1638

CONTRIBUTORS TO THE HEALTH STATUS AND ITS PREDICTORS IN PATIENTS WITH AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR UP TO 14 MONTHS POST IMPLANT

Mirjam Henriette Mastenbroek, MSc, Cardiology, University Medical Center Utrecht, Utrecht, The Netherlands, Johan Denuillet, Professor, Department of Medical and Clinical Psychology, Tilburg University, Tilburg, Brabant, The Netherlands, Henneed Versteege, Ph. D. Cardiology, University Medical Center Utrecht, Utrecht, Utrecht, The Netherlands, Dominik Theuns, PhD, Clinical Electrophysiology, Erasmus Medical Center Rotterdam, Rotterdam, Zuid-Holland, The Netherlands, Susanne S. Pedersen, Professor, Department of Medical and Clinical Psychology, Tilburg University, Tilburg, Brabant, The Netherlands. The study was funded by a grant of the first-time ICD between May 2003 and August 2011 at four hospitals in the Netherlands: Erasmus Medical Center (Rotterdam), Catharina Hospital (Eindhoven), Amphia Hospital (Breda), and University Medical Center (Utrecht). A total of 1285 consecutive patients implanted with an ICD (78% male; mean age = 61.5 ± 11.2 years) completed the Short-Form Health Survey 12 (SF-12) at baseline, 2-3 months (short-term) and 12-14 months (long-term) post implant. Linear mixed model analyses were used to examine changes in health status over time and its predictors. Results: The mean physical (PCS) and mental health status (MCS) scores were 38.95 ± 10.36 and 40.46 ± 12.31 at baseline, 42.89 ± 10.63 and 44.68 ± 11.81 at short-time follow-up, and 43.78 ± 11.20 and 45.50 ± 12.45 at long-term follow-up. There was a significant effect for time (PCS: F = 76.02, p < .001; MCS: F = 62.33, p < .001), with patient-reported health status improving between baseline and short-term follow-up (PCS: F < .001; MCS: F < .001), while scores stabilized between short- and long-term follow-up (PCS: F = 0; MCS: F = 14). Patients with diabetes, NYHA class III-IV, without a paid job and using psychotropic medication were more likely to report poorer perceived physical health status over time. Younger age, low educational level, not having a paid job, smoking, use of psychotropic medication, NYHA class III-IV, and QRS ≥ 120 were associated with poorer perceived mental health status.

Conclusions: This study showed that patients’ perceived physical and mental health status improve between ICD implantation and 2 to 3 months post implant, after which their health status stabilizes up to 12 to 14 months post implant. Overall, patients with symptomatic heart failure (NYHA class III-IV), without a paid job and using psychotropic medication were at highest risk for reporting both poor physical and mental health status. It is important to identify these patients in clinical practice, as poor health status has shown to predict mortality in ICD patients.

387) Abstract 1650

DELAYED BED TIME IS ASSOCIATED WITH RISK FACTORS FOR Atherosclerosis AND Ischemic STROKE

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Background: Circadian misalignment confers risk for cardiovascular (CV) events, including ischemic stroke and atherosclerosis. Leukocyte response to inflammation and exaggerated blood pressure (BP) responses to stress are instrumental in the formation and destabilization of atherosclerotic plaque, leading to thrombosis. Both inflammation and BP responses to stress are elevated in individuals with extreme circadian misalignment. However, this relationship has been studied almost exclusively in night shift-workers who are 12 hours out of phase with the solar light-dark cycle. Little is known about more modest circadian misalignment in relation to CV risk factors. We examined sleep-wake patterns, as an index of circadian alignment, in relation to inflammation, leukocytes and BP responses to lab stress.

Methods: Participants were 101 women and 43 men (mean age 60.2 ± 8.9). Participants recorded sleep and wake times using the Pittsburgh Sleep Diary for an average of 9.6 ± 1.6 days. Blood samples were taken after an overnight fast and were assayed for hsCRP, lymphocytes and monocytes. BP reactivity to and recovery from a lab stress task were measured continuously. Multiple regression analyses were used to test the hypothesis that later bed and wake time were associated with markers of greater inflammation, higher leukocyte count and increased BP reactivity to and prolonged recovery from lab stress. Covariates included age, sex, race, BMI, apnea hypopnea index, sleep duration, and use of BP medication. Results: An eight-bed and nine-wake time were associated with increased lymphocyte count (β=219, p=0.016, β=195, p<0.035, respectively). Neither bed nor wake times were significantly associated with hsCRP or monocyte count. Later bed time, but not later wake time, was significantly associated with a greater increase in diastolic blood pressure in response to lab stress (β=0.364, p<0.003). Longer nightly sleep time was associated with earlier bed time (β=330, p<0.009). Blood pressure recovery from stress was not associated with bed or wake time.

