Abstracts are listed by type, and in chronological order within type: first symposia, then paper presentations, followed by poster presentations.
SYMPOSIA
THURSDAY, March 10, 2016

Symposium 1031
NEW FRONTIERS IN SOCIAL COGNITION, SOCIAL BEHAVIOR, AND HEALTH
David A. Sbarra, Ph.D., Psychology, University of Arizona, Tucson, AZ, Theodore F. Robles, PhD, Psychology, University of California, Los Angeles, CA, John M. Ruiz, PhD, Psychology, University of Arizona, Tucson, AZ, Julianne Holt-Lunstad, PhD, Psychology, Brigham Young University, Provo, UT

Close relationships create a context for the expression of our strongest emotions and play a powerful force regulating health behaviors. These processes, in turn, can set the stage for a range of healthy or harmful biological responses. This symposium brings together four leaders in the study of relationships and health to discuss new frontiers in this area, emphasizing novel ways to understand how social cognition and social behavior alter health-relevant outcomes. In the first talk, Dr. Robles and colleagues discuss results from their study examining how daily family conflict between parents and children (between 8 and 13 years of age) may be associated with the development of a proinflammatory gene expression phenotype; the findings are consistent with the hypothesis that family conflict is related to an overexpression of proinflammatory genes and underexpression of glucocorticoid receptor-responsive genes. In our second talk, Dr. Ruiz and colleagues report on data examining household size and inflammation among married adults in the North Texas Heart Study. In this study, having a child of a married adult with significantly lower TNF-alpha and hsCRP: importantly, larger household size was also associated with lower TNF-alpha. In the third talk, Dr. Holt-Lunstad and colleagues report experimental data on the effects of intranasal oxytocin (OT) administration for cardiac responding as a function of social network integration. Cardiac responses were studied during a social competition task following OT administration. People who received OT (but not placebo) evidenced lower systolic blood pressure responses during the social competition task when they also reported high levels of social integration; in this case, the moderated effect of social integration was limited to online social contact (e.g., text, email, and internet), not the standard items on the Social Network Inventory. In the final study, Dr. Sbarra and colleagues report on objectively-assessed sleep disturbances among people who have experienced a recent, stressful marital separation. The authors use a novel, language-based approach to study experiential overinvolvement (i.e., the inability to create psychological distance from a difficult experience) and find that this behavior mediates the association between self-reported, separation-related grief and actigraphy-assessed sleep efficiency across one week. Together, these four talks integrate multiple domains of social functioning, include multiple ways of assessing health-relevant outcomes, and illustrate new pathways for advancing the mechanistic study of close relationships and health.

To provide an opportunity for discussion and interaction between the audience and the panelists, we have limited the session to four talks without a discussion.

Individual Abstract Number: 1226
Married with Children? Are Children Pro- or Anti-inflammatory Agents?
John M. Ruiz, Ph.D., Psychology, University of Arizona, Tucson, AZ, Bert N. Uchino, Ph.D., Psychology, University of Utah, Salt Lake City, UT, James G. Garcia, MA, Christian Gооds, MA, Psychology, University of North Texas, Denton, TX, Timothy W. Smith, Ph.D., Psychology, University of Utah, Salt Lake City, UT, Joshua M. Smyth, Ph.D., Bionizational Health, Pennsylvania State University, State College, PA, Daniel J. Taylor, Ph.D., Psychology, University of North Texas, Denton, TX, Matthew Allison, MD, Family and Preventive Medicine, University of California, San Diego, San Diego, CA, Chal Ahn, Ph.D., Clinical Science, University of Texas Southwestern, Dallas, TX

Over 50% of U.S. households are characterized by marriage and a household size greater than 2, largely due to the presence of children. Although raising children is a form of caregiving with associated stress, larger households may also increase the social buffer of benefits enjoyed by married persons. This study tested associations between household size and inflammation among married adults enrolled in the North Texas Heart Study (NTHS); a community-based study of 300 participants (150 men, 150 women) stratified by age within gender and ethnicity/race. Analyses focused on the 184 participants who identified as married and reported on household size. Seven participants were excluded for evidence of acute illness (raw hsCRP>10.0). The final sample included 177 participants: 65 coded as married with children (household size = 2), 112 coded as married/with children (household size > 2). A fasting blood draw was used to assess levels of high sensitivity C-reactive protein (hs-CRP), TNF-alpha, and interleukin 6 (IL-6). Serum samples were assayed in duplicate using Human ELISA assay kits with accuracy determined by the linearity of dilution which yielded a correlation coefficient of greater than 0.99. Consistent with prior work, inflammatory values were natural log transformed to normalize the distribution prior to analyses. Analysis of covariance (ANCOVA) was used to examine group differences, controlling for age, gender, BMI, and relevant medications. Two effects were observed. First, compared to married participants without children, those with children had marginally lower TNF-alpha, F(1,169)=3.63, p=0.06. Post hoc analyses demonstrated that married women with children had lower TNF-alpha compared to women without, F(1,80)=4.00, p=0.05. In addition, linear regression revealed that, among married participants, larger household size was significantly associated with lower TNF-alpha, b=-0.151 (p<0.05). These data support the hypothesis that married persons, larger household size driven largely by the presence of children is associated with lower inflammation.

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Individual Abstract Number: 1143
Intranasal Oxytocin, Online Social Networks, and Cardiovascular Functioning
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Converging evidences among the human and animal literatures suggest oxytocin (OT) is a critical mechanism in mammalian attachment and survival and has been linked to both social bonding and stress regulation; thus, it has been postulated as a possible key factor linking social connectedness and long-term health. The present study investigated the role of social integration in moderating the effects of oxytocin on cardiac autonomic functioning in humans. Cardiac functioning was measured in the context of a social stressor (competitive task) among 69 participants (males and females). In a double blind randomized procedure, participants received an intranasal administration containing either oxytocin (20 IU; n=38) or a placebo (n=31). Social Integration was assessed prior to the lab session, using a modified version of the Social Network Index.
Social network size and diversity were calculated in two ways; (1) using the original items and (2) using parallel items that assess online (text, email, internet) contact. In repeated measures analyses of variance, controlling for baseline levels obtained prior to intranasal administration, we found significant differences between the oxytocin and placebo group for blood pressure (SBP and DBP; p<.05) during the stressor tasks and recovery period. These effects were independent of the effects of circulating stress hormones and gender. Further examination of autonomic activation revealed no significant differences between the groups for hf-HRV or PEP (p=.10). Online social network size was also significantly and negatively associated with SBP (p<.05). Further examinations suggest that those with smaller online social networks have higher SBP during recovery regardless of drug condition. Only among those with larger online social networks do we see a difference between the oxytocin and placebo conditions. These findings provide evidence to suggest that size of one’s online social network can influence the sensitivity of oxytocin’s effect on cardiovascular functioning during stressful situations.

Individual Abstract Number: 1568

Experiential Over-involvement and Sleep Problems Following Marital Separation

David Sharra, PhD, Allison Tackman, PhD, Spencer Dawson, MA, Darlyn Rojo-Wissar, BA, Matthias Mehl, PhD, Psychology, University of Arizona, Tucson, AZ

Although it is well known that marital separation and divorce as associated with increased risk for all-cause mortality, the psychological and health behavior mechanisms that drive this association are not especially well understood (see Sharra, Hasselmo, & Bourassa, 2015). Recent findings suggest that sleep disturbances increase risk for all-cause mortality after a separation experience and are associated with prospective increases in resting blood pressure, making sleep an ideal health behavior target for further study (Krietsch & Sharra, 2014). Sleep is a salubrious health behavior that affects nearly all aspects of physiological responding and may play an important role in explaining the down-stream health correlates of marital dissolution. The current paper reports on cross-sectional analyses with 65 community-dwelling adults who separated from their partners within the previous 3.5 months. The primary outcome is an objective measure of sleep quality using actigraphy (assessed and averaged over the course of a week). We hypothesized that talking about one’s separation experience in a highly engaged, first-person, present-oriented way (as indexed by the words people used to describe their separation, which we believe taps the larger construct of experiential over-involvement) would mediate the association between separation-related emotional distress and actigraphy-indexed sleep disturbance. The bootstrapped indirect effect linking self-reported distress and sleep efficiency (assessed using actigraphy) via experiential over-involvement was non-zero, ab = .06, 95% CI: [1.47, .13]. The association between participants’ self-reported distress to their objectively-measured sleep efficiency (and total wake time) was conveyed through verbally immediate language when participants talked about their separation experience. A person’s inability to distance or disentangle themselves from painful psychological experiences (when asked, they speak about their separation in the laboratory) may capture the psychological processes that unfold as they attempt to initiate sleep in their daily lives. A critical contribution of this study is in separating method variance to assess the self-report processes of interest: separation-related emotion distress is assessed via self-report, experiential over-involvement is assessed via language use (i.e., verbal behavior), and sleep quality is assessed via actigraphy. The talk concludes with a discussion of ways in which this finding may advance a mechanistic account of the association between marital status and health, as well as directions for future research in this area.

Thursday, March 10 from 10:45 am to 12:00 pm

Symposium 1083

CURRENT DIRECTIONS IN HEALTH NEUROSCIENCE

Tristen K Inagaki, PhD, Psychology, University of Pittsburgh, Pittsburg, PA, Keely A. Muscatell, PhD, Psychology, University of California, Berkeley, Berkeley, CA, Tristen K. Inagaki, PhD, Psychology, University of Pittsburgh, Pittsburg, PA, Keely A. Muscatell, PhD, Psychology, University of California, Berkeley, Berkeley, CA, Peter J. Gianaros, PhD, Psychology, Psychiatry, University of Pittsburgh, Pittsburgh, PA, David Creswell, Ph.D, Psychology, Carnegie Mellon University, Pittsburgh, PA

The emerging field of Health Neuroscience tackles research questions at the interface of health psychology and neuroscience, with the hopes of providing a more complete picture of the bi-directional links between the brain and health. The presentations in this symposium will highlight current directions in this new field, addressing longstanding questions in psychosomatic medicine using cutting-edge tools from neuroimaging and psychoneuroimmunology. Specifically, talks will feature functional and structural brain imaging findings bearing on the relationship between social support and health, links between stress and inflammation in disease, the neurobiology of socioeconomic health disparities, and mindfulness meditation to reduce stress and inflammation. This sampling of recent work in the area, presented by both leading experts and emerging scholars, will provide examples of the diverse ways in which health neuroscience can be used to further our understanding of brain-body interactions in health and disease.

Individual Abstract Number: 1087

Social support and health: associations between giving and receiving support and stress-related and reward-related neural activity

Tristen K. Inagaki, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Kate E. Byrn, Hallion, BA, Shoshuke Suzuki, BA, Ivana Jevtic, BA, Erica Hornstein, MA, Julienne E. Bower, PhD, Naomi I. Eisenberger, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA

A number of studies have demonstrated the strong link between supportive social ties and health. However most research has focused on the health benefits that come from the support one receives while largely ignoring the support giver and how giving, in and of itself, may contribute to good health. Moreover, few studies have examined the neural mechanisms linked with support giving or how giving support compares to receiving support. With these goals in mind, the current study assessed the relationships: 1) between self-reported receiving and giving social support and vulnerability for negative psychological outcomes and 2) between receiving and giving social support and neural activity to rewarding and stressful tasks. Participants (n = 36) completed three tasks in the fMRI scanner: (1) a stress task (in which they completed mental math under evaluative threat), (2) an affiliative task (in which they viewed images of close others), and (3) a prosocial task (when they had the opportunity to act prosocially). In line with the current literature, both self-reported receiving and giving social support were associated with reduced vulnerability for negative psychological outcomes. However, across the three separate neuroimaging tasks, giving, but not receiving support was related to beneficial outcomes as evidenced by reduced stress-related neural activity (dorsal anterior cingulate cortex, anterior insula, amygdala) to a stress task, greater reward-related neural activity (ventral striatum) to an affiliative task, and greater caregiving-related neural activity (ventral striatum, septal area) to a prosocial task. Results add to existing knowledge of the pathways by which support giving may lead to health benefits and highlight the contribution of giving to others in the broader social support-health link.

Individual Abstract Number: 1086

Links Between Inflammation, Amygdala Reactivity, and Social Support in Breast Cancer Survivors

Keely A. Muscatell, PhD, Psychology, University of California, Berkeley, Berkeley, CA, Naomi I. Eisenberger, Ph.D., Janine M. Ducher, MA, Psychology, Steven W. Cole, Ph.D., Psychiatry and Biobehavioral Sciences, Julie E. Bower, Ph.D., Psychology, UCLA, Los Angeles, CA

Psychosocial stress can affect inflammatory processes that have important consequences for cancer outcomes and the behavioral side effects of cancer treatment. To date, however, there is limited research on how perceptions of social processes that may link psychosocial stressors and inflammation in cancer patients and survivors. To address this issue, 15 women who had been diagnosed with early-stage breast cancer and completed cancer treatment and 15 age- and ethnicity-matched women with no cancer history were recruited for a neuroimaging study. Participants provided a blood sample for levels of circulating inflammatory markers (CRP and IL-6), underwent an fMRI scan in which they completed a threat reactivity task designed to elicit activity in the amygdala, and reported their levels of perceived social attachment/support. There were no significant differences between cancer survivors and controls in levels of CRP or IL-6, in amygdala reactivity to the socially threatening images, or levels of perceived social support. However, results showed a strong positive correlation between CRP concentration and left amygdala reactivity in the survivor group that was not apparent in controls. Higher levels of social support in the survivor group were also associated with reduced amygdala reactivity and CRP. These data suggest the possibility of a stronger “neural-immune pipeline” among breast cancer survivors, such that peripheral inflammation is more strongly associated with neural activity in threat-related brain regions. They also raise the possibility that inflammation and amygdala reactivity to threat may be one neurobiological mechanistic pathway linking social support and cancer outcomes. Finally, results from this study add to a growing health neuroscience literature pointing to the amygdala as a key neural region linking social environmental factors and inflammation.
Antioxidant and inflammatory pathways link socioeconomic disadvantage to brain morphology

Peter J. Gianaros, PhD, Psychology, Psychiatry, Anna Marsland, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Daniel Hackman, PhD, Population Health Sciences, University of Wisconsin, Madison, Madison, WI, Denise Janicki Deverts, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA, Lei Sheu, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Socioeconomic disadvantage confers risk for premature neurocognitive aging. This risk may be partly conferred via pathways encompassing the restricted access to and inadequate intake of nutrients essential for down-regulating systemic inflammation and maintaining neural integrity. To test this possibility, midlife community adults (N=115; aged 30-50yrs; 65 men) free of confounding dietary diversity, immune, and other medical and psychiatric conditions underwent structural magnetic resonance imaging to assess gray and white matter brain tissue volumes. Using structural equation modeling (SEM) implemented in MPlus, latent variables were created for circulating antioxidants (β-carotene, α-tocopherol, α-tocopherol, β-Cryptoxanthin) and markers of systemic inflammation (interleukin-6, C-reactive protein). Indicators of socioeconomic position (SEP) included education (years of schooling) and occupant-adjusted household income. In separate SEMs, lower education and lower income were both significantly associated with reduced total gray and white matter tissue volumes. These associations were similarly explained by indirect effects and serial pathways, whereby lower SEP predicted lower circulating antioxidants which, in turn, predicted higher levels of systemic inflammation that were associated with reduced white and gray matter volume (model RMSEA≤ 0.05). These effects were not explained by age or sex. Lower education, but not income, showed small direct effects on brain tissue volume that were unexplained by antioxidants and systemic inflammation. Socioeconomic disadvantage restricts access to physical and social resources, which may encompass access to dietary nutrients important for brain and cognitive health. Possible consequences of this restricted access may include unfavorable alterations in brain morphology linked to systemic inflammation.

Alterations in Resting State Functional Connectivity link Mindfulness Meditation with Reduced Interleukin-6: A Randomized Controlled Trial

David Creswell, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA

Background: Mindfulness meditation training interventions have been shown to improve markers of health, but the underlying neurobiological mechanisms are not known. Building on initial cross-sectional research showing that mindfulness meditation may increase default mode network (DMN) resting state functional connectivity (rsFC) with regions important in top-down executive control (dorsolateral prefrontal cortex, dPFC), here we test whether mindfulness meditation training increases DMN-dPFC rsFC, and whether these rsFC alterations prospectively explain improvements in interleukin-6 (IL-6) in a randomized controlled trial.

Method: Stressed job-seeking unemployed community adults (N=35) were randomized to either a 3-day intensive residential mindfulness meditation or relaxation training program. Participants completed a five-minute resting state scan before and after the intervention program. Participants also provided blood samples at pre-intervention and at 4-month follow-up, which were assayed for circulating IL-6, a health biomarker of systemic inflammation.

Results: We tested for alterations in DMN rsFC using a posterior cingulate cortex (PCC) seed-based analysis, and found that mindfulness meditation training, and not relaxation training, increased PCC rsFC with bilateral dPFC. These pre-post training alterations in PCC-dPFC rsFC statistically mediated mindfulness meditation training improvements in IL-6 at 4-month follow-up. Specifically, these alterations in rsFC statistically explained 31% (left dPFC) to 34% (right dPFC) of the overall mindfulness meditation training effects on IL-6 at follow-up.

Conclusions: These findings provide the first evidence that mindfulness meditation training functionally couples the DMN with regions important in top-down executive control at rest, which in turn is associated with improvements in a marker of inflammatory disease risk.

Individual Abstract Number: 1084

University of Pittsburgh, Pittsburgh, PA, Allison M. Tackman, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Daniel Hackman, PhD, Population Health Sciences, University of Wisconsin, Madison, Madison, WI, Denise Janicki Deverts, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA, Lei Sheu, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Humans are inherently social beings and we depend on our social environments to derive both physical and emotional security and safety. From an evolutionary perspective, such feelings of safety and security are particularly relevant at night, when people are vulnerable to potential threats from the environment. This social environment may play a critical role in influencing sleep health and risk for sleep disorders; however, extant sleep research has focused primarily on individual-level factors that influence sleep and has largely neglected to consider how social environments influence sleep. This symposium includes four presentations that bring together research focused on multiple levels of social environments, including couples, families, neighborhoods, and sociocultural factors and their influence on sleep. In particular, the first study will examine how sleep disturbances may explain the well-documented health consequences of divorce and function as a mediator of the link between marital status and heightened levels of C-reactive protein (CRP) in a nationally-representative sample of adults in midlife. The second presentation will focus on the relationship between sleep disruptions and depressive symptoms in mothers and fathers of infants. The third presentation will broaden the focus from the family to the neighborhoods in which we live, to evaluate the association between objective and subjective neighborhood characteristics and sleep quality, in two predominantly African American urban communities. Finally, the fourth presentation will examine the influence of broader sociocultural factors, including acculturation stress and discrimination stress, and sleep disturbances in a diverse sample of Hispanic men and women. The discussion will integrate these findings across the multiple levels of social influences on sleep and also consider policy implications of this work. Ultimately, this research may elucidate how social environmental factors contribute to disparities in sleep health and downstream health consequences as well.

Individual Abstract Number: 1438

Sleep Disturbances Mediate the Association Between Marital Status and C-Reactive Protein (CRP)

Allison M. Tackman, PhD, David A. Sharra, PhD, Psychology, University of Arizona, Tucson, Arizona

Marital dissolution can lead to poorer psychological and physical health. For example, in addition to the lasting decreases in life satisfaction following divorce (Lucas, 2005), adults who have experienced a marital separation or divorce are at a greater risk for early death compared to married adults (Sharra, Law, & Portley, 2011). Although much is known about this broad-based association, very little is known about the mechanisms that convey this effect. One promising health behavior may be sleep quality. For example, Krietsch and Sharra (2014) reported that adults who maintain high levels of sleep disturbance up to three months after their separation showed increases in resting blood pressure three months later. In brief, sleep is a quintessential salubrious health behavior that may be disrupted quite substantially following the end of marriage. To examine the effect of marital dissolution (i.e., divorced vs. married) on levels of C-reactive protein (CRP), a marker of systemic inflammation that is associated with various downstream health outcomes, we examined how sleep quality, as measured by the sleep disturbance index (BMI, and self-reported perceived stress, sleep disturbance continued to mediate the effect of divorce on CRP levels. To supplement these findings, planned future analyses will use an objective measure of sleep quality (i.e., actigraphy, using accelerometer technology), and examine how changes in sleep are associated with daily social behaviors in the wake of a marital separation. Discussion will focus on what we can and cannot conclude about the role of sleep in explaining the divorce-health association from the mediational analyses used in the current study.

Individual Abstract Number: 1443

Does Sleep Disturbance Among Parents Of Infants Predict Increased Depressive Symptoms?

Zachary Blackhurst, BS, Clinical Psychology, Julianne Holt-Lunstad, PhD, Psychology, Jonathan Sandberg, PhD, Family, Life, Scott R. Braithwaite, PhD, Clinical Psychology, Brigham Young University, Provo, UT

INTRODUCTION: Sleep disturbance (e.g., sleep latency, wakefulness after sleep onset) negatively affects physical, emotional, and mental health. For many adults, the postpartum period is particularly highlighted by sleep disturbance. This is especially true for mothers as they are more likely than fathers to be waking to care for children during the night, though there is limited evidence to suggest that sleep disturbance is related to increased depressive symptoms. The current study aimed to examine whether sleep disturbance among parents of infants predicted increased depressive symptoms.
that fathers also experience postpartum sleep disturbance. Postpartum mothers are also more vulnerable to psychiatric disorders such as depression. In recent years it has been hypothesized that sleep disturbance may be a contributing cause of postpartum depression. METHODS: Participants for the study were recruited to take part in a larger marital intervention study that focused on cardiovascular outcomes. The sample consisted of 216 participants (108 couples), of which 96 participants (48 couples) were actively seeking therapy. All participants, for social cohesion, depressive symptoms reduced the association physical health, mental health, and psychosocial measures, and were also assessed for body mass index (BMI). These procedures were repeated 12 weeks later. Using reports from mothers and fathers, we used the actor-partner interdependence model (APIM) to examine the influence of children on al demographics, minimization stress appear to be particularly important determinants of ess (exp(b)=1.05, 95% CI= 1.00, 1.09) and lack of sleep quality (averaged over days of recording).