Conclusion: Later bed time was associated with risk factors for atherosclerosis and ischemic stroke, above and beyond total sleep time, suggesting that...
misalignment may constitute an overlooked pathway through which sleep may be important for cardiovascular health. Supported by NIH grants #T32 HL-007560-29, #R01-HL104607, and U1L-TR000005.

388) Abstract 1690

THE INFLUENCE OF SLEEP ON THE ASSOCIATION BETWEEN DEPRESSIVE SYMPTOMS AND BMI IN MIDDLE-AGED AFRICAN AMERICANS

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Research Question: To establish a relationship between depression and obesity yet the mechanisms that explain this association remain inconclusive, especially in African Americans. African Americans are disproportionately overweight and obese; thus, it is important to explore factors that moderate and mediate the association between obesity and depressive symptoms. Poor sleep quality is related to weight gain and depression. Few studies have explored whether sleep influences the depression-obesity relationship. Furthermore, differences in types of sleep: quality of sleep versus daytime sleepiness have been rarely studied in relation to the depression-obesity association. The present study examined the mediating effects of sleep quality and daytime sleepiness on depressive symptoms and BMI in African Americans. Our second aim sought to determine if sex moderates the association between sleep quality and daytime sleepiness, depressive symptoms, and BMI. Participants included 105 African Americans (46% men) from a community-based sample, who were 40 years or older (mean age=58.9 years). Participants completed the Center for Epidemiologic Studies Depression Scale (CES-D), The Pittsburgh Sleep Quality Index (PSQI), and The Epworth Sleepiness Scale (ESS). To test the mediating effect of sleep quality and daytime sleepiness on the relationship between depressive symptomatology and indicators of obesity, analyses were conducted using a variation of the SOBEL test and moderation analyses were conducted using multiple regression. Separate analyses were conducted for each of the two indices of obesity—body mass index (BMI) and waist-to-hip ratio. Additional analyses were conducted when sex varied. Neither sleep measure nor depressive symptomatology was associated with obesity indicators. Consequently, there was no evidence that sleep quality or daytime sleepiness mediated the association between depressive symptoms and BMI, and the relationship do not vary by sex. Our results did reveal that both daytime sleepiness and sleep quality in men, and sleep quality only in women, were significantly associated with depressive symptoms. While poor sleep quality may exacerbate depressive symptoms in African Americans, our findings suggest that daytime sleepiness may be an additional risk factor for depressive symptoms in African American men. Subsequent research should continue to explore mediators and moderators that sustain the depression-obesity link in this population.

389) Abstract 1625

DEVELOPMENT OF COGNITIVE BEHAVIORAL THERAPY- INTERCEPTIVE EXPOSURE FOR IRITRABLE BOWEL SYNDROME: A PILOT STUDY IN JAPAN

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Introduction: Irritable bowel syndrome (IBS) is one of the most common psychosomatic diseases. Cognitive behavioral therapy (CBT) is reported to be an effective treatment option for IBS, but a number of studies in Japan have investigated the efficacy of CBT for IBS. Therefore, we conducted a feasibility study on CBT for IBS using the behavioral therapy technique, interceptive exposure (IE). In this presentation, we report two cases in which CBT-IE was performed and discuss the materials developed for such therapy.