Recent short sleep duration with increased depressive symptoms for mothers (B = 2.65, 95% CI = [1.17, 5.12]), and further mother WASO was associated with less depressive symptoms for mothers (B = 2.65, 95% CI [1.17, 5.12]). Further, father WASO was associated with less veterinary mother WASO (B = −2.52, 95% CI [−4.56, −.47]) which was also associated with less depressive symptoms for mothers (B = 2.65, 95% CI [1.17, 5.12]).

CONCLUSION: These findings illustrate the importance of studying sleep using a dyadic approach so we can capture interdependent, dyadic influences on sleep and downstream mental health. By helping with nighttime care, and sharing the emotional burden, fathers can greatly contribute to the physical and emotional health of mothers.

Individual Abstract Number: 1564
A Tale of Two Neighborhoods: Neighborhood Disadvantage and Sleep in Two Urban Neighborhoods
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Introduction: Neighborhood disadvantage is a robust risk factor for poor mental and physical health, but the mechanisms underlying these associations are poorly understood. Sleep may be an important pathway; however, the extant literature on neighborhood disadvantage and sleep is scant, and few studies have focused specifically on high-risk populations, including predominantly African American (AA) urban communities. The present analyses focus on the association between objective and subjective neighborhood characteristics and sleep quality and the degree to which depressive symptoms explain observed associations in two predominantly AA, urban neighborhoods in Pittsburgh. Methods: The analytic sample (N=873; 77% female; 95% AA) is a randomly recruited sample of residents of two neighborhoods (matched for racial and socioeconomic composition) in the city of Pittsburgh. Participants completed a survey, which assessed covariates (i.e., individual-level sociodemographic characteristics and body mass index), depressive symptoms, and subjective neighborhood characteristics (perceived safety, social cohesion, and satisfaction). Participants also completed daily diaries, which included an assessment of sleep quality (averaged over days of recording). Objective neighborhood characteristics were obtained by conducting observational “audits” of randomly selected street segments in both neighborhoods. Results: Subjective neighborhood characteristics were significant independent correlates of sleep quality [perceived safety (b =.13; p<.001), social cohesion (b =.07; p <.05), and satisfaction (b =.10; p <.001)], but objective characteristics were not significantly associated with sleep quality. Adding depressive symptoms to models for safety and satisfaction accounted for 20-30% of the associations with sleep quality, though both safety and satisfaction remained statistically significant. For social cohesion, depressive symptoms reduced the association by 38% and the social cohesion effect was no longer significant. Conclusion: Perceived neighborhood safety and satisfaction are independent correlates of sleep quality in a high-risk, urban sample. Social cohesion was associated with sleep quality but the association was largely explained by depressive symptoms. These findings suggest that perceptions of neighborhood safety and satisfaction are stronger correlates of sleep quality than objective neighborhood characteristics.

Individual Abstract Number: 1439
Chronic Psychosocial and Sociocultural Stress and Sleep Disturbances in the HCHS/SOL- Sociocultural Ancillary Study
Carmela Alcantara, PhD, Social Work, Columbia University School of Social Work, New York, NY, Sanjay R. Patel, MD, Medicine, Harvard Medical School, Boston, MA, Mercedes R. Carnethon, PhD, Preventive Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL, Elva M. Arredondo, PhD, Sheila Castaneda, PhD, Public Health, San Diego State University, San Diego, CA, Carmen R. Isasi, MD, PhD, Epidemiology and Population Health, Albert Einstein College of Medicine, New York, NY, Sonia Davis, DrPh, Biostatistics, University of North Carolina at Chapel Hill, Chapel Hill, NC, Alberto R. Ramos, MD, Neurology, University of Miami Miller School of Medicine, Miami, FL, Susan Redline, MD, MPH, Medicine, Harvard Medical School, Boston, MA, Phyllis C. Zee, MD, PhD, Neurology, Northwestern University Feinberg School of Medicine, Chicago, IL, Linda C. Gallo, PhD, Psychology, San Diego State University, San Diego, CA

INTRODUCTION: While there is growing research into the relationship between stress and sleep health, the majority of this work has not considered if different types of stress are uniformly associated with sleep, particularly among racial/ethnic and immigrant communities who face specific stressors associated with their marginalized status. Our aim was to examine the association of three different psychosocial and sociocultural stressors with sleep disturbances in Hispanics/Latinos. METHODS: Using cross-sectional data from the Hispanic Community Health Study/Study of Latinos- Sociocultural Ancillary Study, we conducted weighted general linear models with gamma distribution and log link or weighted multinomial logistic regressions to evaluate the association of stress (acculturation stress, discrimination stress, general stress) and stress disturbance with depressive symptoms, sleepiness, sleep duration categories in individuals and aggregated models. Results: Among Hispanics/Latinos, depressive symptoms, ethnic discrimination, and social stress were associated with increased insomnia. Stress intensity and discrimination stress were associated with increased sleepiness scores in adjusted models. In contrast, acculturation stress was associated with less sleep duration (RRR=1.16, 95% CI = 1.03, 1.32) and general stress (exp(b)=1.10, 95% CI = 1.07, 1.13) were independently associated with decreases in insomnia and sleepiness scores in adjusted models. DISCUSSION: Socio-cultural stressors such as acculturation stress and ethnic discrimination stress appear to be particularly important determinants of sleep disturbances. Greater attention to these differential effects may help tailor behavioral sleep interventions for maximal public health impact and uptake.

Thursday, March 10 from 10:45 am to 12:00 pm
Symposium 1428
NEW INSIGHTS INTO PSYCHOBIOLOGICAL MECHANISMS UNDERLYING PRENATAL INFLUENCES ON BIRTH OUTCOME AND CHILD DEVELOPMENT
Laura M. Glynn, PhD, Psychology, Chapman University, Orange, CA, Isabel Ramos, BA, Psychology, University of California, Los Angeles, Los Angeles, CA, Elysa Davis, PhD, Psychology, University of Denver, Denver, , Colorado, Laura Glynn, PhD, Psychology, Chapman University, Orange, CA, Jonathan Ponser, MD, Psychiatry, University of California, San Diego, CA, Mercedes R. Carnethon, PhD, Preventive Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL, Linda C. Gallo, PhD, Psychology, San Diego State University, San Diego, CA, Phyllis C. Zee, MD, PhD, Neurology, University of California, Irvine, Orange, CA

It is clear that intranatal experience sets the stage for lifespan health and development. This symposium is intended to provide new insights in the role of ethnicity in understanding biological pathways to preterm birth, the important role of fetal glucocorticoid exposures in shaping offspring HPA-axis regulation and brain development, a novel mechanism through which prenatal stress might translate into risk for internalizing disorders, and neural mechanisms affected by prenatal exposure to maternal depression. The first presentation addresses a longstanding challenge in this field which is identifying concurrent associations between maternal psychological adversity and biological mechanisms affecting birth outcomes and fetal development. The first speaker
will present a moderated mediation model in which pregnancy specific anxiety predicts placental corticotropin-releasing hormone levels which in turn predict shortened length of gestation, but this relation is apparent only among Latina women and not White women. Glucocorticoids (GCs) have long been identified as a primary mechanism involved in fetal programming and the second presenter explores a novel model of fetal GC exposure: therapeutic administration of betamethasone for women in preterm labor. Results from two large independent cohorts illustrate the effects of this synthetic GC exposure on maternal placental and prenatal HPA-Axis regulation, birth outcome, child HPA-axis function and child brain development. It now is well established that maternal mood during the prenatal period affects risk for later psychopathology, and more specifically internalizing disorders. The third presenter proposes a new perspective on mechanisms through which maternal mood might influence fetal development. Drawing from animal models demonstrating the importance of entropy in signals obtained from early experience, and from information theory, maternal prenatal mood entropy was examined. Mood entropy is predictive of negative infant, toddler and child temperament, maternal report of child internalizing symptoms and child self-reports of anxiety. The last speaker will present provocative new data linking exposure to prenatal maternal depression to neonatal fronto-limbic connectivity and further shows that fetal behavior assessed during the third trimester is associated with these connectivity patterns as well. In sum, this symposium presents data from longitudinal studies spanning early pregnancy through preadolescence and provides novel insights into the psychobiological mechanisms by which early experiences influence birth outcome and trajectories of neurodevelopment.

Individual Abstract Number: 1650
Pregnancy Anxiety, Corticotropin Releasing Hormone in Pregnancy, and Timing of Delivery in Latina and White Women
Isabel Rumos, BA, Christine Dunkel Schetter, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA, Calvin Hobel, MD, Obstetrics and Gynecology, Cedars-Sinai, Los Angeles, CA
Recent evidence suggests that Latinas exhibit high levels of both pregnancy anxiety (Campos et al., 2008) and corticotropin-releasing hormone (CRH) during gestation (Glenn, et al. 2007), both of which are associated with adverse birth outcomes. Other research indicates that at 28 to 30 weeks gestation, CRH mediates the association between pregnancy anxiety and gestational length (GL) in a diverse sample (Mancuso et al., 2004). To date, there have been no studies examining CRH mediation in distinct ethnic groups. The objectives of this study were: (1) To examine ethnic differences in levels of pregnancy anxiety and CRH and length of gestation between pregnant Latina and non-Latina White women at 18 to 20 weeks, 24 to 26 weeks, and 30 to 32 weeks gestation; (2) To replicate the association between pregnancy anxiety and gestational length in a sample of 171 pregnant Latina and White women; (3) To examine CRH mediation in the combined and separate ethnic groups. We found that Latinas had higher levels of pregnancy anxiety throughout pregnancy, higher CRH at the end of pregnancy, and shorter gestational length compared to White women. In the full sample, third trimester pregnancy anxiety predicted timing of delivery, and third trimester levels of CRH, but not earlier levels, mediated this relationship. However, Latinas only first trimester pregnancy anxiety also predicted GA, and this relationship was mediated by third trimester CRH, whereas pregnancy anxiety did not predict GA for White women at any time point, nor were there mediational effects despite having a larger subsample. These findings are the first to address ethnic differences in the combined effect of psychosocial and neuroendocrine processes on birth outcomes. We consider the implications and future research directions.

Individual Abstract Number: 1429
A Novel Approach To Understanding The Mechanisms By Which Early Life Stress Affects Development
Elysia Davis, PhD, Psychology, University of Denver, Denver, Colorado, Michelle Edelmann, PhD, Kevin Head, BS, Psychology, University of Denver, Denver, CO, Deborah Wang, MD, Obstetrics and Gynecology, University of California, Irvine, Orange, CA
Prevalent neurodevelopmental models implicate early life stress as a key factor contributing to risk for later physical and mental health outcomes. Because of the extraordinarily rapid neurologic advances during the prenatal period, the fetus is highly vulnerable to the consequences of stress exposure. Models of early life stress posit that stress exposure to excess glucocorticoids, especially during the fetal period, is a primary mechanism that shapes the developing brain and HPA axis. We employ a novel approach to evaluate the consequences of prenatal stress due to elevated glucocorticoids on brain development and HPA axis functioning. Glucocorticoids are administered as part of the standard of care to women at risk for preterm delivery. This presentation will evaluate the consequences of synthetic glucocorticoid treatment during the prenatal period in two independent cohorts. In a group of 86 six- to ten-year-old typically developing children who were born full-term, we compared structural brain images and HPA axis regulation among children given prenatal GC (betamethasone) treatment with those from children not given prenatal GC treatment. As shown in Fig. 1, prenatal treatment with glucocorticoids was associated with thinner cortices, pri-marily in the rostral anterior cingulate (rACC). Further, glucocorticoid treated children showed a blunted cortisol awakening response and a flat cortisol slope across the day. These findings indicate that prenatal glucocorticoid treatment exerts persisting effects on child neurodevelopment. To further elucidate these long-term consequences, we assessed a cohort of 111 pregnant women. Maternal and placental stress hormones (placental CRH and maternal cortisol) were assessed before glucocorticoid treatment and 7 times following treatment. We found that glucocorticoid treatment altered the profile of maternal and placental hormones and in survival analyses hormone profiles predicted the duration of time from glucocorticoid treatment to delivery (i.e., gestational length was significantly shorter). These findings suggest that glucocorticoid treatment not only directly crosses the placenta and affects fetal neurodevelopment, but that treatment alters the intrauterine environment and the ensuing changes to maternal and placental hormones may be another pathway by which treatment impacts the developing fetus.

Fig 1: Prenatal GC treatment is associated with cortical thinning at 6-10 years of age (blue overlays indicate areas of significant thinning after FDR correction).

Individual Abstract Number: 1678
Laura Glenn, PhD, Psychology, Chapman University, Orange, CA, Curt Sandman, PhD, Psychiatry & Human Behavior, University of California, Irvine, Orange, CA, Tallie Baram, MD, PhD, Neurology, Hal Stern, PhD, Statistics, University of California, Irvine, Irvine, CA
Prenatal maternal mood has been linked to a range of adverse birth and developmental outcomes. The associations between heightened maternal depression and anxiety during gestation and risk of internalizing disorders in the offspring are particularly robust. However, questions remain as to the specific mechanisms or aspects of maternal mood signals that affect fetal development. Animal models suggest that patterns and sequences in maternal signals, including predictability and entropy, may be critical influences on the developing brain (Baram, 2012). Further, entropy measures are used across a range of disciplines to quantify the randomness or uncertainty associated with a series of events or observations and in strings of information. Here we develop an approach to measure entropy in reports of maternal prenatal mood to predict risk for child internalizing disorders. This association was examined in two cohorts of women and their offspring, examined prospectively beginning at 15 weeks’ gestation. Maternal depressive symptoms were assessed in both cohorts with the Centers for Epidemiological Studies Depression Scale (CESD; at 15, 19, 25, 29, 33, and 36 weeks), while maternal internalizing symptoms were assessed for each time point and then averaged to create a composite measure (because there did not appear to be any gestational timing effects). In Cohort 1 (n = 198) the Negative Affectivity temperament dimension of the Infant Behavior Questionnaire/CBQ (c.f. Gartstein & Rothbart, 2003), a predictor of risk for later internalizing disorders, was assessed at 6, 12, 24, and months at 5 and 6-9 years. In addition, maternal report of internalizing symptoms were assessed with the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) at 6-9 years and child report of anxiety symptoms with the State-Trait Anxiety Index for Children (STAIC; Spielberger et al. 1973) at 9-10 years. In Cohort 2 (n = 187) maternal report of internalizing symptoms was assessed with the CBCL at 6-9 years and child report with the STAIC at 9-10 and at 11-13 years. Results indicate across all measures (temperament, maternal and child reports of internalizing) and ages, that higher levels of mood entropy predicted negative temperament and maternal and child reports of internalizing symptoms (all p’s< .05). These results remain significant after adjusting for maternal sociodemographic characteristics including IQ, income and education and also for levels of depressive symptoms during both the pre and postnatal periods. The
This symposium will present new data from three cohorts examining the effects of prenatal stress exposure on stress reactivity in 6-month-old infants. Behavioral reactivity (negative emotions and emotion regulation) and physiological reactivity (cortisol and heart rate variability) will be addressed in each talk. The first two papers show that prenatal stress is associated with blunted cortisol reactivity but enhanced heart rate variability responses to the Still Face procedure. In both of these studies, behavioral reactivity was greater among infants with greater prenatal stress exposure. The second and third papers include measures of emotion regulation, which are shown to be decreased among infants with greater prenatal stress exposure. The third paper shows that behavioral reactivity and emotion regulation mediate the association between exposure to prenatal anxiety and infant cortisol reactivity. The discussant, a leading scientist in the fetal programming field, will highlight how these findings advance our understanding of the ways that prenatal stress leaves a lasting imprint on the development of self-regulation in children.

Symposium 1105

PHYSIOLOGICAL AND BEHAVIORAL STRESS REACTIVITY IN INFANTS AS A FUNCTION OF PRENATAL STRESS EXPOSURE.

Gerald F. Giesbrecht, PhD, Pediatrics, University of Calgary, Calgary, AB, Canada, Kimberly D’Anna-Hernandez, PhD, Psychology, California State University San Marcos, San Marcos, CA, Nicole Bush, PhD, Psychiatry and Pediatrics, University of California San Francisco, San Francisco, CA, Jenna Thomas, MSc, Psychology, University of Calgary, Calgary, AB, Canada, Elysia Davis, PhD, Psychology, University of Denver, Denver, CO

Stress response systems play a key role in shaping children’s development. Whereas early life experiences are known to direct children’s development, in part through social regulation of stress reactivity, emerging evidence suggests that prenatal exposures play a fundamental role in organizing infant stress responses. In utero exposure to maternal stress is believed to affect fetal development through structural and functional reorganization of stress response systems in a process that has been described as fetal or developmental programming. Such programming operates as a form of non-genomic microevolution that allows for rapid adaptation to changing environmental conditions. According to the developmental origins hypothesis, glucocorticoids and other stress ‘signals’ transmitted from mother to fetus during gestation convey useful information about the state of the external world and this information is exploited by the fetus to optimize development in preparation for survival and success in the postnatal environment.

This session will focus on the effects of prenatal stress on stress reactivity in fetal and infant samples. The first paper will present findings from the San Francisco Prenatal Stress in Pregnancy Study, which examined the stress and coping responses of low-income, immigrant Latino women across the prenatal period. The second paper will discuss the role of maternal depression in prenatal stress and infant stress reactivity. The third paper will examine the relationship between prenatal stress, acculturation, and infant stress reactivity in a sample of Mexican American infants. Finally, the discussant will synthesize the findings and highlight the implications for understanding the effects of prenatal stress on stress reactivity in infants.

Thursday, March 10 from 1:30 to 2:30 pm

Symposium 1105

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Gerald F. Giesbrecht, PhD, Pediatrics, University of Calgary, Calgary, AB, Canada, Kimberly D’Anna-Hernandez, PhD, Psychology, California State University San Marcos, San Marcos, CA, Nicole Bush, PhD, Psychiatry and Pediatrics, University of California San Francisco, San Francisco, CA, Jenna Thomas, MSc, Psychology, University of Calgary, Calgary, AB, Canada, Elysia Davis, PhD, Psychology, University of Denver, Denver, CO

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stress protocol—the still face (SF) paradigm—a dyadic interaction in which mothers alternate between 2-minute face-to-face segments of “natural play” with the infant and silent, non-responsive looking at the infant; respiratory sinus arrhythmia (RSA) was calculated to capture parasympathetic reactivity (stressor minus play). Regressions examined the unique effects of SLE and PS on the three infant outcomes.

Results: See Table 1. Infant outcomes were related to poverty, gestational age and birth weight, thus these were covaried in models. Maternal and child age, and maternal postnatal depression were not related and were dropped. Greater pre- and postnatal PS each predicted higher infant distress and lower self-regulation, after adjusting for SLE severity. Prenatal SLE severity uniquely predicted greater infant RSA reactivity to the stressor (parasympathetic withdrawal during the SF) and postnatal PS simultaneously uniquely predicted lower RSA reactivity. Conclusions: Findings add to accumulating evidence for prenatal maternal stress effects on offspring temperament and provide some of the first evidence for prenatal SLE effects on infant ANS reactivity. Importantly, pre- and post-natal adversities appear to have contrasting effects on infant ANS reactivity to the dyadic social stressor, suggesting the importance of differentiating types and timing of exposures when examining prenatal programming of offspring stress physiology and health trajectories.

| Table 1. Standardized Regression Coefficients for Maternal Prenatal Significant Life Events and Stress Effects on Infant Outcomes, Modeled Separately for Pre- and Post-natal Perceived Stress |
|---------------------------------|-----------------|-----------------|-----------------|
| **Predictors**                  | **Self-Regulation** | **Distress to Limits** | **RSA Reactivity** |
| **Model 1**                     | **Model 2** | **Model 3** | **Model 4** | **Model 5** |
| Pre-natal SLE Severity          | 0.13     | 0.07     | 0.04     | 0.09     | -0.22     | -0.25 *     |
| Pre-natal Stress                |          |          |          |          | 0.19 ** | 0.04     |
| Post-natal Stress               | -0.23 *  |          | 0.17    |          |          |
| % Poverty                       | 0.07     | 0.07     | -0.16   | -0.16   | -0.07    | -0.30     |
| Gestational Age                 | -0.29 ** | -0.33 ** | 0.12    | 0.12    | 0.19     | 0.22 *     |
| Birth weight                    | 0.10     | 0.14     | -0.03   | -0.02   | -0.22    | -0.26 *    |
| **NOTE:**                       | **p < .10** | **p < .05** | **p < .01** | **p < .001** | **p < .05** | **p < .001** |

Individual Abstract Number: 1234

The Effect of Pregnancy Anxiety on Infant Temperament and Emotion Regulation: Implications for Cortisol Reactivity to Stress
Jenna Thomas, MSc, Tavis Campbell, PhD, Chantelle Magel, BSc, Psychology, Nicole Letourneau, PhD, Nursing, Lianne Tomfohr, Ph.D, Psychology, Gerald F. Giesbrecht, PhD, Paediatrics, University of Calgary, Calgary, AB, Canada

Background: Emotion regulation has significant implications for infant physiological reactivity to stress. The development of emotion regulation abilities over the first year of life is greatly influenced by infant temperament, which is shaped in part by in utero exposure to maternal psychological distress. In the present investigation we assessed whether the effects of prenatal maternal depression, pregnancy anxiety, and diurnal cortisol levels on infant emotion regulation and cortisol reactivity were mediated by infant temperament. Our objective was to identify in utero exposures that contribute to the developmental origins of infant behavioural and physiological responses to stress.

Methods: The sample comprised 256 women and their infants. Maternal depression, pregnancy anxiety, and diurnal cortisol were assessed across pregnancy. Infant temperamentality was assessed at 3-months using a maternal report measure. Infant emotion regulation and salivary cortisol were assessed at 6-months during a battery of frustration tasks. Multiple regression analysis was used to determine the effects of prenatal exposures on infant temperament. Infant emotion regulation was assessed using the longitudinal associations between the prenatal predictors, infant temperament, emotion regulation, and cortisol reactivity. Infant sex, gestational age at birth, family income, and postpartum maternal anxiety/depression were included as covariates.

Results: Of the prenatal predictors, only pregnancy anxiety was significantly associated with infant temperamentality at 3-months of age, β = .184, p < .001. Using serial mediation we showed that increased pregnancy anxiety was associated with greater temperamentality, β = 2.9, p = .027, which was associated with decreased emotion regulation abilities at 6-months, B = -2.0, p = .023, and subsequently increased cortisol reactivity, B = -.54, p = .003 (Figure 1). The bootstrapped mediation effect was significant, B = .30, [95% CI = .036 – 1.2].

Conclusions: The results suggest that pregnancy-related fears during pregnancy are indirectly associated with infant cortisol reactivity to stress, through its effect on infant temperament and emotion regulation. Greater temperamental negativity may interfere with an infant’s ability to utilize nascent emotion regulation strategies, resulting in heightened physiological reactivity to stress.

Clinical Implications: Our findings support the need to both assess maternal fears related to pregnancy and develop interventions to alleviate maternal distress in the prenatal period.

**Figure 1.** Unstandardized regression coefficients for the relationship between pregnancy anxiety and infant cortisol reactivity at 3 months and 6 months.

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**Symposium 1349**

**MINDFULNESS-BASED INTERVENTIONS IN HEALTH CARE: MORE THAN JUST SYMPTOM REDUCTION?**

Linda E. Carlson, PhD, Oncology, University of Calgary Cumming School of Medicine, Calgary, Alberta, Canada, Eric Garland, PhD, College of Social Work, University of Utah, Salt Lake City, UT, Jeffrey M. Greer, PhD, Psychiatry, University of Pennsylvania, Philadelphia, PA, Linda E. Carlson, PhD, Oncology, University of Calgary Cumming School of Medicine, Calgary, Alberta, Canada, David Creswell, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA

Mindfulness-based interventions (MBIs) are commonly used in health care settings to help people alleviate burdensome symptoms and side effects such as depressed mood, anxiety, anger, and stress. Less well studied but commonly observed in clinical contexts is improvements in indices of positive psychological growth such as spirituality, meaning-making and post-traumatic growth. The objectives of this symposium are to: 1) Present the “Mindfulness to Meaning” theoretical model which proposes mechanisms through which positive changes may occur in MBIs; 2) Summarize research investigating the impact of MBIs on measures of positive psychological growth in different populations, and; 3) Suggest targets for future research based on previous observations and the theoretical model.

We will begin by presenting the “Mindfulness to Meaning” theory and data supporting it from studies of Mindfulness-Oriented Recovery Enhancement (MORE) with chronic pain patients. This work shows that in addition to improving opioid misuse, cravings and pain symptoms, the program enhanced positive cognitive and affective processes like reappraisal and savoring, and increased responsiveness to natural reward cues in the environment. Following this will we summarize positive emotional outcomes observed in a large, open trial of Mindfulness-Based Stress Reduction (MBSR) in a sample with high levels of anxiety and depression. This study found significant increases in five different positive emotions (self-compassion, gratitude, positive affect, positive states of mind, and satisfaction with life) following MBSR and investigated the role of mindfulness and spirituality in mediating these changes. We will then present data from multiple studies in cancer patients and survivors which have used qualitative, quantitative and mixed methods to investigate the development of spirituality and benefit finding (also known as post-traumatic growth) in Mindfulness-Based Cancer Recovery (MBCR) programs after cancer diagnosis. These studies investigate both the nature, timing and sequence of changes throughout the program along with potential mediating variables. Finally, the discussant will comment on the ties among these different lines of research and how they all feed into our understanding of the development of mindfulness and positive psychological processes through various MBIs.
This body of work may be important for translating theory-driven mechanisms into more effective interventions, encouraging health policies to cover MBIs for psychological well-being & quality of life and promoting a health paradigm shift away from solely focusing on symptom reduction in favor of more balanced consideration of whole person well being and flourishing.

Individual Abstract Number: 1392

Mindfulness Promotes Positive Emotion-Cognition Interactions Integral to Human Flourishing: Evidence from Research on Mindfulness-Oriented Recovery Enhancement

Eric Garland, PhD, College of Social Work, University of Utah, Salt Lake City, UT

BACKGROUND: Mindfulness may exert salutary effects on downstream cognitive-affective processes integral to health and human flourishing. The Mindfulness-to-Meaning Theory specifies a novel process model in which mindfulness is posited to expand the scope of attention, and thereby promote positive reappraisal of adversity and savoring of naturally-rewarding life events. In support of this theory, data will be presented from a NIH-funded randomized controlled trial of Mindfulness-Oriented Recovery Enhancement (MORE) as an intervention for chronic pain patients at risk for prescription opioid misuse.

METHODS: Chronic pain patients (N = 115) were randomized to either a MSW-led MORE group (n = 57) or a support group (n = 58). MORE intervention sessions involved training in mindfulness, positive reappraisal, and savoring skills. Pain severity, functional interference, opioid craving, and opioid misuse were assessed pre- and post-intervention, as well as at 3-month follow-up. To test the mechanistic hypotheses embedded in the Mindfulness-to-Meaning Theory, participants completed measures of mindfulness and positive reappraisal, as well as a psychophysiological measurement protocol including a dot probe task and affective picture viewing task designed to assess attentional processing of emotional stimuli.

RESULTS: In addition to clinically-significant improvements in opioid misuse, craving, and pain symptoms, MORE increased positive reappraisal coping. In parallel, MORE was associated with increased responsiveness to natural reward cues as indexed by cardiac-autonomic and electrocortical brain responses. Enhancements in natural reward processing were associated with the craving reducing and pain relieving effects of MORE.

DISCUSSION: By encoding positive cognitive and affective processes like reappraisal and savoring, mindfulness-based interventions such as MORE may promote salutary outcomes among vulnerable persons suffering from comorbid psychiatric and medical conditions. These results further support the Mindfulness-to-Meaning theory explicating the positive effects of Mindfulness-Based Interventions and mechanism whereby they may accrue.

Individual Abstract Number: 1493

Mindfulness-Based Stress Reduction: Correlates, Predictors, and Moderators of Positive Emotional Outcomes

Jeffrey M. Greeson, PhD, Psychiatry, University of Pennsylvania, Philadelphia, PA

BACKGROUND: Mindfulness-Based Stress Reduction (MBSR) is an 8-week group program often used to reduce stress and negative emotions. Less is known, however, about the positive emotional outcomes of MBSR, including the correlates, predictors, and potential moderators of changes in positive emotions.

METHODS: Open trial using a pre-test post-test design. Participants were primarily well-educated white women who were married and working full-time. Over half of study participants met cutoff criteria for a "likely case" of clinical depression (51%) and anxiety (57%) on the Hospital Anxiety and Depression Scale (HADS). Of 322 individuals who enrolled in the study, 213 provided at least some post-survey data (66% response rate).

RESULTS: MBSR was associated with significant improvement in all five positive emotional outcomes assessed, including self-compassion, gratitude, positive affect, positive states of mind (e.g., focused attention, restful repose, and sharing with others), and satisfaction with life (all p-values < .001). Changes in both mindfulness (Cognitive and Affective Mindfulness Scale – Revised [CAMS-R]) and spirituality (Daily Spiritual Experiences Scale [DSES]) were significantly correlated with changes in all five positive emotional outcomes (.23 < r < .57, p < .05), with one exception – change in mindfulness was not associated with change in gratitude (p = .80). Multiple regression indicated that change in mindfulness independently predicted higher post-MBSR levels of three positive emotion outcomes (self-compassion, positive affect, and satisfaction with life; all p < .05), controlling for baseline level of each positive emotion and change in spirituality. Similarly, change in spirituality independently predicted higher post-MBSR levels of four positive emotion outcomes (self-compassion, positive affect, positive states of mind, and satisfaction with life; all p < .05). There were no significant interaction effects between change in mindfulness and change in spirituality. Finally, repeated measures ANOVA found that compared to individuals who did not report taking MBSR for spiritual growth, those who did report such a motivation experienced a greater increase in mindfulness (p < .001), but no significant differences on the five positive emotion outcomes. Similarly, participants who reported taking MBSR for personal growth/self-discovery experienced significantly larger increases in mindfulness (p = .008) and gratitude (p = .028), but no other significant differences.

CONCLUSIONS: MBSR is associated with increased positive emotions, which are predicted by changes in both mindfulness and spirituality. Positive emotional outcomes generally did not depend on taking MBSR for spiritual or personal growth, suggesting generalizability.

Individual Abstract Number: 1393

Mindfulness-Based Cancer Recovery: Effects on positive psychology outcomes

Linda E. Carlson, PhD, Oncology, University of Calgary Cumming School of Medicine, Calgary, Alberta, Canada

BACKGROUND: Our group has been offering Mindfulness-Based Cancer Recovery (MBCR), an adaptation of Mindfulness-Based Stress Reduction (MBSR) at the Tom Baker Cancer Centre in Calgary Alberta since 1998. MBCR is an 8-week group program which trains people diagnosed with cancer in mindfulness meditation practices and gentle Hatha yoga in a supportive group setting, with daily home practice of 30-45 minutes. Practices include body scan, sitting meditation, walking meditation and loving kindness. Our previous studies have shown its efficacy for improving stress symptoms, mood disturbance and symptoms such as sleep problems and fatigue. Another theme has been to investigate the programs’ effects on enhancing measures of positive growth.

METHODS AND RESULTS: We first interviewed nine graduates of our 8-week program who were attending drop-in booster sessions, and “personal growth” and “spirituality” emerged as two pivotal themes in their experience of mindfulness practice. In another study a sample of 60 patients in the MBSR program completed questionnaires measuring spirituality (the FACIT-Sp) and post-traumatic growth (the PTGI) pre and post-intervention. Improvements were seen on PTGI subscales of Relating to Others, Seeing New Possibilities and Personal Strength, and on the overall spirituality score. We explored these themes more in depth in a mixed-methods study with 14 MBCR participants who expounded on their experience relating to items which changed on their questionnaires. More recently, a longitudinal waitlist-controlled study assessed whether increased mindfulness mediated the effects of MBCR on spirituality and PTG in 135 patients undergoing the program compared to 76 on the waitlist, who completed questionnaires pre-, mid-, and post-MBCR (or waiting period). The MBCR participants demonstrated increased spirituality, PTG, and mindfulness relative to controls, and changes in all mindfulness facets mediated the effect of MBSR on spirituality and PTG. Finally, we replicated these results showing enhanced PTG and spirituality in an online version of the program which occurred in weekly real-time live interactive group sessions.

CONCLUSIONS: The development of mindfulness skills through both in-person and online MBCR may facilitate a sense of meaning, peacefulness, connectedness, and personal growth in cancer patients. Further research should investigate in more depth the mechanisms and process of growth through mindfulness practice.
The subjective experience of pain is driven by a constellation of interactions between sensory, cognitive and affective factors rendering the treatment of pain difficult and a financial burden. In fact, chronic pain has been characterized as “silent epidemic” affecting over 1.5 billion worldwide and costs the United States over 635 billion dollars annually. These staggering statistics highlight the importance of developing, validating, and testing non-pharmacological approaches to treat pain. It is then critical to identify the specific analgesic mechanisms supporting the cognitive modulation of pain to better tailor and target interventions to alleviate pain.

The goal of this symposium is to advance our understanding of the role of endogenous pain modulatory systems in the cognitive modulation of pain. Endogenous opioidergic systems play a significant role in the modulation of pain. For instance, analgesia produced by distraction, expectancy, and acupuncture is reversed by the opioid antagonist, naloxone. Mindfulness meditation is a cognitive practice based on sustaining non-judgmental awareness that reliably attenuates behavioral and neural pain responses. However, it remains unclear if the stress-reduction analgesia is mediated by placebo mechanisms. We will present new data demonstrating that mindfulness meditation, after a brief mental training regimen, reduces pain independent from opioids and through multiple, distinct neural mechanisms. We will also delineate new data from a separate study examining the role of opioids in pain relief as a function of meditative experience. The opioid system is the only system found to regulate pain. Recently, studies have shown that vasopressin, a hormone critically involved in regulating homeostasis and social behavior, plays a pivotal role in modulating pain. We will present novel findings demonstrating that arginine vasopressin when given intranasally, induces an enhancement of expectancy-induced analgesia and this effect depends upon a sexual dimorphism and stress responses. The discussant will facilitate discussion and stimulate questions about both theoretical and practical implications of these results with an eye towards clinical pain management, psychosomatic medicine and clinical trial design. This work will contribute to advance our knowledge of the impact of social, neural, and behavioral factors on pain.

Individual Abstract Number: 1356
From social learning to vasopressin: new mechanisms underlying placebo analgesia
Luana Colloca, Ph.D., Pain Translation Symptom Science, University of Maryland Baltimore (SON & SOM), Baltimore, Maryland
Placebo produces pain relief in individuals by virtue of expectations and conditioning mechanisms. Here I show that social interactions and observational learning can also lead to placebo analgesic effects. Therefore I propose an integrative conceptual framework according to which the placebo effect is the byproduct of expectancies created via conditioned, verbal, and observational cues that are centrally integrated to change behaviors and outcomes. Moreover, I show the first evidence that the social behaviors can be manipulated by giving intranasal arginine vasopressin resulting in robust placebo analgesic effects. Avp1a and Avp1b vasopressin receptors are largely expressed within the central nervous system and regulate social and stress behaviors across different species in a sex-specific manner. In nonhumans, vasopressin promotes aggression in males, and modulates affiliative behaviors in females. The vasopressin system is a strong enhancer of placebo analgesic effects. In fact, the nonselective Avp1a and Avp1b vasopressin receptor agonist produces placebo effects in women but not in men. The modulatory action of vasopressin is highly significant when compared to the no-treatment, oxytocin and saline groups. The effect of vasopressin in boosting placebo analgesia is also related to the regulation of stress responses. Since every analgesic treatment is significantly modulated by placebo effects, gaining deeper understanding of the mechanisms underlying social process and pain modulation has enormous implications for personalizing and optimizing pain control.

Individual Abstract Number: 1355
Mindfulness meditation engages unique, non-opioid mediated mechanisms to reduce pain
Fadel Zeidan, Ph.D., Adrienne Adler, MPH, Neurobiology and Anatomy, Wake Forest School of Medicine, Winston-Salem, NC, Rebecca Wells, MD, Neurology, Wake Forest School of Medicine, 1 Medical Center Boulevard, NC, Emily Suggaro, BS, Psychology, Wake Forest University, Winston-Salem, NC, Anne-Marie Porter, BA, Psychology, University of North Carolina, Charlotte, Charlotte, NC, Lauren Barber, High school, Dakota Lee, High school, Alysson Kaleita, High school, Katelyn Garcia, High school, Grace Posey, High school, Psychology, Wake Forest University, Winston-Salem, NC, Peter Lichstein, MD, General Internal Medicine, James Eisenach, MD, Anesthesiology, John McMaffie, PhD, Neurobiology and Anatomy, Wake Forest School of Medicine, Winston-Salem, NC, Robert Coghill, PhD, Anesthesiology, Cincinnati Childrens Hospital, Cincinnati, OH
It is well established that opioids play a significant role in supraspinally mediated pain modulation. Opioidergic systems are also critically involved in facilitating the cognitive modulation of pain. Pain relief produced by placebo, conditioned pain modulation, and distraction has been reversed by administration of the opioid antagonist, naloxone. Dr. Zeidan will present novel, unpublished findings demonstrating that mindfulness meditation-induced analgesia, exhibited after a brief mental training regimen, does not engage endogenously driven opioidergic systems to reduce pain. That is, high doses of intravenously administered naloxone failed to reverse pain relief produced by mindfulness meditation in the presence of noxious heat stimulation. Furthermore, novel data will be presented showing that mindfulness meditation engages a unique neural network to reduce pain including activation in the orbitofrontal, rostral anterior cingulate, and insular cortices. Dr. Zeidan will present a theoretical model postulating that mindfulness meditation reduces pain by engaging corticothalamic interactions. Taken together, these findings provide further evidence that meditation-induced pain relief can be achieved after a brief mindfulness meditation training, an important clinical consideration.

Individual Abstract Number: 1357
The Role of Opioids in Pain Relief as a Function of Meditative Experience.
Lisa M. May, B.S., Neuroscience / Biology, Elliot T. Berkman, Ph.D., Psychology, University of Oregon, Eugene, OR
The Role of Opioids in Pain
Lisa M. May, B.S., Neuroscience / Biology, Elliot T. Berkman, Ph.D., Psychology, University of Oregon, Eugene, OR
Mediation is a cognitive practice that reliably attenuates behavioral and neural pain responses. Moreover, meditation analgesia is of particular clinical relevance because mediation reliably improves a wide range of physical and mental health benefits such as reduced stress and improved life satisfaction, and because this kind of analgesia can be cultivated intentionally via habitual practice. In contrast to the problems of tolerance and hyperalgesia that often occur with medication, the pain relief effect of meditation increases with practice at no continuing cost to the patient or the health care system. However, the endogenous pain modulation system(s) underlying meditation-induced analgesia remain unknown.

Here I present the results of a double-blind, placebo controlled crossover design study on the effect of opioid blockade, with the opioid antagonist naloxone, on meditation during noxious electrical stimulation in healthy community adults with over 1000 hours of meditation experience across different meditation traditions. Participants completed pain testing in three sessions: 1) without drug administration, 2) with placebo-saline, and 3) with naloxone. During each session, they completed pain testing at baseline, while meditating, and during a distraction task. The preliminary results demonstrate that long-term meditation practice produces analgesia. This study provides the opportunity to examine the role of opioids in meditation-induced analgesia as a function of meditation experience, meditation type, and trait measures such as personality and pain catastrophizing. The results of this study will further our understanding of the neurochemical mechanisms underlying the cognitive modulation of pain and improve our ability to tailor and target pain treatment interventions.

FRIDAY, March 11, 20116
Friday, March 11 from 10:45 am to 12:00 pm
Symposium 1067
BIOLGICAL AND BEHAVIORAL INTERMEDIARIES LINKING RELATIONSHIP PROCESSES TO PSYCHOSOMATIC HEALTH
Rebecca G. Reed, Ph.D., Psychology, University of Kentucky, Lexington, KY, Lisa M. Jaremka, Ph.D., Psychology and Brain Sciences, University of Delaware, Newark, DE, Mary-Frances O’Connor, PH.D., Psychology, University of Arizona, Tucson, AZ, Rebecca G. Reed, Ph.D., Psychology, University of Kentucky, Lexington, KY, Beate Ditzen, Ph.D., Medical Psychology and Psychotherapy, University Hospital Heidelberg, Germany, Heidelberg, Baden-Württemberg, Germany
Close relationships can have profound effects on health. New biopsychosocial research is underway that identifies how relationship processes in loneliness,
bereavement, distress, and emotional closeness affect psychosomatic health. The goal of this symposium is to present results from multi-method approaches in examining biological and behavioral intermediaries that link relationship processes to endocrine, cardiovascular, and immune functioning. The presenters use a diverse array of methods (e.g., multi-study report, experimental, daily measures, eye-tracking) in both clinical and non-clinical samples. Their findings contribute new knowledge to relationship and health research.

The first speaker reports on multi-study evidence that appetite dysregulation (via the hormone ghrelin) and increased food intake are potential mechanisms linking social disconnection and loneliness to poorer health. Findings presented by the second speaker demonstrate that bereaved individuals show elevated cardiovascular responses when recalling their bereaved experience, and that aspirin can attenuate these cardiovascular responses as well as decrease depressive symptoms over time. The third speaker explores new data on immune reactivity and recovery in couples. Results indicate that couples low in dyadic coping (i.e., how well couples cope with stress together) have higher immune reactivity to a laboratory interpersonal stressor and have potentially impaired immune recovery post-stressor, as displayed in diurnal immune trajectories. The final speaker examines the role of intranasal oxytocin administration as a means of increasing couples’ emotional closeness and intimacy, measured using eye-tracking technology. Findings are discussed in terms of the long-term effects of oxytocin and its relevance in improving relationship cognitions and, ultimately, health.

In sum, this symposium brings together a variety of scientists to describe their ideas and findings regarding novel links between relationship and health processes. The data presented cover a breadth of biopsychosocial approaches and methodologies and will stimulate audience questions and symposium discussion in the realm of relationships and health.