Methods: The patients were diagnosed with IBS by specialists and provided informed consent to participate. We translated the IE protocol of Craske et al. (2011) into Japanese and developed new materials to use in cooperation with the original author. The protocol comprised 10 sessions aimed at patients enhancing control of their overall symptoms by reducing their fear of the physical symptoms, and the developed materials contained many pictures and figures. Results: In this case, the patient experienced anxiety caused by negative automatic thoughts, which served to amplify interoceptive sensations. Her symptoms were decreased when she recognized the vicious cycle through psychoeducation. Subsequent cognitive restructuring and exposure reduced her symptoms and anxiety for visceral symptoms further and improved her quality of life (QOL). Similarly in case 2, the patient showed a vicious cycle, but she found it difficult to understand the cycle and the CBT model, and thus it was also difficult for her to understand cognitive restructuring and exposure. However, the initial success of IE motivated her and further successes increased her understandings of the CBT model. Her symptoms and anxiety for visceral symptoms were decreased and QOL were improved. At the 3-month follow-up, she had somewhat relapsed but their anxiety or depressive symptoms and QOL were improved relative to pre-intervention levels. The findings indicate that the CBT-IE protocol could be an effective and safe treatment for Japanese patients with IBS. However, the protocol and materials may need to be refined to maintain the therapeutic effect.

390) Abstract 1643

SLEEP DISTURBANCE AND CARDIOMETABOLIC RISK FACTORS IN EARLY PREGNANCY

Michele L. Okan, Ph.D., Psychology, Alyssa Haney, M.S., Psychiatry, Bedda Rosario, Ph.D., Epidemiology, University of Pittsburgh, Pittsburgh, PA. Cardiometabolic risk factors seen later in life. Disturbed sleep is associated with CM risk factors in late pregnancy, but little is known about sleep in early pregnancy and CM risk factors. Diary and actigraphy-assessed sleep information, as well as CM outcomes (blood pressure (BP) and BMI), were collected three times from pregnant women (N = 161) in early pregnancy: T1 (10-12 weeks), T2 (14-16 weeks), and T3 (18-20 weeks). The sleep variables evaluated included sleep onset latency (SOL), wake after sleep onset (WASO) and total sleep time (TST). Sleep variables were dichotomized using established clinical cutoffs. BMI and BP significantly changed across time. Women with persistent SOL 20 minutes had greater BMI for T2 (r(128) = 2.71, p = 0.0077) compared to T3. For persistent SOL ≥ 30, the greatest BMI was at T1 when compared to T3 and T2 (r(128) = 2.30, p = 0.0230). SOL as measured by diary was associated with elevated SBP (F(1,158)=6.85, p=0.0098). In contrast, SOL as measured by actigraphy was not associated with elevated BP. Although contrary to anecdotal evidence, it appears as if a subset of women report long SOL during early pregnancy and this may augment risk for CM during late pregnancy. Understanding these relationships is important since CM risk factors are linked to maternal and infant morbidity. Assessing sleep in early pregnancy may bestows time necessary for appropriate intervention.

391) Abstract 1663

INTERNALIZATION OF THE THIN IDEAL: ASSOCIATION WITH PSYCHOSOCIAL VARIABLES AND TREATMENT OUTCOME AMONG TREATMENT-SEEKING OBSE

KayLoni Olson, M.A., Erin A. Truong, MA, Charles F. Emery, PhD, Psychology, The Ohio State University, Columbus, OH. Internalization of the thin ideal (e.g., societal standard of beauty characterizing extreme thinness as attractive) has been associated with body dissatisfaction, eating pathology, and psychological distress among young females at risk for or diagnosed with eating pathology. However, internalization of the thin ideal has not been studied among obese individuals except as a predictor of body dissatisfaction. Based on studies of non-obese samples, it is hypothesized that individuals higher in thin ideal internalization would be more likely to report eating disturbances, decreased quality of life, and perceived weight-related stigma. In addition, they would be less likely to adhere to a behavioral weight management program and, in turn, likely to lose less weight during the program. This study evaluated the relationship of thin ideal internalization with psychosocial variables and the influence of thin ideal internalization on weight management treatment outcome. Seventy-nine obese (average BMI=47.8±12.1) adult participants (mean age= 45.8±11.5 years; age range: 22 to 72 years; 79% female) in 6-month university-based behavioral weight management program completed self-report questionnaires (i.e., eating disturbances, quality of life, stigma) at program entry. Participants were instructed to submit written daily logs of dietary intake and physical activity. Height and weight were assessed at the start of treatment and again at completion of the program. Data were analyzed with correlational analyses and hierarchical regression analyses. At baseline, thin ideal internalization was associated with emotional eating (r=0.23, p=0.06), eating self-efficacy (r=0.38, p<.01), perceived weight-stigma (r=0.34, p<0.01), and weight-related quality of life (r=0.44, p<0.01). All relationships are in the expected direction. It was not related to coping, adherence, or health-related quality of life. Internalization of the thin ideal was not associated with baseline BMI (r=-0.05, p=0.68), but predicted less weight loss at program completion (t=1.99, p=0.05). Internalization of the thin ideal was associated with psychological distress and reduced weight loss over time, but was not associated with behavioral indicators of adherence in a weight management program. These findings suggest that evaluating internalization of the ‘thin ideal’ may be relevant in assessing and treating obese patients in weight management programs.