Individual Abstract Number: 1069

Novel Evidence Linking Social Disconnection to Appetite Regulation and Diet
Lisa M. Jaremka, Ph.D., Psychology and Brain Sciences, University of Delaware, Newark, DE

Background: Experiencing social disconnection is clearly linked to a variety of health outcomes, including cardiovascular disease incidence, a medical condition with strong ties to a person’s diet. In the current talk, appetite dysregulation and altered food intake are proposed as novel mechanistic pathways linking social disconnection to poor health. Three studies using different indices of social disconnection provide evidence to support this claim.

Methods and Results: Study 1 utilized a sample of non-obese women; those who experienced more interpersonal tension had higher post-meal ghrelin, a hormone that is implicated in food intake, and also reported consuming more food than their counterparts who experienced fewer interpersonal stressors. In Study 2, lonelier women had larger post-meal ghrelin and hunger increases compared with less lonely women, but only among participants with a lower BMI. Loneliness and post-meal ghrelin and hunger were unrelated among participants with a higher BMI. In Study 3, both men and women in more distressed marriages had higher post-meal ghrelin and a poorer quality diet than those in less distressed marriages, but only among participants with a lower BMI. Marital distress and post-meal ghrelin and diet quality were unrelated among participants with a higher BMI. Follow-up analyses across both Study 1 and 2 indicated that the distinction between lower and higher BMI hovered around 30.00 across analyses.

Conclusion: Taken together, these data demonstrate that social disconnection is linked to appetite dysregulation (as reflected by the hormone ghrelin) and poor food choices among non-obese people. Accordingly, appetite dysregulation and food intake may partly explain low feeling socially disconnected ultimately results in serious health problems.

Individual Abstract Number: 1068

Low Dose Aspirin Reduces Cardiovascular Reactivity and Depressed Mood in Acutely Bereaved: A Pilot Study
Mary-Frances O’Connor, Ph.D., Psychology, University of Arizona, Tucson, AZ; Sebastian Kremers, B.Sc., Psychosomatic Medicine and Psychotherapy, University Hospital of Ulm, Ulm, Baden-Württemberg, Germany; Monica Fallon, M.A., Roman Pilitsky, M.Div, Psychology, University of Arizona, Tucson, AZ; Harald Gündel, M.D., Psychosomatic Medicine and Psychotherapy, University Hospital of Ulm, Ulm, Baden-Württemberg, Germany

Background: The death of a loved one is extremely stressful, and cardiovascular risk increases two-fold in the acute period of bereavement. Despite this data, no studies have attempted to intervene to reduce risk during this identifiable period. The present study investigated the protective effect of low-dose aspirin on the cardiovascular parameters of bereaved participants, compared to nonbereaved healthy controls. Additionally, we hypothesized that aspirin would prevent worsening of depressed mood in bereaved participants.

Methods: Ten bereaved participants who had experienced the death of their spouse had heart rate and heart rate variability (HRV) measured and blood drawn in a baseline lab visit. The visit was within 30 days of the death of their spouse, on average. Twelve control participants were matched for age and sex. Participants were randomized to receive low-dose aspirin (81 mg) or placebo, taken for five days. In a second lab visit, the same assessments were repeated, as well as a structured separation recall reactivity task (i.e., recalling a time they felt alone or abandoned). Bereaved participants recalled their bereavement experience.

Results: At baseline, the bereaved group showed significantly more depressive symptoms than the control group (F=10.09, p<0.01). Bereaved participants taking aspirin were more likely to report a decrease in CES-D score from the baseline to the second lab visit than bereaved participants taking placebo (χ²=6.667, p<0.01). Additionally levels of p-selectin (F=6.668, p<0.01) and a composite cardiovascular risk score (F=5.667, p<0.03) decreased more from the first to the second lab visit in participants taking aspirin. In response to the separation recall, participants taking aspirin exhibited cardiovascular parameters that recovered faster than those taking placebo: heart rate decreased more in the aspirin group (F=10.379, p<0.005) and HRV decreased in the placebo group while it increased in the aspirin group (F=5.691, p<0.03).

Conclusion: The cardiovascular and psychological findings at baseline in bereaved participants are similar to previously reported findings in the literature. The present study was the first to use the separation recall paradigm in a bereaved population. Our results suggest that it elicits cardiovascular and psychological responses similar to pangs of grief and that aspirin can attenuate these cardiovascular responses. Aspirin also showed a positive effect in bereaved participants on self-reported symptoms of depression, suggesting that inflammation is affecting mood as well as cardiovascular health.

Individual Abstract Number: 1071

Couples’ Immune Reactivity and Diurnal Recovery from Interpersonal Stress
Rebecca G. Reed, Ph.D., Psychology, University of Kentucky, Lexington, KY

Background: Inflammation is a stress-relevant mechanism through which interpersonal stressors increase risk for health problems. Despite extensive research on immunoreactivity to stress, an understudied area is immune recovery, the return of individuals’ inflammatory levels to homeostasis following a stressor. Couples’ abilities to deal with stress together (dyadic coping) may buffer or exacerbate immune recovery. The present study examined the moderating role of dyadic coping on couples’ immune reactivity to and recovery from an interpersonal stressor.

Method: Twenty-four healthy couples (N=48) completed the Dyadic Coping Inventory and provided saliva samples four times each day (at waking, midmorning, later afternoon, and bedtime) for 5 days (2 days before a laboratory dyadic stressor, the day of, and 2 days after) to capture normative baseline diurnal variability and immune recovery post-stressor. Four additional saliva samples were taken during the laboratory stressor (in which partners discussed an interpersonal conflict): at baseline, immediately after the stressor, and 45 and 120 min post-stressor. All laboratory sessions occurred between the midmorning and early afternoon time points (6-8 PM). Saliva samples were assayed for interleukin (IL)-6 using ELISA (Salimetrics, LLC). Multilevel models that controlled for relevant covariates were used to estimate IL-6 reactivity to and diurnal recovery (i.e., quadratic slopes) from the stressor, moderated by dyadic coping.

Results: Dyadic coping significantly moderated IL-6 reactivity to the interpersonal stressor [F(1,133) = 8.94, p=.003] such that partners low in dyadic coping displayed significant reactivity, whereas partners high in dyadic coping did not. Additionally, dyadic coping and gender moderated diurnal IL-6 trajectories [F(2,419)=4.77, p=.009] where men low in dyadic coping showed a flattened diurnal slope (and a nonsignificant trend toward an elevated later afternoon time point) on the lab stressor day. Overall, recovery may have occurred by the later afternoon time point (approximately 3 hrs post-stressor), but more certainly by the evening of the stressor on the lab stressor day.

Conclusion: Results corroborate previous findings that couples display immune reactivity to an interpersonal stressor and provide new insight into the recovery process post-stressor, accounting for diurnal variability. Although interpersonal stress did not affect recovery in terms of significantly elevated time points post-stressor, it may be found to dysregulate the overall immune diurnal pattern on the day of a stressor. Immune recovery as measured by diurnal immune trajectories is an area in need of study and may be a key biological pathway through which relationship distress affects health.

Individual Abstract Number: 1070

Intranasal Oxytocin and Social Cognition Processes in Couples
Beate Ditzen, Ph.D., Medical Psychology and Psychotherapy, Corina Aguilar-Raaub, Ph.D., Monika Eckstein, Ph.D., Institute of Medical Psychology in the
The Effects of Perseverative Cognition on Diverse Physiological Responses: An Integrative View

Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio, Cristina Ottaviani, PhD, Santa Lucia Foundation, Rome, Italy, Jos F. Brosschot, PhD, Institute of Psychology, Leiden University, Leiden, The Netherlands

Perseverative cognition is not only implicated in psychological health, contributing to mood worsening and psychopathology, but due to its ability to elicit prolonged physiological activity, is also considered to play a role in somatic health. Recent investigations have revealed that there is emerging evidence that such negative and persistent thoughts have consequences on the body, this association has not yet been quantified. The aim of this study was to meta-analyze available studies on the physiological comorbidities of perseverative cognition in healthy subjects. Associations emerged between perseverative cognition and higher systolic blood pressure (g = .45; p = .003), diastolic blood pressure (g = .31; p = .001), heart rate (g = .28; p < .0001) and cortisol (g = .36; p = .03), and lower heart rate variability (g = .15; p = .03). Even if effects were small to medium, moderator analysis suggests that there is the potential for larger effects if a series of precautions will be taken by future studies. Significant moderators were sex, ethnicity, type of induction used to elicit perseverative cognition, assessment of state versus trait perseverative cognition, focus on worry or rumination, duration of physiological assessment, and quality of the studies. Results showed that perseverative cognition affects cardiovascular, autonomic, and endocrine nervous system activity, suggesting a pathogenic pathway to long-term disease outcomes and clarifying the still unexplained relationship between chronic stress and health vulnerability.

Individual Abstract Number: 1202
The Effects of Perseverative Cognition on Diverse Physiological Responses: An Integrative View

Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio, Cristina Ottaviani, PhD, Santa Lucia Foundation, Rome, Italy, Jos F. Brosschot, PhD, Institute of Psychology, Leiden University, Leiden, The Netherlands

Perseverative cognition is not only implicated in psychological health, contributing to mood worsening and psychopathology, but due to its ability to elicit prolonged physiological activity, is also considered to play a role in somatic health. Recent investigations have revealed that there is emerging evidence that such negative and persistent thoughts have consequences on the body, this association has not yet been quantified. The aim of this study was to meta-analyze available studies on the physiological comorbidities of perseverative cognition in healthy subjects. Associations emerged between perseverative cognition and higher systolic blood pressure (g = .45; p = .003), diastolic blood pressure (g = .31; p = .001), heart rate (g = .28; p < .0001) and cortisol (g = .36; p = .03), and lower heart rate variability (g = .15; p = .03). Even if effects were small to medium, moderator analysis suggests that there is the potential for larger effects if a series of precautions will be taken by future studies. Significant moderators were sex, ethnicity, type of induction used to elicit perseverative cognition, assessment of state versus trait perseverative cognition, focus on worry or rumination, duration of physiological assessment, and quality of the studies. Results showed that perseverative cognition affects cardiovascular, autonomic, and endocrine nervous system activity, suggesting a pathogenic pathway to long-term disease outcomes and clarifying the still unexplained relationship between chronic stress and health vulnerability.

Individual Abstract Number: 1201
Hemodynamic Profiles of Adaptive and Maladaptive Forms of Perseverative Cognition: Implications for Health

Cristina Ottaviani, PhD, Santa Lucia Foundation, Rome, Italy, Jos F. Brosschot, PhD, Institute of Psychology, Leiden University, Leiden, The Netherlands, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio

The ability of the human brain to escape the here and now and now can function (problem solving) and dysfunctional (perseverative cognition) routes. Although it has been proposed that only the latter may act as a mediator of the relationship between stress and cardiovascular disease, in terms of cardiovascular reactivity both forms of repetitive thinking have been associated with blood pressure (BP) reactivity of the same entity. However, one important limitation of the ‘reactivity hypothesis’ is the focus on BP reactivity per se and not on its underlying physiological determinants. The aim of this study was to overcome such limitation and explain previous inconsistencies by examining the way (hemodynamic profile) and the extent (compensation deficit) to which total peripheral resistance (TPR) and cardiac output (CO) compensate for each other in determining BP reactivity during functional and dysfunctional types of repetitive thinking. Fifty-six participants (26 women, 30 men; mean age 24.5 (3.9) years) underwent a perseverative cognition, a mind wandering, and a problem solving induction in a randomized order, each followed by a 5-min recovery period while their cardiovascular parameters were continuously monitored by the Portapres device. Perseverative cognition (but not mind wandering) elicited BP increases of similar entity (ps > .70). However, perseverative cognition resulted characterized by a more vascular (vs myocardial) profile compared to mind wandering and problem solving (F= 4.34; p = .02). As a consequence, BP recovery was impaired after perseverative cognition compared to the other two conditions (Fs > 4.43; ps < .04 for SBP and DBP). Given that high vascular resistance is the hemodynamic hallmark of cardiovascular risk, results suggest a potential mechanism through which rumination and worry may act a mediator in the relationship between stress and risk for developing precursors to cardiovascular disease.

Individual Abstract Number: 1212
Examining Ethnic Differences in the Hemodynamic Profile of State Perseverative Cognition

Lauren E. Hull, PhD, Psychology, The Ohio State University, Columbus, Ohio, Cristina Ottaviani, PhD, Santa Lucia Foundation, Rome, Italy, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio

There is accumulating evidence of the important role of perseverative cognition (PC), characterized by worrisome and ruminative thinking, in acute and long-term changes in cardiovascular function and health. Several studies have shown that greater PC is linked with altered cardiac activity; however, less is known regarding the influence of PC on other aspects of cardiovascular function and in particular to variations in the mechanisms underlying blood pressure (BP) regulation. According to previous research, stressors characterized by greater vascular, compared with central, cardiovascular responses may convey heightened risk for later cardiovascular disease. Using data from a laboratory-based study, we investigated whether changes in BP during an induced period of PC were more strongly governed by shifts in cardiac output (CO), a volumetric index of cardiac blood flow to the periphery, or total peripheral resistance (TPR), a global measure of contractile force in the vasculature. Results revealed important ethnic differences in the hemodynamic response to state PC. Specifically, among white participants BP changes during State PC were mixed, or not clearly due to exclusive changes in either vascular or myocardial activity. However, among African Americans, BP responses during State PC were more strongly driven by changes in TPR, a pattern which is consistent with the greater vascular profile thought to underlie hypertension and other CVD disparities among African Americans. Although less is known about the specific stressors that may evoke divergent patterns of underlying cardiovascular response and potentially contribute to ethnic disparities in cardiovascular disease risk.
Friday, March 11 from 10:45 am to 12:00 pm

Symposium 1168

BIOPSYCHOSOCIAL APPROACHES TO CARDIOVASCULAR HEALTH: INTEGRATION ACROSS POPULATION-BASED STUDIES

Jennifer Morozcink Boylan, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania, Andrew Steptoe, DPhil, Epidemiology and Public Health, University College London, London, England, and Richard D. Lane, MD, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania.

This symposium aims to characterize protective factors for cardiovascular (CV) health as well as identify pathways and risk factors impacting disease processes and quality of life using prospective data from three population-based studies. The first paper uses the nationally representative English Longitudinal Study of Ageing to describe and compare quality of life, specifically regarding sexual behavior, among people with and without coronary heart disease (CHD). Using a calendar control design, data suggest that the deterioration of sexual activity due to CHD has been previously overestimated, and that more appropriate advice about sexual activity following CHD diagnosis might attenuate impaired sexual activity, leading to more satisfying personal lives. The second paper considers socioeconomic status (SES) at the individual and neighborhood level as prospective predictors of favorable CV health (FCH; i.e., healthy status on several CV components) across the first and second waves of the Midlife in the United States (MIDUS) study. Results support a collective resource or double jeopardy model, where lower SES individuals had more FCH 9–10 years later if they lived in higher SES neighborhoods and less FCH if they lived in lower SES neighborhoods, respectively. The third paper investigated positive emotions and optimism as predictors of FCH up to 20 years later within the Coronary Artery Risk Development in Young Adults study. Positive emotions and optimism were associated with having FCH earlier in adulthood but were not associated with changes in FCH over time, suggesting that other factors may contribute to differences in FCH with age. The final paper provides evidence for inflammation as a key physiological pathway linking CV disease and other chronic conditions to incident and worsening disability over a 7–10 year period using data from the second and third waves of MIDUS. Results showed that greater age, lower SES, and greater inflammation, and greater multiple chronic conditions, increased risk of incident basic and instrumental activities of daily living (ADL), and inflammation was a significant, partial mediator of the association between multiple chronic conditions and risk of incident, and increases in ADLs. Together, these papers highlight a variety of targets for intervention to improve CV health among healthy adults and those with CHD, including neighborhood SES, positive emotions and optimism, inflammation, and sexual activity. The discussant, a leading expert on psychobiological pathways of CV disease in middle age, will integrate and evaluate each of the studies, focusing on both protective and vulnerability factors, and she will tie in relevant findings from the Study of Women’s Health Across the Nation.

Individual Abstract Number: 1216

Sexual Activity in People with Coronary Heart Disease


Background: Sexual activity is a central component of intimate relationships, but sexual function may be impaired by coronary heart disease (CHD). Many studies have not included comparisons with people of similar age, and since CHD has been previously overestimated, and that more appropriate advice about sexual activity following CHD diagnosis might attenuate impaired sexual activity, leading to more satisfying personal lives. The second paper considers socioeconomic status (SES) at the individual and neighborhood level as prospective predictors of favorable CV health (FCH; i.e., healthy status on several CV components) across the first and second waves of the Midlife in the United States (MIDUS) study. Results support a collective resource or double jeopardy model, where lower SES individuals had more FCH 9–10 years later if they lived in higher SES neighborhoods and less FCH if they lived in lower SES neighborhoods, respectively. The third paper investigated positive emotions and optimism as predictors of FCH up to 20 years later within the Coronary Artery Risk Development in Young Adults study. Positive emotions and optimism were associated with having FCH earlier in adulthood but were not associated with changes in FCH over time, suggesting that other factors may contribute to differences in FCH with age. The final paper provides evidence for inflammation as a key physiological pathway linking CV disease and other chronic conditions to incident and worsening disability over a 7–10 year period using data from the second and third waves of MIDUS. Results showed that greater age, lower SES, and greater inflammation, and greater multiple chronic conditions, increased risk of incident basic and instrumental activities of daily living (ADL), and inflammation was a significant, partial mediator of the association between multiple chronic conditions and risk of incident, and increases in ADLs. Together, these papers highlight a variety of targets for intervention to improve CV health among healthy adults and those with CHD, including neighborhood SES, positive emotions and optimism, inflammation, and sexual activity. The discussant, a leading expert on psychobiological pathways of CV disease in middle age, will integrate and evaluate each of the studies, focusing on both protective and vulnerability factors, and she will tie in relevant findings from the Study of Women’s Health Across the Nation.

Individual Abstract Number: 1203

Prolonged non-Metabolic Heart Rate Variability Reduction as a Physiological Marker of Psychological Stress in Daily Life

Bart Verkuijl, PhD, Institute of Psychology, Leiden University, Leiden, The Netherlands, Jos F. Brosschot, PhD, Institute of Psychology, Leiden University, Leiden, Italy, Marieke S. Tollenaar, PhD, Institute of Psychology, Leiden University, Leiden, The Netherlands, Richard D. Lune, MD, PhD, Psychiatry, University of Arizona, Tucson, Arizona, Julian F. Thayer, PhD, Psychology, The Ohio State University, Columbus, Ohio.

Background: Prolonged cardiac activity that exceeds metabolic needs is detrimental for somatic health. Psychological stress has been suggested to result in such additional cardiac activity in this study we examined whether additional reductions in heart rate variability (HRV) can be measured in daily life by filtering out changes in HRV that are purely due to movement, using a brief calibration procedure. We tested whether prolonged additional HRV reductions were related to stress and negative emotions. Methods: Movement (acceleration in three axes) and the root of the mean square of successive differences (RMSSD) in heart rate were measured continuously during a calibration phase and the subsequent 24 hours in thirty-two participants. Stress, worrying and emotions were assessed hourly using smartphones. During calibration, person-specific relations between movement and RMSSD were determined. Afterwards, a new developed algorithm detected prolonged periods (i.e. 7.5 min) of additional HRV reductions (AddHRV), which were matched with the psychological data from the smartphones. Results: AddHRV periods were associated with the occurrence of worry episodes, with decreased positive affect, and with increased tension, but not with the experience of stressful events or implicit measures of affect. Conclusion: The algorithm that we provide can be used to capture prolonged reductions in HRV that are not due to metabolic needs. This makes the real-time assessment of episodes of detrimental cardiac activity in daily life possible.
Conclusions: There is an association between CHD and sexual activity, particularly among men, but the impact of CHD is limited, and levels of sexual activity were high in both men and women. Effects were more pronounced among people with recent compared with older diagnoses. More appropriate advice after diagnosis might attenuate the impaired sexual activity of people with CHD, leading to more satisfying personal lives.

Individual Abstract Number: 1213

Neighborhood Socioeconomic Status and Ideal Cardiovascular Health in the MIDUS Study

Jennifer Morozinka Boylan, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania, Stephanie Robert, PhD, Social Work, University of Wisconsin, Madison, Madison, Wisconsin

Background: Disparities in health have been noted as a function of socioeconomic status (SES) at both the individual (e.g., education, income) and neighborhood level (% poverty, median family income). Several theoretical models inform hypotheses about the ways in which individual and neighborhood SES interact. A collective resources model suggests that low SES individuals’ health will benefit the most from a high SES neighborhood, given access to shared resources at the neighborhood level. A relative deprivation model suggests that low SES individuals will be worse off in high SES neighborhoods compared to low SES neighborhoods, given the additional risks associated with perceiving one’s lower status in higher SES neighborhoods (Robert, 1999; Stafford & Marmot, 2003). In the current study, we test these competing hypotheses by examining prospective associations of individual- and neighborhood-level SES with ideal cardiovascular (CV) health among a national sample of U.S. adults.

Methods: Data were from the Midlife in the United States (MIDUS) Study (N = 1,054; 55% female; meanSD age = 58.0(11.6) years). Neighborhood SES was a summed, z-scored composite of 5 census-tract level indicators from the 1990 census (median household income, % high school education and college education, % income below poverty, and % working class occupations). Individual SES was a composite of z-scored educational attainment and total household income at MIDUS wave 1 (1995-1996). Ideal CV health was assessed at MIDUS wave 2 (2004-2008) and was computed as the number of criteria met (out of 7) on smoking status, body mass index, physical activity, diet, total cholesterol, blood pressure, and glucose (Lloyd-Jones et al., 2010).

Results: On average, individuals met 2.9 (SD= 1.3) of the 7 ideal CV health components. As a main effect, neighborhood SES was not associated with CV health net of individual SES and baseline health status (t(880) = 1.32, p = .19). However, there was a significant interaction between individual and neighborhood SES (t(892) = 2.10, p = .036). Neighborhood SES was associated with more ideal CV health for those of low (t(892) = 2.48, p = .013), but not high, individual SES (p = .26).

Conclusions: There was no evidence of an independent, prospective association between neighborhood SES and ideal CV health after adjusting for individual SES and baseline health. Instead, results supported the collective resources model, where lower SES individuals had better cardiovascular health if they lived in higher SES neighborhoods and worse health if they lived in lower SES neighborhoods. The CV health of high SES individuals was not affected by neighborhood SES. Results suggest that improving the neighborhood socioeconomic context may extend health benefits to low SES individuals.

Individual Abstract Number: 1215

Do positive emotions and optimism protect favorable cardiovascular health across time? Findings from the Coronary Artery Risk Development in Young Adults (CARDIA) Study

Julia K. Boehm, PhD, Psychology, Champaign University, Orange, California, Ying Chen, MSc, Jackie Soo, MPH, Laura D. Kubzansky, PhD, Department of Social and Behavioral Sciences, Harvard T. H. Chan School of Public Health, Boston, MA

The prevalence of favorable cardiovascular health (FCH; i.e., healthy status on 5 indicators of cardiovascular functioning) decreases with age; moreover, protective factors for FCH remain understudied. In a cohort of younger adults (CARDIA) Study, which was initiated in 1985 when participants were ages 18-30 years. Positive emotions (4 positively-worded items from the Center for Epidemiological Studies Depression Scale; N=4184) and optimism (6 items from the Life Orientation Test; N=3542) were first assessed in 1990 and 2000, respectively. Thus, those years served as baseline with follow-up through 2010. FCH is comprised of 5 components: 1) not currently using blood pressure medication, systolic blood pressure ≤120 mmHg, and diastolic blood pressure ≤80 mmHg; 2) not currently using lipid medication and total cholesterol 2; 4) no diabetes diagnosis; and 5) non-smoker. Components were assessed by clinical exam and medical history in 1990, 1992, 1995, 2000, 2005, and 2010. FCH scores were calculated by assigning each component a score of 1 (present) or 0 (not present) and summing across all components (higher numbers indicate better health). We used linear mixed effects models to examine the association of baseline positive emotions and optimism with FCH, considering effects at each time point as well as on change in FCH over time. Positive emotions (β=0.07, 95% CI=0.04-0.09, p<.001) and optimism (β=0.13, 95% CI=0.09-0.16, p<.001) were each associated with better FCH across all time points in age-adjusted models. Results were similar when accounting for gender, race, education, income, marital status, and psychological ill-being. However, no effects of positive emotions and optimism were evident on FCH’s rate of change. In sum, positive emotions and optimism are associated with having FCH earlier in adulthood, but other factors may contribute to how slowly or quickly FCH deteriorates. Further assessment of psychological well-being’s causal effects on FCH may require examining associations even earlier in the life course.

Individual Abstract Number: 1214

Inflammation partially mediates the longitudinal relationship between chronic conditions and disability

Elliott Friedman, PhD, Human Development and Family Studies, Purdue University, West Lafayette, Indiana

Chronic medical conditions, including cardiovascular disease, increase the risk of disability in aging adults. Inflammation is a known risk factor for many of these conditions, but its role as a mediator in the onset of disability in the context of chronic illness is unclear. We recently showed that inflammation mediated with cross-sectional association of multiple chronic conditions (MCC) and disability. The present study examines the prospective association of MCC and incident disability to which inflammation mediates this longitudinal relationship. Data are from the second and third waves of the Survey of Midlife Development in the United States (MIDUS) and are limited to participants who underwent an overnight clinic stay at the second wave (N = 846). Participants completed telephone interviews and self-administered questionnaires providing information on demographics, basic (BADL) and intermediate (IADL) activities of daily living, and 13 chronic conditions. Fasting blood samples for assessment of serum inflammatory proteins (interleukin-6 (IL-6), C-reactive protein (CRP), fibrinogen) were drawn between 0800-1000 during the clinic stay. Structural equation models estimating both change in and onset of ADLs between data collections were fit; inflammation was modeled as a latent variable indicated by IL-6, CRP, and fibrinogen. Results showed that greater age, lower educational attainment, greater MCC, and higher inflammation significantly predicted increases in BADLs and IADLs in the intervening 7-10 years. When the sample was limited to participants with no disability at the second wave, analyses showed that greater age, lower educational attainment, and greater inflammation, and greater MCC increased risk of incident BADLs while all predictors were linked to risk of incident IADLs in expected directions. Finally, as hypothesized mediation models showed that inflammation significantly and partially mediated the association of increases in ADLs and risk of incident ADLs associated with MCC. Model fits were not sensitive to the addition of age, sex, race, and education. These results show that inflammation contributes to increases in and onset of disability, particularly severe impairment, in aging adults with MCC. Targeting inflammation may improve function capacity and quality of life in adults living with chronic conditions.

Friday, March 11 from 1:30 to 2:30 pm

Symposium 1348

POSTTRAUMATIC STRESS DISORDER AND CARDIOVASCULAR DISEASE

Donald Edmondson, PhD, Medicine, Columbia University Medical Center, New York, NY, Jennifer A. Sunner, PhD, Medicine, Columbia University Medical Center, New York, New York, New York, Ian M. Kronish, MD, Medicine, Columbia University Medical Center, New York, New York, New York, Roland von Kanel, MD, Neurology, University of Bern, Bern, Bern-Mittelland, Switzerland, Viola Vaccarino, MD, PhD, Epidemiology, Emory University, Atlanta, Georgia

In recent years, convincing evidence has accumulated that posttraumatic stress disorder (PTSD) is both a risk factor for, and relatively common outcome of, acute cardiovascular events. The introduction to this symposium will briefly review that evidence using meta-analytic data on the association of PTSD with incidence of CVD, as well as the results of PTSD as a mediator in the association of CVD-induced PTSD with recurrent CVD events. It will also provide new evidence for the association of acute stress disorder symptoms with rehospitalization and recurrent cardiac events in a large sample of acute coronary syndrome patients. In the first presentation, new data on the association of PTSD with cardiovascular disease in women will be presented to
fill holes in the knowledge base outlined in the introduction (much of which is based on research in male veterans). In the second presentation, the association of PTSD with nonadherence to medications will be explored as a potential mechanism of the PTSD-CVD link using new meta-analytic data. In the final presentation, the results of a new trial to offset PTSD risk in distressed myocardial infarction patients will be unveiled. Our discussant will then bring her considerable expertise in the epidemiology, biological mechanisms, and clinical implications of the PTSD-CVD link to bear to place these new findings in context.

Individual Abstract Number: 1553

Trauma Exposure, Posttraumatic Stress Disorder Symptoms, and Risk of Venous Thromboembolism in Women: Finding from the Nurses Health Study II

Jennifer A. Summer, PhD, Medicine, Columbia University Medical Center, New York, New York, Laura D. Kabzems, PhD, Andrea L. Roberts, PhD, Paola D. Gilsanz, PhD, Ashley Winning, PhD, Social and Behavioral Sciences, Eric B. Rimm, ScD, Epidemiology, Harvard University, Cambridge, MA, Qixuan Chen, PhD, Biostatistics, Columbia University Medical Center, New York, NY, Karestan C. Koenen, PhD, Epidemiology, Harvard University, Cambridge, MA

Background: Posttraumatic stress disorder (PTSD) has been associated with a range of cardiovascular illnesses. However, most research has been conducted in male veterans. PTSD is twice as common in women as in men, and there are clear sex differences in the pathophysiology, presentation, and course of cardiovascular disease. Thus, studying the link between trauma exposure, PTSD, and cardiovascular health specifically in women is important. Initial research from our group has linked trauma and PTSD to higher risk of myocardial infarction and stroke in women. Trauma exposure and PTSD are likely associated with a biologic and behavioral dysregulation that contributes to risk for various cardiovascular conditions. In the present analyses, we further investigated the scope of this relationship by examining associations between trauma, PTSD symptoms, and risk of incident venous thromboembolism (VTE) in a large cohort of younger and middle-aged women. Methods: We examined associations between trauma, PTSD symptoms, and risk of self-reported incident VTE in 49,296 women in the Nurses’ Health Study II. Trauma exposure and PTSD symptoms and date of PTSD symptom onset were assessed with a screening questionnaire. We used proportional hazards models to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for new-onset VTE (960 events) over a 22-year period. Results: Compared to no trauma exposure, both trauma exposure and PTSD symptoms were significantly associated with increased risk of developing incident VTE, adjusting for demographics, family history, and childhood adversity. Women with the most PTSD symptoms exhibited the greatest risk elevation: trauma/6-7 symptoms: HR=2.42 (95% CI, 1.83-3.20); trauma/4-5 symptoms: HR=2.00 (95% CI, 1.55-2.59); trauma/1-3 symptoms: HR=1.44 (95% CI, 1.12-1.84); trauma/no symptoms: HR=1.72 (1.43-2.08). Results were similar, although slightly attenuated, when adjusting for VTE-relevant medications, medical conditions, and health behaviors. Conclusions: PTSD is emerging as an important cardiovascular risk factor, including in women. Our findings suggest that trauma and PTSD may be associated with a hypoarrestable state. Treatment providers should be aware that women with PTSD may be vulnerable to developing VTE. Women with PTSD may benefit from cardiovascular monitoring and targeted interventions to reduce cardiovascular risk.

Individual Abstract Number: 1560

Posttraumatic Stress Disorder and Nonadherence to Medications: A Meta-Analytic Review

Ian M. Kronish, MD, Lauren Wasson, MD, Medicine, Columbia University Medical Center, New York, NY, Donald Edmondson, PhD, Medicine, Columbia University Medical Center, New York, New York, Louise Falzon, MA, Elena Brondolo, BS, Rachel Bring, MD, Medicine, Columbia University Medical Center, New York, NY, Jonathan Shaffer, PhD, Psychology, University of Colorado Denver, Denver, CO

Background: Patients with post-traumatic stress disorder (PTSD) are at increased risk for adverse outcomes from comorbid medical conditions. Nonadherence to preventive medications is a potent mechanism explaining this increased risk. Some, but not all, studies have found an association between PTSD and medication nonadherence. Our objective was to quantify the association between PTSD and medication nonadherence and to determine whether this association varied according to whether PTSD was triggered by a medical versus a non-medical event. Methods: Studies were identified through a systematic search of the literature using Medline, PsycINFO, and PubMed databases. Relevant studies were pooled from inception to June 15, 2015, supplemented by manual searches of bibliographies of retrieved articles. Studies with prospective observational or cross-sectional designs were included if they measured medication adherence using a validated self-report instrument or objective measure, measured PTSD using a validated self-report scale or psychiatric interview, and provided sufficient data to calculate a measure of the risk of PTSD on medication nonadherence. Random-effects models were used to pool data. Results: Sixteen studies, involving 4,483 patients, met inclusion criteria. Studies assessed PTSD and medication adherence for the following conditions: HIV (9 studies); transplant (1 study); stroke/TIA (1 study); acute myocardial infarction (2 studies); stable cardiovascular disease (1 study); hypertension (1 study); and non-specific general medicine conditions (1 study). Nine studies were rated as good, one as excellent, and six as moderate quality. For all 16 studies, the pooled effect size of the risk of PTSD to medication non-adherence was OR 1.22 (95% CI, 1.06-1.41). Among the 6 studies of medical event-induced PTSD, the OR was 2.08 (95% CI, 1.03-4.18); p=0.04. Among the 8 studies in which PTSD was not induced by a medical event, the OR was 1.10 (95% CI, 0.99-1.24); p=0.09. Conclusions: Compared to patients without PTSD, those with PTSD were more likely to be nonadherent to medications. The association between PTSD and nonadherence, however, only appeared to be present when the PTSD was induced by a medical event. Medications may serve as aversive reminders among survivors of acute medical events. Practitioners should inquire carefully about medication adherence in patients with medical event-induced PTSD.

Individual Abstract Number: 1352

Prevention of Postinfarction MI Stress Attributable to Acute Myocardial Infarction: Data from the MI-SPRINT Randomized Controlled Trial

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Posttraumatic stress disorder (PTSD) symptoms attributable to myocardial infarction (MI) occur in up to 20% of patients, deteriorate quality of life, adherence to treatment and the prognosis of the disease with a 2-fold increased risk for hospital readmissions. The prevention of the development of posttraumatic stress following MI thus could greatly improve mental and physical health of traumatized MI patients. The Myocardial Infarction - Stress Prevention Intervention (MI-SPRINT) randomized controlled trial aimed at reducing the development of posttraumatic stress in patients with acute MI through trauma-focused psychological counseling. Between 2013 and 2015, we enrolled 190 patients, aged 18 years or older, at ‘high risk’ of developing clinically relevant posttraumatic stress symptoms as a result of their high levels of perceived distress during MI (e.g. fear of dying). Patients were randomly allocated to a single 45-min counseling session targeting either specific MI-triggered traumatic reactions (i.e., the verum intervention) or the general role of psychosocial stress in coronary heart disease (i.e., the control intervention). Counseling sessions, by the bedside, were delivered in the coronary care unit of an university cardiology center within 48 hours after patients had reached a stable circulatory condition. Each patient additionally received an illustrated information booklet as study material. The primary outcome was the interviewer-rated posttraumatic stress level, using the Clinician-Administered PTSD Scale, assessed at the 3-month follow-up by a blinded study therapist. It is hypothesized that posttraumatic stress levels are at least 20% lower in the verum group than in the control group. The last 3-month follow-up interview is scheduled to take place in December 2015, at which time point the blind will be broken. The study results will be reported and discussed as part of the symposium.

SATURDAY, March 12, 2016

Saturday, March 12 from 1:30 to 2:30 pm

Symposium 1205

EARLY LIFE SOCIAL ENVIRONMENT AND CARDIOVASCULAR RISK FACTORS FOR DISEASE IN ADULTHOOD: PROSPECTIVE AND LONGITUDINAL FINDINGS.

Jenny M. Cudjoff, Ph.D., Psychology and Psychiatry, University of Pittsburgh, Pittsburgh, PA, Jennifer Morozink Boylan, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA, Craig Evert, Ph.D., Psychology, Syracuse University, Syracuse, NY

The objective of this symposium is to present data linking the early social environment to health decades later. Such data are rare and strengthen causal conclusions, which at this point are based on primarily cross-sectional and retroactively reported data. This symposium will bring together converging
evidence from large prospective studies showing that early life social experiences significantly predict risk for poor health in adulthood and examine pathways and moderators of such effects. One study shows, using prospectively measured data over the life-course, that parenting may be an important modifiable factor linking low childhood SES to poor health behaviors and psychosocial functioning in adulthood. Another study will present data showing that retrospectively reported childhood SES is associated with significantly greater increases in circulating IL-6 over a 6 year period. This study finds that IL-6 may be one physiological pathway linking childhood SES to accelerated morbidity and mortality. The third study will present prospective data from a population-based sample showing that social integration (measured repeatedly by informant report) during childhood and adolescence is associated with blood pressure years later in adulthood, which appears to be driven by the association between early life social integration and weight in adulthood. This study establishes a prospective link between social integration and physical health using data and methods that allow for strong causal inference.

Individual Abstract Number: 1208

Positive Parenting in Adolescence Mediates the Association between Childhood SES and Adult Health Behaviors and Psychological Resources: Results from a Prospective, Longitudinal Study

Jennifer Morezink Boylan, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, PA; Karen P. Jaukowskie, MS, Psychology, Jenny M. Cundiff, Ph.D., Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania, Dustin A. Pardini, Ph.D, Criminology and Criminal Justice, Arizona State University, Phoenix, Arizona, Karen A. Matthews, Ph.D, Psychiatry, University of Pittsburgh, Pittsburgh, Pennsylvania

Background: Exposure to low socioeconomic status (SES) in childhood predicts increased risk for adult morbidity. However, little prospective evidence is available to test pathways linking low childhood SES to adult health. In the current study, we focus on positive parenting factors, including supervision, communication, and expectations for the future, as a mediator of the association between childhood SES and positive health behaviors and psychological resources in adulthood.

Methods: Participants (n=305; 56% black) were from a population-based sample of men in Pittsburgh, PA. Childhood SES was measured annually via the Hollingshead index (parental education and occupation) between the ages of 7 and 9. Parenting was assessed annually via primary caregiver self-report on supervision, positive communication and warmth, and expectations for their son's future when he was 13-16 years old. Health behaviors (i.e., smoking, marijuana use, fruit and vegetable consumption, and physical activity) and psychological resources (i.e., optimism, purpose in life, self-mastery, self-esteem) were assessed in early adulthood (mean age = 32 y). Structural equation modeling was utilized to examine direct and indirect pathways between childhood SES and health behaviors and psychological resources via negative parenting.

Results: Lower childhood SES was directly associated with more cigarette smoking and less physical activity in adulthood. Childhood SES was also associated with psychological resources and fruit/vegetable consumption via indirect effects through positive parenting. High childhood SES predicted more positive parenting behaviors in adolescence, which, in turn, predicted greater psychological resources and more fruit and vegetable consumption in adulthood. The final model demonstrated good fit (RMSEA = .049, CFI = .965) as well as measurement and structural invariance across racial groups. Indirect effects remained significant after adjustments for substance use in adolescence and adult SES.

Conclusions: Low childhood SES was associated with poor health behaviors and psychological resources in adulthood. Our results show that this may be due in part to its association with negative parenting factors. Parenting factors, such as positive communication and warmth, supervision, and having high expectations for the future, represent potentially modifiable factors. Promoting these factors through late childhood and adolescent might then improve health behaviors in adulthood and reduce SES related disparities in fruit and vegetable intake and psychological functioning.

Individual Abstract Number: 1209

Childhood SES and age as moderators of changes in inflammatory markers over time among middle-age adults

Neha A. John-Henderson, Ph.D., Psychology and Psychiatry, Anna Marsland, Ph.D., Psychology, Matthew Muldoon, M.D., Medicine, Thomas Kamarck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA

Background: Lower socioeconomic status (SES) in childhood associates with higher levels of circulating markers of inflammation in adulthood. Higher levels of inflammatory markers predict increased risk for a range of diseases. Circulating levels of inflammatory cytokines, such as interleukin-6, increase with age even among healthy adults. Individuals who experience more chronic stress show greater increases in these markers over time and immune dysregulation in response to psychological stress increases with age. We propose that childhood SES may interact with age to predict changes in inflammatory markers over time.

Methods: We tested our prediction in a sample of 263 healthy adults (50-70 years; 52% female, 87% White). At baseline, a blood draw was taken to assess interleukin-6 (IL-6) and C-reactive protein (CRP). Approximately six years later, participants attended follow-up visits at which point information pertaining to socioeconomic status was collected along with a repeat assessment of inflammatory markers. Childhood SES was assessed using the highest educational attainment of the parents of the participant. A linear regression analysis adjusting for sex, race, education, Body Mass Index (BMI), smoking status and current depressive symptoms was used to test for associations between childhood SES, age, and the interaction between childhood SES and age with changes in these inflammatory markers over the 6-year period.

Results: In our adjusted regression model, we observed a significant interaction between childhood SES and age in predicting changes in IL-6 over the 6-year period, β=-0.31, t(251)=-2.36, p<.01; R2 change= 0.02. Simple slopes analyses revealed a significant difference in changes in IL-6 in low childhood SES individuals as a function of age (b=0.42, t(251)=2.18 p=0.03), such that older low childhood SES individuals showed larger increases in IL-6 compared to younger low childhood SES individuals. However, the interaction in high childhood SES individuals as a function of age (b=-0.22, t(251)=-1.21, p=.23). The interaction between age and childhood SES was not significant in predicting changes in CRP over the 6-year period, β=-0.16, t(251)=-1.45 p=.14.

Conclusions: We present initial evidence that childhood SES interacts with age to predict changes in IL-6 over time. For low childhood SES individuals, the magnitude of increases in IL-6 over time was significantly greater as age increased, independent of childhood SES. This may contribute to future disease risk via an inflammatory pathway, possibly contributing to observed associations of low socioeconomic status in childhood with premature mortality and increased morbidity in later life.

Individual Abstract Number: 1206

Greater social integration during childhood is prospectively associated with lower blood pressure in adulthood

Jenny M. Cundiff, Ph.D., Psychology and Psychiatry, Karen A. Matthews, Ph.D., Psychology, Psychiatry, Epidemiology, University of Pittsburgh, Pittsburgh, PA

Background: Greater social integration is associated with reduced risk of cardiovascular disease and early mortality, including reduced risk of developing hypertension (Yang, Li & Ji, 2013). Additionally, adverse childhood experiences have been associated with worse adult health, including higher blood pressure in adulthood (Ford & Browning, 2014). Some researchers have argued that early social and psychobiological risk factors may particularly influence risk for death and disease later in life due to early embedding of unhealthy biological as well as psychosocial and behavioral profiles, which increase risk throughout the life course (e.g., Miller, Chen & Park, 2011). Objective: We tested the hypothesis that social integration during childhood and adolescence predicts blood pressure in adulthood, and evaluated whether the association is stronger in blacks, relative to white, given their higher risk for hypertension in adulthood.

Method: We tested these hypotheses in a longitudinal, population-based sample of men who were originally recruited as part of the Pittsburgh Youth Study. They were recontacted in adulthood for a follow up assessment of physical health and psychosocial functioning. The sample (N=267; 56% Black, 44% White) was approximately 33 years old at follow up. Social integration was assessed annually between ages of 6 and 16 by asking parents to report the amount of time their child spent with friends, and these assessments were aggregated.