392) Abstract 1629

ANTIBODIES TO THE HEAT SHOCK PROTEIN 60 (ANTI-HSP60) AND BLOOD PRESSURE ARE INCREASED IN WOMEN AND MEN AFTER DIVORCE OR SEPARATION

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Method: this is a case-control observational study matched by gender, age and social class in which quantitative variables: basal blood pressure was measured to each
individual (Hypertension was considered when Blood Pressure was = 0r > than 140/90) and serum antibodies to Heat Shock Protein 60 (Anti- Hsp60), were measured in 22 patients (17 women and 5 men) who completed a questionnaire measuring social constraints from spouse, intrusive thoughts and distress. Regression analysis revealed that there was a significant interaction between social constraints from spouse and intrusive thoughts on distress. Therefore, we hypothesize that stress-reducing techniques such as biofeedback will be effective in reducing distress and improve the quality of life for these patients.

Our results show that on the Outcome Questionnaire OQ-45, red responders (patients whose distress score significantly go up after baseline) showed slower systolic blood pressure (SBP) recovery on the TSST (F= 3.101, p=.018). Our results also showed that patients scoring high on the TSST (8-45) and low on the OQ-45 (below 63) have higher levels of heart rate and SBP (F=3.804, p=.006) and take more time to reduce stress levels during the recovery period compared to less distressed psychotherapy patients. In conclusion, we propose that stress-reducing techniques such as biofeedback will provide a useful adjunct to psychotherapy and will help improve the psychotherapeutic experience and the outcome of these patients.

**Abstract 1636 NONADHERENCE TO TREATMENT STRONGLY PREDICTS THERAPY OUTCOME IN PATIENTS WITH DEPRESSION AND DIABETES:**

Researchers investigated whether adherence to treatment affects therapy outcome in patients with depression and diabetes. They found that nonadherence strongly predicted nonresponse for the sertraline as well as cognitive behavior therapy (CBT) when patients participated sufficiently in the therapy sessions and the vast majority of patients treated with sertraline did not take their medication as intended. Nonadherence strongly predicted nonresponse for the sertraline as well as the treatment outcome.

**Abstract 1644 INTEGRATED MODELING OF BIOPSYCHOSOCIAL ASPECTS OF METABOLIC SYNDROME:**

Researchers developed a semi-quantitative modeling approach that overcomes this hurdle and allows the building of a more complete model of metabolic syndrome.

**Abstract 1676 THE IMPACT OF SOCIAL CONSTRAINTS AND INTRUSIVE THOUGHTS ON DISTRESS AMONG NEWLY DIAGNOSED PROSTATE CANCER PATIENTS:**

Researchers studied the impact of social constraints and intrusive thoughts on distress among newly diagnosed prostate cancer patients. They found that prostate cancer patients experience distress around the time of PCA diagnosis. The aim of this study was to examine if the cognitive processing theory explained variability in distress among newly diagnosed patients. Based on that theory, it was hypothesized that there would be a significant interaction between social constraints from spouse and intrusive thoughts on distress. The strongest relationship between intrusive thoughts and distress was when social constraints were high. These results indicate that when newly diagnosed prostate cancer patients have the opportunity to express themselves to their partner, intrusive thoughts about the cancer have little impact on distress.
400) Abstract 1678

DISTRESS, COPING, AND SUPPORT IN LUNG CANCER: GENDER DIFFERENCES AND ASSOCIATIONS WITH LUNG PSYCHOPATHOLOGY

Lauren A. Zimmarno, B.A., Elizabeth Cash, Ph.D., Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY; Elizabeth E. Davis, Ph.D., Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC; Whitney N. Rehbolz, B.A., Rene C. Bayleye, B.A., Paul Salomon, Ph.D., Sandra E. Seplhon, Ph.D., Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY

For both men and women, lung cancer is the leading cause of cancer death in the US. A disease with greater distress than most other cancers. Yet, gender differences in distress, coping, social support, and psychopathology associated with lung cancer have yet to be fully explored. We tested for gender differences in the context of a familiar model of stress and coping (Lazarus & Folkman, 1984). We hypothesized direct effects of gender on distress, coping, social support, and psychopathology (anxiety, depressive symptoms), and that gender differences would exist in the associations between these factors.