Results: Men who were reported by their parents to be more socially integrated during childhood and adolescence evidenced lower blood pressure almost 20 years later in adulthood. This effect was not accounted for by involvement in sports in adolescence, weight during childhood and adolescence, childhood socioeconomic status, or current self-reports of social support and functioning in fully adjusted models B =-.14 and -1.13, for systolic and diastolic blood pressure respectively, both p<.05. Results did not differ by race. Adjusting for concurrent adult body mass index significantly attenuated results, suggesting that the link between early social integration and later blood pressure may be due to the effects of early social integration on later weight.

Conclusions: These findings contribute to the growing body of evidence that early social experiences significantly impact health later in life in both black and white men. The longitudinal and non-self-report nature of the data, additional controls, and the inclusion of multiple assessments of social integration increase confidence in these findings.

This work was supported by grant # HL111802 and grant # HL07560.
Symposium 1281
STRESS, DIET, MEMORY, AND WEIGHT LOSS: WHAT’S EATING YOU?

Janice K. Kiecolt-Glaser, Ph.D., Institute for Behavioral Medicine Research, The Ohio State College of Medicine, Columbus, OH, Ruth M. Barrientos, Ph.D., Psychology & Neuroscience, University of Colorado, Boulder, CO, Charles F. Emery, Ph.D., Psychology, Ohio State University, Columbus, OH, Janice K. Kiecolt-Glaser, Ph.D., Institute for Behavioral Medicine Research, The Ohio State College of Medicine, Columbus, OH, Susan Lutgendorf, PhD, Department of Psychological and Brain Sciences, University of Iowa, Iowa City, IA

This symposium unites basic and clinical researchers to provide novel perspectives on the interactions among behavior, stress, diet, and their relationships to memory formation, weight loss, arterial health, and immune function. The first presentation examines a high-fat diet's impact on the central nervous system, and consequent alterations in memory. Recent rodent studies have shown that chronic consumption of high-fat foods and consequent diet-induced obesity can have adverse consequences for memory; building on those studies, new and novel work demonstrates that even acute consumption of a high-fat diet can sensitize the brain's inflammatory response to subsequent challenging stimuli, thus increasing vulnerability to memory disruption. The second speaker evaluates risky decision-making as a predictor of weight loss using behaviorally-based computerized measures that have been associated with impaired response inhibition. Among the 50 obese adults (BMI=46.7 + 9.7) in the study, lower baseline risky decision-making performance scores predicted greater weight loss in a six-month weight management program. Furthermore, development of a more robust etiology of eating behavior linked to the behavioral manifestation of obesity suggests that BMI was not calculated again. Data were analyzed with hierarchical regression analyses, predicting BMI at program completion from performance on each of the DM tasks, controlling for baseline BMI and length of program participation (< 3 months, 3 months, or 6 months). Additional regression analyses were conducted evaluating change in BMI as a mediator. Intention to treat analyses were conducted with the assumption that BMI did not change for drop-outs (n=14). Results indicated that participants achieved a significant reduction of BMI (t= 45.3 + 9.6; t= 4.75, p<.001) and a significant reduction in BES (t=3.62, p<.001). In addition, reduced BES mediated the relationship between IGT and decreased BMI. Thus, the data suggest that better performance on cognitive tasks reflecting response inhibition was associated with greater weight loss during the program, and that eating behavior change in combination with a program of behavioral therapy improved weight loss in individuals with extreme obesity. In addition, decreases in binge eating appeared to be a mechanism of change. Results highlight the importance of DM in the context of behavioral weight management, and may suggest the need to address cognitive as well as behavioral functioning in weight management interventions.

Individual Abstract Number: 1287
The sensitizing effects of a 3-day high-fat diet on LPS-induced neuroinflammation and contextual memory is mediated by corticosterone
Ruth M. Barrientos, Ph.D., Psychology & Neuroscience, University of Colorado, Boulder, CO

How the foods we eat everyday impact metabolism and physiology has been studied for decades. However, relatively little is known about the effects of foods on the central nervous system, and the behavioral manifestations that may result from these effects. Previous studies have shown that chronic consumption of high-fat foods leading to diet-induced obesity sensitizes the brain's inflammatory response to subsequent challenging stimuli, causing deficits in forming long-term memories. Our new findings demonstrate that acute consumption of a high-fat diet does the same thing. Rats fed a high-fat diet for 3 days exhibited an increase in corticosterone and the endogenous danger signal HMGB1 in the hippocampus. A low-dose lipopolysaccharide (LPS) immune challenge potentiated the neuroinflammatory response in the hippocampus, and caused a long-term memory deficit, effects not observed in rats fed regular chow. Blocking corticosterone action with the GR antagonist, mifepristone prevented the HMGB1 increase in unchallenged animals, and normalized the pro-inflammatory response to LPS. These data suggest that acute high-fat diet consumption increases the vulnerability to memory disruptions caused by an immune challenge by priming the hippocampal inflammatory response, and this effect appears to be mediated by increases in corticosterone.

Individual Abstract Number: 1411
Decision making, binge eating, and weight loss among obese adults
Charles F. Emery, Ph.D., Psychology, Ohio State University, Columbus, Ohio, Melissa T. Buelow, Ph.D., Psychology, Ohio State University, Newark, Newark, Ohio, KayLynn L. G. MA, PhD, Psychology, Ohio State University, Columbus, Ohio, Jacob B. O'Donnell, BSc, diabetes, Psychology, Ohio State University, Columbus, Ohio, High school diploma, Psychology, Ohio State University, Columbus, Ohio
Recent studies suggest that obese individuals may exhibit a greater degree of risky decision making (DM) than normal weight individuals on computerized tasks of DM such as the Iowa Gambling Task (IGT). Poor performance on the IGT has been associated with impaired response inhibition, as documented in studies of drug addiction, alcoholism, and compulsive gambling. In turn, reduced inhibition reflected in poorer performance on DM tasks such as the IGT may be a mechanism contributing to overeating and obesity. No prior study has investigated the relationship of DM to weight loss in a prospective investigation. This prospective study evaluated DM as a predictor of weight loss among 50 obese (BMI=46.7 + 9.7) adults (mean age=44.0 + 11.8, range: 21-75 years; 86% female) participating in an outpatient hospital-based weight management program. At study entry, all participants completed computerized assessments of DM, including the IGT and Game of Dice Task (GDT), and self-report questionnaires including the Binge Eating Scale (BES). In addition, body mass index (BMI) was calculated as weight (kg)/height (m2). All participants then initiated a program of weekly educational classes covering topics relevant for weight loss including nutrition, exercise, and behavioral stress. At each weekly session, body weight was recorded and participants turned in dietary logs. After completing a 3-month or 6-month version of the program, BMI was calculated again. Data were analyzed with hierarchical regression analyses, predicting BMI at program completion from performance on each of the DM tasks, controlling for baseline BMI and length of program participation (< 3 months, 3 months, or 6 months). Additional regression analyses were conducted evaluating change in BES as a mediator. Intention to treat analyses were conducted with the assumption that BMI did not change for drop-outs (n=14). Results indicated that participants achieved a significant reduction of BMI (t= 45.3 + 9.6; t= 4.75, p<.001) and a significant reduction in BES (t=3.62, p<.001). In addition, reduced BES mediated the relationship between IGT and decreased BMI. Thus, the data suggest that better performance on cognitive tasks reflecting response inhibition was associated with greater weight loss during the program, and that eating behavior change in combination with a program of behavioral therapy improved weight loss in individuals with extreme obesity. In addition, decreases in binge eating appeared to be a mechanism of change. Results highlight the importance of DM in the context of behavioral weight management, and may suggest the need to address cognitive as well as behavioral functioning in weight management interventions.
of the adverse metabolic alterations could persist throughout the day. These data suggest that the type of fat in a meal can interact with daily stressors to promote maladaptive responses.

Saturday, March 12 from 2:45 to 3:45 pm
Symposium 1359
INSUFFICIENT SLEEP GETS OLD FAST: THE MALADAPTIVE EFFECTS OF SLEEP DISTURBANCE ON BIOLOGICAL AND COGNITIVE AGING

Aric A. Prather, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Judith E. Carroll, Ph.D., Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, Alyssa Goldberg, M.D., Pediatrics, Children’s National Medical Center, Washington, DC, Teresa E. Seeman, Ph.D., Geriatrics, University of California, Los Angeles, Los Angeles, CA, Rita B. Effros, Ph.D., Jeffrey Dock, Ph.D., Pathology & Laboratory Medicine, Richard Olmstead, Ph.D., Elizabeth C. Arenander, BA, Michael Coccia, MAS, Elissa S. Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Christine M. Walsh, PhD, Neurology, University of California, San Francisco, San Francisco, CA, Daniel J. Buesy, MD, Psychiatry, University of Pittsburgh Medical School, Pittsburgh, PA

Sleep is a critical health behavior for establishing and maintaining optimal mental and physical health. There is growing epidemiologic and laboratory-based evidence demonstrating that insufficient sleep, characterized by short sleep duration and/or disturbed sleep, is associated with increased risk for a bevy of age-related illnesses, including cardiovascular disease, metabolic conditions, and infectious illness. Perhaps even more alarming is that sleep disturbance has emerged as a risk factor for neurodegenerative diseases, such as Alzheimer’s disease. While the restorative qualities sleep confers to the mind and body are well recognized, the biological pathways through which this occurs are not well understood. The objectives of this symposium are to highlight cutting-edge and multi-disciplinary research on the treatment and early detection of insomnia and the biological pathways through which this leads to increased risk of disease and death, and inadequate sleep may also influence these aging-related processes.

Next, experimental partial sleep deprivation induced activation of gene expression patterns consistent with DNA damage and the senescence associated inflammatory secretome, indicating acute sleep deprivation promotes processes of cellular aging.

Individual Abstract Number: 1360
Sleep disturbances and biological aging: The wear and tear of insufficient sleep

Judith E. Carroll, Ph.D., Stephanie Esquivel, B.S., Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, Alyssa Goldberg, M.D., Pediatrics, Children’s National Medical Center, Washington, DC, Teresa E. Seeman, Ph.D., Geriatrics, University of California, Los Angeles, Los Angeles, CA, Rita B. Effros, Ph.D., Jeffrey Dock, Ph.D., Pathology & Laboratory Medicine, Richard Olmstead, Ph.D., Elizabeth C. Arenander, BA, Michael Coccia, MAS, Elissa S. Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Christine M. Walsh, PhD, Neurology, University of California, San Francisco, San Francisco, CA, Daniel J. Buesy, MD, Psychiatry, University of Pittsburgh Medical School, Pittsburgh, PA

Sleep provides the body time to rest, repair, and restore at both the system and cellular level. Not getting quality sleep may disrupt these restorative processes and lead to greater wear and tear, and eventually contribute to disease risk. Numerous studies have linked short sleep duration, poor sleep quality, and/or insomnia to increased risk for cardiovascular disease, diabetes, and mortality; however the mechanisms are not clearly defined. Biological aging precipitates disease and death, and inadequate sleep may also influence these aging processes. Through a series of studies, we have begun to identify connections between sleep deprivation and system and cellular aging biology. At the system level, we have reported that short and long sleep with sleep disturbances to be related to greater multi-system dysfunction, indicating system aging. In a randomized, placebo-controlled trial of insomnia improved system level function, suggesting that treating sleep disturbances may reverse system aging. Next, experimental partial sleep deprivation induced activation of gene expression patterns consistent with DNA damage and the senescence associated inflammatory secretome, indicating acute sleep deprivation promotes processes involved in cellular aging. In the present set of analyses, we demonstrate a link between sleep problems and a molecular marker of aging, the telomere. In a sample of 126 (45 insomnia cases; 81 controls) male and female participants recruited from the local community surrounding UCLA, we assessed telomere length in peripheral blood mononuclear cells (PBMC) using real time quantitative polymerase chain reaction (qPCR) methodology. In ANCOVA models adjusting for sex and BMI, insomnia diagnosis interacted with age to predict shorter PBMC telomere length (p<0.04). In the oldest age group (70-88 yrs), PBMC telomere length was significantly shorter in those with insomnia (M(SD)=59.2 vs M(SD)=78.4, p=.04). Older adults with insomnia exhibited shortened telomere length, suggesting that clinically severe sleep disturbances in late life may increase cellular aging. Our findings link insufficient sleep to the promotion of biological aging at the systemic and cellular level.

Individual Abstract Number: 1364
Longevity factor klotho and sleep disturbance in women under high and low psychological stress

Aric A. Prather, PhD, Psychiatry, Dena B. Dubal, MD, PhD, Neurology, Justine Arenander, BA, Amanda Gilbert, BA, Michael Coccia, MAS, Elissa S. Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA

Sleep disturbances, marked by difficulty initiating and maintaining sleep, are highly prevalent among individuals experiencing chronic psychological stress. Moreover, epidemiologic and accruing laboratory data suggest that disrupted sleep can modulate many of the biological mechanisms implicated in the development of age-related diseases that are, in turn, observed at disproportionately high rates in those reporting elevated levels of psychological stress. Sleep may serve as an important behavioral pathway linking stress and age-related illness; however, the biological pathways through which this may occur are unknown. The active form of a longevity hormone. Klotho is a pleitropic hormone produced by the kidney and in choroid plexus of the brain that aids in regulation the aging process, including the maintenance of cognitive and physical health. Despite compelling data that klotho is critical to longevity, little is known about how psychosocial factors modulate klotho activity. In this regard, we previously reported lower serum levels of klotho in a sample of high stress mothers of children with Autism Spectrum Disorder (87 vs 88 yrs) compared to low stress mothers of neurotypical children (n=88; t(176)=2.92, p=0.006). Notably, stress-related differences in klotho were stronger in older versus younger participants. The aim of the present study was to investigate 1) associations between sleep disturbances and levels of klotho, 2) whether these associations varied by age, and 3) whether sleep-klotho links varied by level of stress in our sample high and low stress mothers. Analyses revealed that more frequent sleep disturbances, as measured using the Insomnia Severity Index, were associated with lower levels of klotho in older (+1 standard deviation (SD) above mean for age: b=-0.013, SE=0.005, p<0.01) but not younger participants (-1SD below the mean for age: b=0.003, SE=0.004, p=0.56), independent of several covariates including age, body mass index, and caregiver status (high vs. low). This age-dependent association between sleep disturbance and klotho did not differ between high and low stress participants. Taken together, these findings suggest that symptoms of insomnia, which are known to increase with age, may influence age-related conditions, may contribute to health through effects on klotho. Further investigations of this novel longevity marker are indicated.

Individual Abstract Number: 1442
The cognitive effects of disrupted sleep in healthy older adults

Christine M. Walsh, PhD, Nihar Patel, BA, Kathleen Walker, BA, Neurology, University of California, San Francisco, San Francisco, CA, Leslie Ruoff, RPSGT, Jason Varbel, RPSGT, Stress and health research, USA, Franciscan Veterans Affairs Medical Center, San Francisco, CA, Matthew Wynne, BA, Bruce L. Miller, MD, Neurology, University of California, San Francisco, San Francisco, CA, Thomas C. Neylan, MD, Stress and health research, USA, Franciscan Veterans Affairs Medical Center, San Francisco, CA, Joel H. Kramer, PsyD, Neurology, University of California, San Francisco, San Francisco, CA

Previous studies have shown that disrupted sleep impairs cognitive function in younger adults more than older adults (e.g. Adam et al, 2006; Stenius and Kerkhofs, 2008). However, it’s possible that older adults are less vulnerable to acute sleep deprivation if they are in a chronically sleep disrupted state. To date, it has been challenging to assess overall sleep patterns in older adults across multiple nights, to ascertain how both the average nightly, as well as the night-to-night variability in sleep is associated with cognitive performance. In our study, we employed both actigraphy and an at-home sleep-measuring device capable of recording multiple nights (Zeo, Inc.) to evaluate the cognitive effects of average and night-to-night variability in sleep. Clinically healthy older adults recruited from the Hillblom Healthy Aging Cohort at the University of California, San Francisco, completed a series of cognitive assessments, including those for working memory and information processing speed.
Participants wore the sleep-measuring devices for up to 10 nights and completed a daily sleep journal and a series of sleep questionnaires. We found that increased time spent awake (WASO, p<0.05) and poorer sleep efficiency (p<0.01) were associated with poorer working memory. Night to night variability in duration to sleep onset (p<0.05) and overall sleep efficiency (p<0.05) were inversely associated with working memory, where those with more variable, or inconsistent sleep patterns had poorer working memory. Information processing speed is also vulnerable to sleep disruption, where those who report higher levels of subjective sleepiness on the Epworth Sleepiness Scale (p<0.01) and had objectively less time asleep at night (p<0.01) were slower. Interestingly, those reporting higher levels of insomnia had faster speeds on the information processing speed tasks. It is possible that increased levels of arousal, in otherwise clinically healthy older adults, results in increased self-perceived insomnia while maintaining cognitive abilities. I will discuss how subjective and objective measures of sleep contribute to or are associated with cognitive performance, and possible neural and biological correlates and mechanisms.
PAPERS

Thursday, March 10 from 10:45 am - 12:00 pm

Sleep, Cancer and Inflammation

1670/CHANGE IN PRO-INFLAMMATORY GENE EXPRESSION OVER 12-MONTHS PREDICTS FATIGUE SEVERITY IN DISTRESSED WOMEN WITH NON-METASTATIC BREAST CANCER

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Objective: Women with breast cancer commonly report high levels of fatigue during treatment. Existing literature indicates that fatigue-tired women with breast cancer have higher levels of inflammatory cytokines (such as IL-6) than non-fatigued women with breast cancer. This study explored how changes in pro-inflammatory gene expression affect subsequent fatigue in women who reported high levels of cancer-specific distress prior to adjuvant treatment. Methods: Women who reported fatigue in the month following their surgery were recruited 2-10 weeks post-surgery to participate in a psychosocial intervention prior to adjuvant therapy. For the present study, we focused on women (N=44) who scored in the top 50% of the distribution on a measure of cancer-specific distress, the Impact of Events Scale (Average Intrusiveness Subscale score, M=2.04, SD=0.57) 2-10 weeks post-surgery. Women provided blood samples and completed the Fatigue Symptom Inventory (Severity Scale) at study entry and then again 12 months later. Multiple regression was used to assess the relationship between the 12-month change in a composite score of pro-inflammatory gene expression (IL1A, IL1B, IL6) and fatigue severity at the 12-month assessment, controlling for age, stage, time since surgery, BMI, fatigue severity at study entry, and intervention condition. Pro-inflammatory gene expression was measured by quantitative PCR analysis of separated B-cells.

Results: Controlling for covariates, increases in the pro-inflammatory gene expression composite over 12 months was significantly related to greater fatigue severity at the 12-month assessment (p<0.1). Conclusions: In the first year of treatment for non-metastatic breast cancer, increases in pro-inflammatory gene expression are related to increased fatigue severity at the 12-month follow-up above and beyond the effects of potential confounders. These preliminary findings implicate inflammation as an important biobehavioral correlate of individual differences in fatigue experienced by breast cancer

1344/INFLAMMATION AND DISRUPTED ACTIGRAPHIC REST-ACTIVITY PATTERNS IN WOMEN RECOVERING FROM ENDOMETRIAL CANCER SURGERY

Erin S. Costanzo, PhD, Psychiatry, Carbone Cancer Center, Christopher L. Coo, PhD, Psychology, Stephen L. Rose, MD, Gynecologic Oncology, Carbone Cancer Center, Katie H. White, PhD, Psychiatry, Center for Sleep Medicine and Research, Keayra Morris, BA, Psychiatry, Meredith E. Rumble, PhD, Psychiatry, Center for Sleep Medicine and Research, University of Wisconsin-Madison, Madison, WI

Individuals recovering from cancer treatment are often inactive and fatigued during the day and experience disrupted sleep at night. We have previously reported that women have disrupted circadian rest-activity patterns after surgery for endometrial cancer. When treatment side effects and altered daily routines are likely contributory, we hypothesized that inflammation may also contribute to fatigue and disturbances in sleep and rest-activity patterns. Women (N=72) completed 72-hour wrist actigraphy assessments of rest-activity (mesor, amplitude, R-squared, acrophase) and sleep (TST, WASO, SOL) and self-report measures of fatigue (FSI) and insomnia (ISI) at 1 week, 1 month, and 4 months following surgical resection of an endometrial malignancy. Circulating cytokines (IL-6, IL-8, IL-10, TNFalpha) were measured at the same three time points using multiplex electrochemiluminescence detection. Mixed effects linear regression models covarying for time since surgery, extent of surgery, adjuvant therapy, disease stage, and age were employed to examine relationships between inflammatory markers and both actigraphic and self-report indices. Women with higher circulating IL-6 levels reported more severe fatigue (z=2.23, p=0.02) and marginally more insomnia symptoms (z=1.80, p=0.072) across the assessment points. Similarly, those with higher IL-6 had less optimal rest-activity patterns, including less overall activity (mesor, z=2.07), a smaller distinction between maximum and minimum activity (amplitude, z=2.07), less robust rhythms (R-squared, z=2.75), and a later daily activity peak (acrophase, z=2.14), all p-values<0.05. Other cytokines were not associated these measures. However, higher circulating levels of IL-8 and TNFalpha predicted shorter nighttime sleep duration. Total TST, z=2.87 and 1.93, both p<0.05, but there were no associations with other measures of sleep continuity. Subject-level fixed effects models indicated that among individual participants, fatigue was highest and rest-activity rhythms were most disrupted when IL-6 was most elevated, after covarying for time since surgery. These results reveal a biobehavioral pathway by which inflammatory processes secondary to tumor development and/or surgery may contribute to fatigue, sleep disturbance, and dysregulated rest-activity patterns across the 24-hour cycle following endometrial cancer surgery.

1539/DAYTIME DYSFUNCTION ASSOCIATED WITH PREOPERATIVE SLEEP DISTURBANCE PREDICTS POSTOPERATIVE LENGTH OF HOSPITAL STAY AMONG WOMEN UNDERGOING SURGERY FOR SUSPECTED GYNECOLOGIC CANCER

Elizabeth L. Kacel, MS, Clinical and Health Psychology, University of Florida, Gainesville Florida, Florida, Chantel M. Uijff, M.S., Diego Esparruz-Daran, M.S., Rachel A. Postupack, M.S., Stephanie G. Smith, Ph.D., Laura C. Trinastic, Ph.D., Shan Wong, M.S., Deidre B. Pereira, Ph.D., Clinical and Health Psychology, University of Florida, Gainesville, Florida

Background: Researchers have demonstrated that length of hospital stay has a complex relationship to recovery following surgery. The current study investigated if shorter hospital stays for women undergoing surgery for suspected gynecologic malignancy was longer stays being beneficial for different clinical outcomes. Several studies have identified psychosocial factors (i.e., depression, anxiety) as important contributors to length of hospital stay among various medical populations. Relately, researchers have also examined the role of sleep quality in impacting and being impacted by medical illness as well as time spent in the hospital. Despite knowledge of these significant relationships, relatively few studies have examined the potential role of preexisting sleep disturbance and related sequelae in predicting length of hospital stay, particularly in the gynecologic oncology setting. The current study examined the association between preexisting sleep difficulties and length of hospital stay in women recovering from surgery as a first line of treatment for suspected gynecologic malignancy. Methods: Participants consisted of 84 women (M age = 56.24 [yrs], SD = 12.46) undergoing surgery for suspected gynecologic cancer. Preoperative self-reported daytime dysfunction associated with sleep disturbance was captured by the sleep dysfunction component score contained within the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989). Length of hospital stay (number of days) along with several disease-specific and surgery-related variables were assessed via patient medical chart abstraction. Results: Hierarchical linear regression analyses controlling for presence of poor prognosis gynecologic cancers (ovarian/fallopian tube cancers), disease stage, and surgical type (open laparotomy vs. robotic, laparoscopic, local excision, etc) revealed that daytime dysfunction associated with sleep disturbance was significantly related to length of hospital stay (number of square-root transformed days, β=0.207, p=0.003). This model accounted for 64.6% of the variance in length of hospital stay. Conclusions: These findings suggest that patient-reported impact of sleep disturbance on daytime dysfunction is a significant predictor of length of hospital stay, above and beyond important health and medical factors, among women undergoing surgery for suspected gynecologic cancer. Future research should seek to further examine the relationship between preexisting sleep difficulties and postoperative clinical outcomes. Additionally, researchers should investigate the utility of empirically supported cognitive-behavioral sleep treatment in reducing length of hospital stay for women undergoing gynecologic surgery.

1449/ASSOCIATIONS BETWEEN SLEEP DISTURBANCE AND THE SEVERITY OF PERSISTENT BREAST PAIN: AN ANALYSIS OF THE ROLE OF ANXIETY, DEPRESSION, AND PAIN CATASTROPHIZING IN WOMEN WITH A HISTORY OF BREAST CANCER SURGERY

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Persistent pain following breast cancer surgery is a significant and debilitating problem for many breast cancer survivors. Recent experimental evidence suggests that sleep disturbance results in increased pain sensitivity and decreased pain perception thresholds. In addition, poorer self-reported sleep quality has been associated with increased persistent post-surgical breast pain severity. However, little attention has been paid to examining the psychological factors that may mediate the relationship between sleep and pain in the context of breast cancer. In the present study, we examined depression, anxiety, and pain catastrophizing as potential psychological pathways linking sleep disturbance to pain severity in a sample of breast cancer survivors.

A secondary analysis was conducted using cross-sectional data collected from breast cancer survivors in a registry of patients treated at Magee-Womens Hospital of UPMC. A sample of 420 women who had undergone breast cancer surgery completed demographic measures along with validated self-report measures of breast pain severity (primary study outcome), short forms for the Patient-Reported Outcomes Measurement Information System (PROMISSTM) sleep disturbance, depression and anxiety item banks, and a pain catastrophizing scale. Multiple regression was used to test associations between sleep disturbance and breast pain severity. Multiple mediational pathways were examined simultaneously using bias-corrected bootstrapping.

Sleep disturbance was significantly positively correlated with breast pain severity, r = 0.21, p < .001. In multiple regression analyses that included age, body mass index, menopausal status, number of days since surgery, and type of adjuvant treatment, sleep disturbance remained a significant predictor of breast pain severity (β = 0.19, p = 0.03) and greater pain catastrophizing (r = 0.26, p < .001). Regression models that included the above mentioned covariates, as well as depression, anxiety, and pain catastrophizing as simultaneous mediators of the relationship between breast pain severity and sleep problems showed independent significant mediation effects for anxiety, b = 0.34, 95% CI = [0.17, 0.53], and pain catastrophizing, b = 0.30, 95% CI = [0.05, 0.59], but not for depression, b = 0.11, 95% CI = [-0.03, 0.25].

We found that anxiety and pain catastrophizing, but not depression, independently accounted for the association between self-reported sleep disturbance and post-surgical breast pain severity in our sample of breast cancer survivors. These findings suggest that targeted interventions to reduce anxiety and pain catastrophizing could alter a debilitating cascade of downstream psychophysiological effects that could contribute to the development of persistent pain.

**1312/Psychological Distress and Malnutrition Biomarkers Are Associated with Head and Neck Cancer Progression and Survival**

Abigail B. Pace, Undergraduate Student, Hospitality Management: Dietetics, Western Kentucky University, Bowling Green, Kentucky, Abigail Seibert, Medical School Student, Medicine, University of Louisville Medical School, Louisville, KY, Whitney Rehholz, MA, Department of Psychological and Brain Sciences, University of Louisville, Louisville, KY, Liz Wilson, BSN, RNC, CCRP, OCN, Jeffrey Bumpous, MD, Elizabeth Cash, PhD, Department of Otolaryngology-Head and Neck Surgery, University of Louisville Medical School, Louisville, KY

We previously reported that depressive symptoms predict greater likelihood of interruption and incomplete response to treatment in head and neck cancer (HNC). Here we extend those examinations to two-year disease-free (DFS) and overall survival (OS). Further, given the relationship between depressed mood and poor appetite, HNC patients are at high risk for cachexia. We hypothesized that greater psychological symptoms and malnutrition biomarkers would be associated with increased weight loss, and poorer two-year DFS and OS. Patients who presented to a Multidisciplinary Clinic with a primary HNC diagnosis (N=98) completed the Distress Thermometer (DT) and Hospital Anxiety and Depression Scale (HADS). Albumin, hemoglobin, AST, and ALT values, weight change during treatment, and two-year survival data were gathered from medical records. Psychometric scores and biomarkers were entered separately as predictors, with weight loss, DFS and OS entered separately as outcomes in hierarchical and Cox regressions.

Patients were mostly male (75.5%), averaging 59 years of age, diagnosed with oropharyngeal (33.7%), laryngeal (17.3%), or oral (10.2%) cancers. Many reported clinically significant anxiety (42%) and/or depressive symptoms (33%). The majority of patients demonstrated biomarker levels within normal ranges, and 65 patients demonstrated weight loss averaging 3.6 kg. Anxiety, depressive symptoms, and malnutrition biomarkers did not relate to weight change over the course of treatment. After adjusting for age, stage, site of disease, and treatment, anxiety was associated with poorer DFS (HR, 1.124; 95% CI, 1.005 - 1.258; p=.041), depressive symptoms were associated with poorer OS (HR, 1.109; 95% CI, 1.012 - 1.216, p=.027), and lower pretreatment hemoglobin was associated with poorer OS for male and female patients (HR, 740; 95%CI, .561 - .977; p=.033).

This study identifies a cohort of HNC patients at risk for poorer progression and survival outcomes. Depressive symptoms are associated with a greater likelihood of poorer short-term (treatment interruption and incomplete response) and long-term (OS) outcomes in this sample of HNC patients. Malnutrition biomarkers should be further examined to determine their validity as predictors of cachexia and long-term outcomes. Future studies should examine biological (e.g., inflammatory, immunologic) factors with the potential to mediate the relationships between psychological symptoms and cancer outcomes. (Support: University of Louisville Cancer Education Program: NCI R25-CA134263)

**Thursday, March 10 from 1:30 to 2:30 pm**

**The Psychology of the Heart**

**1248/Anxiety Disorders and Stressful Life Events Are Stronger Predictors of Incident CVD at Younger Versus Older Adult Ages: Data from the NESARC Study**

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Although depression, anxiety, and stressful life events (SLEs) have all been shown to predict cardiovascular disease (CVD) outcomes, few studies have examined age as a potential moderator of these associations. Based on Scheier and Bridges’ (1995) theoretical framework, we hypothesized these psychosocial risk factors would predict incident CVD to a greater degree at younger versus older ages. We examined data from 28,562 adults (mean age = 45 years, 58% female; 42% non-White) who reported no history of CVD at Wave 1 and who participated in Wave 1 (2001-2002) and Wave 2 (2004-2005) of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) study. At Wave 1, DSM-IV depressive and anxiety disorders were diagnosed using the Alcohol Use Disorder and Associated Disabilities Interview Schedule, and SLEs were measured using 12 questions assessing past-year stressors. Lifetime depressive disorder (major depressive disorder and/or dysthymic disorder; n = 4904; 17.2%) and lifetime anxiety disorder (generalized anxiety disorder, panic disorder, and/or social phobia; n = 3014; 10.6%) variables and a SLEs variable (number of past-year stressors: 0, 1, 2, 3, 4, 5, or 6+) were computed. At Wave 2, adults who reported a physician diagnosis of arteriosclerosis, angina pectoris, myocardial infarction, and/or stroke within the past year were coded as incident CVD cases (n = 1178; 4.1%). All logistic regression models had incident CVD as the outcome variable and were adjusted for age, sex, race/ethnicity, education, hypertension, hypercholesterolemia, diabetes, tobacco use, body mass index, and NESARC sampling design variables. We found main effects for depressive disorder (OR = 1.23, 95% CI: 1.07-1.42, p = .0037), anxiety disorder (OR = 1.39, 95% CI: 1.20-1.42, p < .0001) and SLEs (OR = 1.12, 95% CI: 1.09-1.16, p < .0001) when all three factors were modeled together. We also detected significant age x anxiety disorder (p < .0001) and age x SLEs (p = .0008) interactions, but not an age x depressive disorder interaction (p = .9292), when all three interactions were modeled together. We conducted follow-up analyses of significant interactions using PROCESS Macros for SPSS. These analyses revealed that the effect of anxiety disorders and SLEs on incident CVD (a) was greater at younger relative to older ages (see Table 1) and (b) was significant (p < .05) only in adults below the ages of 61 (anxiety disorders) and 62 (SLEs) years but not in adults above these cut points (Johnson-Neyman significance regions). Results from this large sample representative of the U.S. population suggest that anxiety disorders and SLEs are stronger predictors of incident CVD in younger adults relative to older adults. These findings are consistent with the notion of intervening on psychosocial risk factors earlier, versus later, in the natural history of CVD.
IATED WITH

Patients at risk for sudden cardiac death, everyday experiences of APA are associated with abnormal and excessive shortening of the QT interval, which can contribute to abnormal repolarization dynamics and heightened risk for life-threatening arhythmias.

1147/ASSOCIATIONS BETWEEN PSYCHOLOGICAL CONSTRUCTS AND CARDIAC BIOMARKERS AFTER AN ACUTE CORONARY SYNDROME

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Objective: Psychological factors—both positive and negative—have been associated with cardiac prognosis following an acute coronary syndrome (ACS), but the mechanism by which these constructs may affect post-ACS health is unclear. Cardiac biomarkers may reflect one potential mechanism mediating these relationships; however, no studies have concurrently examined the associations between multiple psychological constructs and key biomarkers in the post-ACS period. Accordingly, we analyzed data from a prospective, observational study to examine the relationships between psychological constructs (depression, optimism, and gratitude) and biomarkers of inflammation, endothelial function, and cardiac prognosis following an ACS. Methods: Participants (N=164) completed study visits 2 weeks and 6 months post-ACS. During these visits, they completed questionnaires measuring psychological constructs, and blood was obtained to examine levels of cardiac biomarkers related to inflammation, endothelial function, and cardiac prognosis. Generalized estimating equation and linear regression analyses were utilized to assess the concurrent and prospective associations between psychological constructs and cardiac biomarkers. Results: In concurrent analyses, depression was significantly associated with greater inflammation (interleukin-1β: β = .045, 95% CI [.008, .083]), endothelial dysfunction (endothelin-1: β = .022, 95% CI [.006, .038]), and poor cardiac prognosis (NT-proBNP: β = .052, 95% CI [.015, .089]), independent of age, sex, medical factors, and anxiety, while anxiety was not associated with these markers even controlling for these variables and depression. Optimism and gratitude were associated with improved endothelial functioning (gratitude: β = -.009, 95% CI [-.016, -.001]; optimism: β = -.008, 95% CI [-.016, -.001]) but not with most markers of inflammation. Baseline psychological constructs were not prospectively associated with cardiac biomarkers, controlling for baseline biomarkers and other factors. Conclusions: Depressive symptoms are significantly associated with elevated inflammatory markers and endothelial dysfunction in the post-ACS period, while the relationship between anxiety and cardiac biomarkers appears to be driven primarily by the effects of comorbid depression. In contrast, positive psychological states may be linked to improved endothelial functioning.

1133/GREATER DAILY EXPERIENCES OF RESPECT AND APPRECIATION FROM OTHERS IS ASSOCIATED WITH LESS INTIMA-MEDIA THICKNESS

Jenny M. Candiff, Ph.D., Psychology and Psychiatry, Thomas W. Kamarck, Ph.D., Psychology, Matthew F. Muldoon, M.D., Internal Medicine, Stephen B. Manuck, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA

Background: Poor quality social relationships and interpersonal stress have been shown to negatively impact health. Similarly, positive and rewarding social experiences may protect against the onset and progression of disease. A large body of work shows that social behaviors and experiences can be categorized along one of two primary interpersonal dimensions, one associated with social hierarchy (control) and the other associated with social connection (affiliation). From a cardiovasical perspective, being treated with respect (e.g., as a person of status) may be associated with better cardiovascular health, as such gender, we find that shortening of QTcI in the context of moderate or high relative to low intensity APA is significantly greater in LQTS patients, particularly LQT2 (19.3 msec) who are most prone to emotion-induced cardiac events [and 5.3 msec in LQT1, who are most prone to exertion-related cardiac events] than in controls (0.7 msec) (p<.001). No such significant interaction effects between groups were observed for low arousal positive affect (calm, relaxed) in relation to QTcI. These findings indicate that in these patients at risk for sudden cardiac death, everyday experiences of APA are associated with abnormal and excessive shortening of the QT interval, which can contribute to abnormal repolarization dynamics and heightened risk for life-threatening arhythmias.

1604/ACTIVATED POSITIVE AFFECT ASSOCIATED WITH EXAGGERATED SHORTENING OF VENTRICULAR REPOLARIZATION DURATION IN PATIENTS WITH CONGENITAL LONG QT SYNDROME

Richard D. Lane, MD, PhD, Psychiatry, University of Arizona, Tucson, AZ, Harrey Reis, PhD, Psychology, University of Rochester, Rochester, NY, Paul Hsu, PhD, Epidemiology and Public Health, University of Arizona, Tucson, AZ, Wojciech Zareba, MD, PhD, Medicine, University of Rochester, Rochester, NY

Although positive affect is often thought to be health-promoting, there is growing recognition that this generalization may not apply to activation of more highly arousing positive affect. We studied 161 patients (72% female; mean age 35 years) with Long QT Syndrome (LQTS), a genetic disorder that puts affected individuals at risk for sudden cardiac death, everyday experiences of APA are associated with abnormal and excessive shortening of the QT interval, which can contribute to abnormal repolarization dynamics and heightened risk for life-threatening arhythmias.
Figures and tables

1522/AFRICAN GENETIC ANCESTRY IS ASSOCIATED WITH HIGH FREQUENCY SLEEP HEART RATE VARIABILITY IN AFRICAN AMERICANS
Indrani Halder, PhD, Steven Reis, MD, Medicine, Daniel Buyse, MD, Tica Hall, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA
Introduction: Heart rate variability (HRV) reflects autonomic tone and is a critical determinant of cardiovascular health. Compared to European Americans (EA), African Americans (AA) have greater power in high-frequency HRV, which reflects parasympathetic tone, during both awake and sleep states. The reasons underlying this discrepancy are unknown. HRV has high heritability but whether genetic factors may account for racial differences is unknown. We hypothesized that higher sleep HRV in African Americans is associated with higher African Genetic ancestry.

Methods: Participants included 65 AA (mean age 69.9 ±6.8 years; 64% female) enrolled in the University of Pittsburgh SleepSCORE study. HRV during sleep was measured by EKG (Mindware HRV Scoring Module, Mindware Technologies Ltd., Gahanna, OH). Time series of successive R-R intervals was used to derive HRV. Power spectral density (PSD) was integrated over a total power spectrum of 0.04 to 0.4 Hz. We examined power in the high-frequency (HF-HRV; 0.15 to 4.0 Hz) band. 1698 genetic ancestry markers were genotyped in all individuals and individual % African ancestry was ascertainment using a maximum likelihood method. We used hierarchical regression analysis with natural log of high frequency HRV as outcome, age, gender, BMI entered in step one and % African ancestry entered in step two. A second model included % SWS sleep as an additional predictor entered in step one.

Results: Individual % African ancestry ranged between 10% to 88% (mean 67%). Higher % African ancestry was associated with higher HF-HRV power (b = 1.52, SE = 0.704, t = 2.16, P = 0.035) in the first model. Additional adjustment for % SWS wave strengthened this association (b = 1.88, SE = 0.73, t = 2.56, P = 0.013). % African ancestry explained 8% of the variation in HF HRV in this sample. Restricting the study to 61 individuals with % African ancestry >20% strengthened the association (b = 4.26, SE = 1.33, t = 3.20, P = 0.002).

Conclusion: A higher proportion of genetic variation inherited from African ancestors appears to be related to greater HF HRV power during sleep in African Americans. Thus, racial differences in HF-HRV are partly genetic.

1529/POOR SLEEP QUALITY AND PARENTING STRESS PREDICT ENHANCED LPS-STIMULATED CYTOKINE PRODUCTION AMONG WOMEN DURING POSTPARTUM
Lisa M. Christian, PhD, Amanda M. Mitchell, PhD, Psychiatry, Kyle M. Porter, MAS, Center for Biostatistics, The Ohio State University, Columbus, Ohio
Objectives: The postpartum period is a time of considerable stress related to adaptation to the demands of parenting including altered sleep schedules. The potential implications for immunomodulation are well described. This study examined effects of sleep quality and psychosocial stress on stimulated cytokine production among 71 women assessed during late pregnancy (26-35 weeks gestation) and again at 7-10 weeks postpartum. Methods: LPS-stimulated production of IL-6, IL-8, TNF-α, and IL-1β by PBMCs incubated for 24 hours was determined via multiplex tissue culture kits from MSD. Women completed the Pittsburgh Sleep Quality Index (PSQI), Center for Epidemiological Studies Depression Scale (CES-D), Perceived Stress Scale (PSS), and Parenting Stress Index – Short Form (PSI-SF; at postpartum only). Results: During the 3rd trimester of pregnancy, no associations were observed between psychosocial measures and stimulated cytokine production (ps > 0.10). However, at postpartum, poorer sleep quality was associated with greater stimulated IL-6 (r = 0.235, p = 0.049) and IL-8 production (r = 0.266, p = 0.025). In addition, greater parenting stress predicted greater stimulated IL-6 (r = 0.30, p = 0.013) and IL-8 production (r = 0.22, p = 0.069). Women both PSQI and PSI-SF were included in a regression model, the effect of sleep quality was reduced by 25.5% for IL-6 production and 13.9% for IL-8 production, suggesting that effects of sleep were partially accounted for by increased parenting stress. The observed associations were not affected by inclusion of maternal BMI, race, breastfeeding status, smoking, age, or weeks postpartum in

Sleep and Health

1490/INTRAINDIVIDUAL VARIABILITY IN ACTIGRAPHY-ASSESSED SLEEP IS RELATED TO ALLOSTATIC LOAD
Beit Be, DPsych(Clinical), Ph.D., School of Psychological Sciences, Faculty of Biomedical and Psychological Sciences, Monash University, Clayton, VIC, Australia; Joshua F. Wiley, Ph.D., Centre for Primary Care and Prevention, Mary MacKillop Institute for Health Research, Australian Catholic University, Melbourne, VIC, Australia; Judith E. Carroll, Ph.D., Cousins Center for Psychoneuroimmunology, Semel Institute for Neuroscience and Human Behavior, Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine, Teresa E. Seeman, Ph.D., Division of Geriatrics, David Geffen School of Medicine, University of California, Los Angeles, CA.

Objective: Sleep is a fundamental process; a deviation from it is referred to as sleep pathology. The majority of variability in sleep is associated with the regulation of a wide range of physiological, psychological, and social factors. These factors may be the result of a combination of external and internal factors such as age, sex, race, socioeconomic status, neuroticism, job strain, and mean positivity and negativity of social interactions as measured by EMA (adjusted B = -1.11, ps = 0.03).