Sixty-two lung cancer patients diagnosed within the last 5 years (27 men, 35 women; age M = 63.1; 57 non-small cell) completed self-reports of cancer-specific distress (IES), coping (Stanton), social support (Duke), and psychopathology (BAI, BDI). Higher distress was associated with cancer stage, marital status, income, and smoking history. The sample was heterogeneous with 13 current smokers, 42 former smokers, and 5 non-smokers. Multivariate tests revealed a gender difference in the variance accounted for by gender, main effects, and interactions. For men, depressive symptoms were greater than for women, and women reported lower social support and higher distress. For both men and women, gender differences in distress, coping, and social support were associated with worse health outcomes.

Women reported more coping through emotional expression (partial r = .421, p = .001). Women reported greater stress in the past week, and had lower social support. Women reported higher depressive symptoms, and lower social support. Women reported higher levels of distress, coping, and social support, and psychopathology associated with lung cancer have yet to be fully explored. We tested for gender differences in the context of a familiar model of stress and coping (Lazarus & Folkman, 1984). We hypothesized direct effects of gender on distress, coping, social support, and psychopathology (anxiety, depressive symptoms), and that gender differences would exist in the associations between these factors. Sixty-two lung cancer patients diagnosed within the last 5 years (27 men, 35 women; age M = 63.1; 57 non-small cell) completed self-reports of cancer-specific distress (IES), coping (Stanton), social support (Duke), and psychopathology (BAI, BDI). Higher distress was associated with cancer stage, marital status, income, and smoking history. The sample was heterogeneous with 13 current smokers, 42 former smokers, and 5 non-smokers. Multivariate tests revealed a gender difference in the variance accounted for by gender, main effects, and interactions. For men, depressive symptoms were greater than for women, and women reported lower social support and higher distress. For both men and women, gender differences in distress, coping, and social support were associated with worse health outcomes. Women reported more coping through emotional expression (partial r = .421, p = .001). Women reported greater stress in the past week, and had lower social support. Women reported higher depressive symptoms, and lower social support. Women reported higher levels of distress, coping, and social support, and psychopathology associated with lung cancer have yet to be fully explored. We tested for gender differences in the context of a familiar model of stress and coping (Lazarus & Folkman, 1984). We hypothesized direct effects of gender on distress, coping, social support, and psychopathology (anxiety, depressive symptoms), and that gender differences would exist in the associations between these factors. Sixty-two lung cancer patients diagnosed within the last 5 years (27 men, 35 women; age M = 63.1; 57 non-small cell) completed self-reports of cancer-specific distress (IES), coping (Stanton), social support (Duke), and psychopathology (BAI, BDI). Higher distress was associated with cancer stage, marital status, income, and smoking history. The sample was heterogeneous with 13 current smokers, 42 former smokers, and 5 non-smokers. Multivariate tests revealed a gender difference in the variance accounted for by gender, main effects, and interactions. For men, depressive symptoms were greater than for women, and women reported lower social support and higher distress. For both men and women, gender differences in distress, coping, and social support were associated with worse health outcomes.

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To investigate this question, we assessed eating disorder psychopathology (EDE-Q), mastery and constraints (MIDI), and perceived chronic stress (PSS) in N=44 healthy undergraduate students (28 women; 20.3±2.4 yrs.). Repeated salivary samples over two consecutive days were used to compute maximum cortisol awakening responses (CAR). Regression analyses controlling for gender revealed that higher perceived stress was associated with perceiving lower mastery ($\beta=0.37$, $p=.01$) and more constraints ($\beta=0.69$, $p=.00$) as well as with higher levels of disordered eating ($\beta=0.29$, $p=.01$). Interestingly, only for perceptions of constraints, but not mastery, disordered eating added to the negative stress effect ($\beta=0.21$, $p=.03$; $\beta=0.12$, $p=.36$, resp.). Contrary, we found only a main effect for mastery but not for constraints on CAR, such that lack of mastery was linked to increased CARs ($\beta=-0.33$, $p=.03$; $\beta=-0.65$, $p=.68$, resp.). Our findings suggest that, contrary to our prediction, in individuals perceiving uncontrollable obstacles to the pursuit of their goals, disordered eating increased perceived stress levels in an additive way, potentially constituting a vicious cycle leading to psychopathology. Future studies have to address whether the same is true in a patient population. Furthermore, lack of perceived efficacy in problem solving appears to be physiologically malleable, as indicated by exaggerated cortisol awakening responses, independent of eating-related issues. Longitudinal studies are needed to address whether over time, persistent experiences of uncontrollable obstacles as well may take their toll and result in the expected stress-related physiological dysfunctions, thus further exaggerating symptom severity.

402) Abstract 1774

PHYSICAL AFFECTION: INFLUENCE ON CARDIOVASCULAR RISK FACTORS AND OXYTOCIN RECEPTOR GENE EXPRESSION

Julianne Holt-Lunstad, PhD, Psychology, Brigham Young University, Provo, UT, Kathleen Light, PhD, Psychology, University of Utah, Salt Lake City, UT, Patrick Steffen, PhD, Psychology, Jonathan Sandberg, PhD, Family Life, Ben Clark, BS, Psychology, Brigham Young University, Provo, UT

Oxytocin is implicated in some of the behaviors we as humans value most: maternal care, social bonding, desire for physical closeness, and sexual response. Evidence suggests oxytocin may be an important factor in stress regulation and has been shown to modulate cardiovascular functioning, giving rise to interest in oxytocin as a possible pathway by which to understand the well-established links between social relationships and physical health. In a prior study we found a warm touch intervention among couples was linked to increases in circulating oxytocin and decreases in stress hormones and ambulatory blood pressure. In the current study, we examined whether physical affection would significantly influence cardiovascular risk among well-adjusted and distressed married couples (N=204) at study initiation and 12-weeks later. We further examined the influence of physical affection on leukocyte gene expression (mRNA) for oxytocin prepropeptide (OXT) and receptor (OXTR) among a smaller subsample at study initiation and 12-weeks later. Although relationship quality was positively associated with physical affection, higher physical affection was independently associated with significantly lower levels of 3 biomarkers of cardiovascular risk: mean diastolic ambulatory blood pressure, Hemoglobin A1C, and carotid intima-medial thickness. Physical affection was not associated with OXT mRNA but was significantly associated with OXTR mRNA at both study initiation and 12-weeks later. This latter effect held when adjusting for gender, perceived social support, and depression levels. Frequency of holding hands and intercourse also were significantly associated with OXTR gene expression at both time points. These data suggest that relationship quality and physical affection independently influence biomarkers of cardiovascular risk and offer novel evidence of potential links to OXTR gene expression.

403) Abstract 1850

MARITAL STATUS AND RISK OF MORTALITY: AN INTERNATIONAL META-ANALYTIC REVIEW

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Background: Previous research has documented that social support decreases the odds of mortality, with a recent meta-analysis comparing the magnitude of the association to widely cited health risks such as smoking, alcoholism, and hypertension. Marital relationships have typically constituted the most consistent source of social support across the lifespan, but for several decades rates of marriage and the stability of marriages have declined. Although prior research has already established that marital status is associated with mortality risk, the precise magnitude of that association has not been determined and possible changes in risk over time have not been ascertained. Objectives: This meta-analytic review was conducted to determine the magnitude of the association between marital status and mortality. We also sought to ascertain the degree to which several variables such as gender, age cohort, and socioeconomic status moderated the association. We were particularly interested in possible changes over time. Data Extraction: This meta-analysis compiled a comprehensive list of 281 scholarly articles containing multivariate data with marital status as the independent variable and mortality as the dependent variable. Articles were found in a variety of fields ranging from medicine to psychology. Data were extracted on multiple study and participant characteristics.

Conclusions: The omnibus effect size of OR = 1.43 confirm that marital status is associated with lower odds of mortality. Contrary to common assumptions in the literature, gender did not moderate the association, which did not change in magnitude over the past three decades. The data have implications for public health policy.

How to Cite your Abstract
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