Conclusions: Mid-life adults who report being treated with more respect and appreciation by others evidence less preclinical vascular disease as indexed by IMT, after adjusting for standard risk factors and also personality and other aspects of social interactions. Moving beyond positive and negative ratings of social interactions assessed with self-report measures, objective markers of social hierarchy and agency, not just warmth and connection, appears to provide incremental predictive utility with respect to risk for cardiovascular disease.

Funding support: HL040962 and HL007560.

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1. A higher parasympathetic system dysregulation; other associations between unique individual system variance and average or IV of sleep parameters were non-significant after adjusting for multiple comparisons.

Conclusions: Aspects of both average and IV of sleep/wake patterns were associated with greater multi-system physiological dysregulation. Both the average values and IV of sleep showed a stronger association with AL than with aspects specific to individual physiological systems. These findings suggest that sleep/wake patterns might contribute to wear and tear across multiple physiological systems in a global, non-specific manner.
the model. In addition, no associations were observed between CES-D or PSS scores with stimulated cytokine production at postpartum (ps ≥ 0.11).

Discussion: Women reporting poorer sleep quality during postpartum show enhanced inflammatory responses to immune challenge, an effect partially accounted for by increased parenting stress. Infections of delivery-related wounds (surgical or episiotomy), as well as uterine, bladder, and kidney infections and mastitis are common in postpartum, affecting 6.0-7.4% of women in the first month alone. Implications of sleep- and stress-induced immune dysregulation during this period of considerable behavioral stress as well as health vulnerability require examination.

1302/SLEEP AND FATIGUE IN CHRONIC FATIGUE SYNDROME
Alison J. Wearden, PhD, Charlotte Russell, DClinPsy, School of Psychological Sciences, Richard Emsley, PhD, Centre for Biostatistics, University of Manchester, Manchester, Greater Manchester, UK, Gillian Fairclough, DClinPsy, Clinical Health Psychology, Salford Royal Hospital, Salford, Greater Manchester, UK, Simon D. Kyle, PhD, Sleep and Circadian Neuroscience Institute, University of Oxford, Oxford, Oxfordshire, UK

Background: In addition to their primary complaint of fatigue, people with chronic fatigue syndrome (CFS) report problems such as hypersomnia, broken sleep and feeling unrefreshed on awakening. These problems are often distressing to them. However, little is known about the relationship between sleep problems and fatigue symptoms. Furthermore, while there are effective treatments for fatigue and disability, we do not know whether improvements in sleep brought about by treatment may be one mechanism for improvements in fatigue.

Method: This talk will present three studies that have recently been carried out at Manchester. The first used a daily diary method to determine the relationship between subjective ratings of sleep quality, actigraph defined sleep estimates and next day fatigue in a sample of 27 patients recruited from a specialist clinic. The second study was a systematic review of treatment trials to examine the effectiveness of recommended treatments for CFS for improving sleep. In the third study we analysed data from a randomised controlled treatment trial (n=296) to construct a sequential mediation model examining whether the effect of pragmatic rehabilitation on fatigue was mediated through cognitive behavioural factors and sleep.

Results: We found that subjective sleep ratings rather than actigraph-estimated sleep ratings predicted next day fatigue and that a significant proportion of this relationship was accounted for by negative affect. Additionally, pre-sleep arousal was associated with poorer subjective sleep quality. Our systematic review found few studies which had examined sleep as an outcome. However, there is some evidence that graded exercise therapy and cognitive behaviour therapy for CFS have a beneficial effect on sleep as well as on fatigue. Finally, our sequential mediation model showed that a reduction in activity limitation mediated improvements in sleep but that improved sleep did not mediate improvements in fatigue.

Conclusions: Sleep problems are an important feature of CFS and are amenable to change via recommended treatments. Future diary studies with larger samples would be helpful to explore the impact of negative affect, dysfunctional beliefs and different aspects of sleep problems on fatigue. Intervention studies explicitly addressing sleep problems and reporting how this was done are recommended.

Thursday, March 10 from 1:30 to 2:30 pm
Learning from Healthy Populations

1320/SOMATIC SYMPTOM DISORDER IN THE GENERAL POPULATION: ASSOCIATIONS WITH MEDICAL STATUS AND HEALTH ANXIETY USING THE SSD-12
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BACKGROUND: Somatic Symptom Disorder (SSD) is characterized by excessive thoughts, feelings, and behaviors associated with somatic symptoms. Current DSM-5 criteria for SSD focus on these three features of somatic symptoms (criterion B) rather than the presence or absence of any identifiable underlying medical disorder. Little is known about the prevalence of SSD in the general population and the role of medical diseases on measures of SSD.

METHODS: Participants (N = 448, mean age 46.7±16.9 years, 54% women) were recruited from the general community and completed the SSD-12 to quantify the severity of the psychological aspects of SSD in accordance with DSM-5 criteria. The SSD-12 has three components assessing thoughts, feelings and behavioral aspects of SSD and has been validated in a clinical sample. Participants also completed the bodily vigilance scale (BVS; modified to measure the number of symptoms and the participant’s attention given to each of the symptoms), general anxiety (GAD-7), and illness-related anxiety (IAS-21) questionnaires and provided demographic and medical background information.

RESULTS: The SSD-12 showed high internal consistency (Cronbach’s α = 0.953) and was significantly correlated with the total number of symptoms (r = 0.435), bodily vigilance (r = 0.396), general anxiety (r = 0.402) and illness-related anxiety (r = 0.707; all p<0.001). The three components of the SSD-12 were highly correlated (r’s<0.750) and in confirmatory factor analyses, data were consistent with both the original 3-factor structure (RMSAE = 0.055) as well as a 1-factor structure (RMSAE = 0.061). The SSD-12 total scores were elevated in individuals with a major medical disease (N = 97: cardiovascular disease, cancer, pulmonary, or other: SSD-12 = 11.6±8.8), and also among those with a “typical” functional disorder (N = 37: e.g., migraine, asthma, fibromyalgia, psoriasis: SSD-12 = 8.3±7.1), compared to those free of these disorders (N = 314; SSD-12 = 5.8±7.0). The SSD-12 total scores remained significantly elevated in both groups compared to individuals free of major medical or functional disorders when adjusting for age, sex, and current mental disorder (anxiety, depression, or other; F2,442 = 15.7;p<0.001).

CONCLUSIONS: The SSD-12 can be validly used in studies targeting the general population. Scores on this scale are elevated in individuals with major medical disorders as well as those with disorders that could be considered as functional. No support was found for unique contributions of thoughts, feelings and/or behaviors in SSD and the SSD-12 was highly correlated with illness-related anxiety.

1628/ANXIETY SENSITIVITY, STRESS, AND 6-MONTH EXERCISE BEHAVIOR IN HEALTHY ADULTS
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INTRODUCTION: Anxiety sensitivity—a cognitive vulnerability commonly referred to as “fear of fear”— is associated with behavioral risk factors for incident cardiovascular disease and disease progression in clinical samples. The association of anxiety sensitivity with perceived stress and exercise in healthy adults is not known. Our aims were to, 1) test if anxiety sensitivity predicts exercise behavior, and 2) explore if anxiety sensitivity affects the relationship
between stress perception and exercise behavior. METHOD: Data were collected from a longitudinal single-cohort observational study of intermittently exercising (defined as those who exercise 6-11 times per month but do not have a regular workout schedule), otherwise healthy adults. Anxiety sensitivity was assessed at baseline with the Anxiety Sensitivity Index, and computed as a total score. Exercise behavior was objectively measured daily for 6 months by accelerometer, and expressed as the total number of exercise bouts (at least 30 minutes) and total number of minutes of exercise. RESULTS: Participants included 63 healthy adults, with a mean age of 32.4 years (SD: ± 10.1; 42.9% were male, 14.3% identified as Black and 25.4% as Hispanic. The average number of valid observational days (≥ 6 hours of ≥ 10 steps) was 137.3 (SD: ± 27.0). Anxiety sensitivity was associated with exercise behavior in unadjusted and adjusted models. In adjusted models, a unit increase in the total anxiety sensitivity score was associated with a 1.4 decrease in the total number of exercise bouts (B = 1.4, SE: ± 1.2, p = 0.05), and with an 84.6 minute reduction in the total number of exercise minutes (B = -84.6, SE: ± 68.1, p = 0.025). Perceived stress at baseline was not associated with future exercise behavior, and anxiety sensitivity did not modify the association of perceived stress with exercise behavior. DISCUSSION: Anxiety sensitivity was an important psychological determinant of exercise behavior measured objectively over a 6-month period in a diverse sample of healthy adults. These results suggest that behavioral interventions to increase exercise may benefit those with higher anxiety sensitivity. They also include attention to cognitive vulnerabilities such as anxiety sensitivity.

136/ASSOCIATION OF BLOOD LIPIDS FRACTIONS WITH DEPRESSIVE SYMPTOM CLUSTERS AND INDIVIDUAL SYMPTOMS IN MEN AND WOMEN IN THE UNITED STATES: NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) 2005-2012
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Although low cholesterol levels have been consistently related to depression, no studies have examined whether blood lipid fractions are differentially associated with depressive symptom clusters and individual symptoms. Such an analysis could provide insights into the mechanisms underlying lipid-depression relationships, as particular neurobiological changes are thought to be responsible for certain depressive symptoms. Thus, we examined associations of low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglycerides, and statin use with depressive symptom clusters and individual symptoms. We utilized cross-sectional data from NHANES 2005-2012, a survey of a large probability sample representative of the U.S. population. We selected the 7,072 adults (Mage=47.9 years, 51% female, 27% non-white) who were 18 years or older, had no history of CVD, were not pregnant, followed the blood draw fasting restrictions, and had complete data on key variables. Depressive symptoms were measured by the Patient Health Questionnaire-9 (PHQ-9), and subscale scores were computed by summing items 1, 2, 6, 7, and 9 for the affective-afective subscale and 3, 4, 5, and 8 somatic subscale. Standard methods were used to assess serum total cholesterol, HDL-C, and triglycerides. The Friedewald equation was used to calculate LDL-C. Statin use was self-reported during the household interview. Separate regression models revealed that only HDL-C is inversely associated with both total PHQ-9 score (B=-0.41, SEB=0.18, p=0.03) and the somatic subscale score (B=-0.27, SEB=0.11, p=0.01) but not the cognitive-affective subscale (B=-0.14, SEB=0.09, p=1.1). LDL-C, triglycerides, and statin use were all not associated with the PHQ-9 total and subscale scores. Further analyses indicated that HDL-C is inversely associated with PHQ-9 Item #2 (sleep disturbance; B=-0.09, SEB=0.04, p=0.02) and Item #4 (fatigue; B=-0.10, SEB=0.04, p=0.02) only. Contrastingly, with prior findings, lipid fractions and statin use were not associated with Item #9 (suicidal ideation). Our results suggest that the relationship between low HDL-C and depressive symptoms is driven by the somatic symptoms, especially sleep disturbance and fatigue but not appetite/eating changes. These findings are more consistent with physiologic mechanisms underlying low cholesterol levels (e.g., depression may be a consequence of increased systemic inflammation and/or reduced serotonin signaling leading to sleep disturbance and fatigue) than behavioral mechanisms (e.g., appetite/eating changes leading to nutritional deficits leading to low HDL-C).

1161/POSITIVE PSYCHOLOGICAL FUNCTIONING AND HEALTHY BIOLOGY: WELL-BEING AND HDL-C
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Background: Positive psychological well-being has been associated with better cardiovascular health. We sought to investigate one possible mechanism for this relationship by examining well-being’s association with lipid levels over time, focusing on high density lipoprotein cholesterol (HDL-C). Methods: Participants were 4,757 men and women ages ≥50 from the English Longitudinal Study of Ageing who were free from cardiovascular conditions at baseline (Wave 2) and had clinical data from Waves 2 (2004-05), 4 (2008-09), and 6 (2012-13). Well-being was assessed with the Control, Autonomy, and Meaningfulness Scale (CAS) at each wave. Total HDL cholesterol were assessed from blood samples. Mixed models were used to assess the association between baseline well-being and lipid levels over time. Cox proportional hazard models were also used to examine the effect of well-being on developing unhealthy HDL-C levels among individuals with healthy levels at baseline (≥40 mg/dL, N=2,907).

Results: In mixed models, HDL-C increased over time (β=0.64; 95% CI: 0.58, 0.69) and higher baseline well-being was associated with higher HDL-C at every time point (β=0.52; 95% CI: 0.05, 0.99) after adjusting for baseline sociodemographic factors and confounders. The interaction between well-being and time (β=0.07; 95% CI: 0.02, 0.13) indicated that relative to lower levels of well-being, higher levels were associated with a faster rate of increase in HDL-C over follow-up. The interaction remained significant after adjusting for health behaviors. The causal effect of the positive correlate of well-being was attenuated. Considering triglycerides, the main effect of well-being was significantly associated with lower triglycerides, but the association was no longer significant after adding health behaviors. Analyses with total cholesterol showed no association with well-being over time. Higher baseline well-being was also associated with a lower likelihood of developing unhealthy levels of HDL-C over follow-up among initially healthy individuals (HR=0.84; 95% CI: 0.72, 0.98); however, this effect was weaker after adjusting for health behaviors (HR=0.87; 95% CI: 0.74, 1.03).

Conclusions: Higher well-being is associated with healthier HDL-C levels and effects may compound over time. The protective effect that well-being has on HDL-C appears to be partly mediated by health behaviors.

Thursday, March 10 from 2:45 to 3:45 pm
Depression and Inflammation

1605/DEPRESSION AND INFLAMMATION: WHICH COMES FIRST? A LONGITUDINAL MONOZYGOTIC TWIN DIFFERENCE STUDY
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Background: There is growing evidence suggesting an association between inflammation and depression. However, the causal direction of this association remains unclear. In addition, this association may be confounded by a third underlying factor, such as a specific genetic makeup. We sought to examine the temporal relationship between inflammation and depressive symptoms after controlling for genetic confounding using a longitudinal monozygotic (MZ, genetically identical) twin difference design.

Methods: Plasma levels of interleukin-6 (IL-6) were measured in 47 MZ male twin pairs at baseline (mean age: 55 years old) and at 5-year follow-up. Values were log-transformed to improve the distribution. Depressive symptoms at both time points were assessed with the Beck Depression Inventory-II (BDI). Because MZ twins are genetically identical and share the same familial environments if reared-together, phenotypic differences within MZ twin pairs exclusively reflect differences in their non-shared environments, i.e. removing the confounding of genetic factors and shared familial environmental factors. A longitudinal cross-lagged model was then run on signed MZ sibling differences in IL-6 and BDI score (i.e. twin A – twin B; difference scores could thus be positively or negatively signed), as illustrated in Figure 1. The path coefficients were examined by using the robust maximum likelihood test implemented in STATA. A two-tailed P
Results: As shown in Figure 1, the twin differences in IL-6 and BDI score showed stability across two visits, particularly for depressive symptoms (r=0.57, P<0.001). Of primary focus here are the longitudinal cross-tail connections given by the cross-lagged paths. The path was not significant between the baseline MZ difference in BDI and the MZ difference in IL-6 at follow-up (BDI→IL-6: r=0.15, P=0.16). However, the MZ difference in IL-6 at baseline predicted the MZ difference in BDI over time (IL-6→BDI: r=0.36, P<0.001). The positive coefficient indicates that members of the twin pair who had higher levels of IL-6 than their co-twin at baseline on average developed more depressive symptoms compared to their sibling over time. Furthermore, constraining the path of IL-6→BDI equal to the path of BDI→IL-6 resulted in a significantly less robust model (τ2=8.19, df=1, P=0.004) compared to the saturated model in which both paths were freely estimated, suggesting that these two paths were significantly different.

Conclusions: After controlling for genetic and familial confounding, our longitudinal cross-lagged MZ twin difference model revealed that IL-6 is linked to increasing depressive symptoms over time and not vice versa. These results suggest that inflammation may be a cause of depression, rather than a consequence.

1099/DIFFERENTIAL AUTONOMIC NERVOUS SYSTEM REACTIVITY IN DEPRESSION AND ANXIETY DURING STRESS DEPENDING ON TYPE OF STRESSOR
Mandy X. Hu, MSc, Femke Lamers, PhD, Eco J. C. de Geus, PhD, Brenda W.J.H. Penninx, PhD, Psychiatry, VU University Medical Centre, Amsterdam, Noord-Holland, The Netherlands

Objective: It remains unclear whether depression and anxiety disorders are associated with hypo- or hyperreactivity of the autonomic nervous system (ANS) and whether deviant reactivity occurs in all types of stressors. This study therefore compared ANS reactivity in people with current or remitted depression and/or anxiety with reactivity in healthy controls during two different stress conditions.

Methods: From the Netherlands Study of Depression and Anxiety (NESDA), data was available of 804 individuals with current depression/anxiety, 913 individuals with depression/anxiety earlier in life, and 466 healthy controls (mean age of total sample 44.1 years; 66.4% female). Two conditions were used to evoke stress: 1) an n-back task, a cognitive challenging stressor, and 2) a psychiatric interview, evoking personal-emotional stress related to the occurrence of symptoms of depression and anxiety. Indicators of ANS activity were heart rate (HR), root mean square of differences between successive interbeat intervals (RMSSD), respiratory sinus arrhythmia (RSA), and pre-ejection period (PEP).

Results: A hyperreactivity of HR, RMSSD and RSA was seen during the n-back task, as opposed to a hyperreactivity of these same parameters during the psychiatric interview, in participants with psychopathology compared to controls. The lack of group-differences in PEP reactivity suggests that the found effects were driven by altered cardiac vagal reactivity in people with depression and anxiety.

Conclusions: We conclude that the direction of altered ANS reactivity in depressed and anxious patients is dependent on the type of stressor and that only the more ecologically valid stressors may evoke hyperreactivity in these patients.

1100/PREDICTIVE VALUE OF AUTONOMIC BASAL AND STRESS REACTIVITY VALUES FOR INCREASE IN METABOLIC SYNDROME COMPONENTS OVER TIME
Mandy X. Hu, MSc, Eco J.C. de Geus, PhD, Sarah A. Hiles, PhD, Femke Lamers, PhD, Brenda W.J.H. Penninx, PhD, Psychiatry, VU University Medical Centre, Amsterdam, Noord-Holland, The Netherlands

Objective: Various cross-sectional studies have linked dysregulation of basal autonomic nervous system (ANS) functioning to the metabolic syndrome (MetS). Few longitudinal studies have been conducted to infer causality and even fewer have looked at the predictive value of ANS reactivity to stress. This study aims to 1) examine cross-sectionally to what extent ANS basal and stress reactivity values are independently related to MetS and 2) establish the predictive values of both ANS basal and stress reactivity values in the 4-year increase of MetS components.

Methods: This study included 4-year longitudinal data of 2189 participants from the Netherlands Study of Depression and Anxiety. Indicators of ANS functioning were heart rate (HR), respiratory sinus arrhythmia (RSA) and pre-ejection period (PEP). ANS stress reactivity values were measured during two stress conditions: 1) an n-back task, a cognitive challenging stressor, and 2) a psychiatric interview, evoking personal-emotional stress related to the occurrence of symptoms of depression and anxiety. MetS components included triglycerides, high-density lipoprotein cholesterol, blood pressure, glucose and waist circumference.

Results: Cross-sectional analyses showed that high basal values of HR and low values of RSA and PEP were related to less favorable values of almost all individual MetS components. Cross-sectional analyses of stress reactivity showed that mainly RSA reactivity during cognitive challenge was associated with less favorable MetS profiles. Longitudinal analyses showed that low basal values of PEP predicted 4-year increase in many MetS components. RSA stress reactivity during cognitive challenge predicted 4-year increase in number of METS components.

Conclusion: Higher sympathetic and lower parasympathetic activity at rest are associated with MetS, and higher sympathetic activity predicts an increase in metabolic abnormalities over time. These findings support a role for ANS dysregulation in the risk for MetS and, consequently, the development of cardiovascular disease.
Thursday, March 10 from 2:45 to 3:45 pm

**Emotion Regulation**

1641/INCREASED TIME SPENT IN POVERTY IS ASSOCIATED WITH IMPAIRED EMOTION RECOGNITION IN MIDDLE CHILDHOOD

Andrew Erhart, MA in Psychology, Tanisha Crosby-Attipoe, B.S., Victoria Everts, B.S., Pilyoung Kim, PhD Psychologia, University of Denver, Denver, CO

Prior research suggests links between poverty and a higher likelihood of negative psychosocial outcomes. Early adversity can lead to deficits in emotion recognition, which has been associated with difficulties in emotion regulation. Poverty and early life stress have also been shown to cause deficits in emotion labeling tasks, however the role of emotion recognition and its links to poverty and behavioral outcomes in middle childhood are less understood.

The present study looks at differences in emotional face labeling between children who have spent a variable amount of time in poverty. Children (N=46, males=45%) aged 7-10 (mean age=9.15) are presented a series of faces of three different emotions, angry, fearful, and happy, with the emotional intensity of the face varying from 10% to 100%, and asked to judge what emotion the face is. Interviews with the mother of the child were used to determine the percentage of time the family has spent in poverty since the birth of the child. We hypothesize that children who have spent a longer percentage of their life in poverty will show lowered accuracy for emotional face labeling.

The accuracy of higher intensities (70-100%) was used as the dependent variable, as the overall accuracy of the lower intensities was too low (53% to 7%) to reflect labeling capacities across all children. Three way interactions of emotion x intensity x percentage of time in poverty were not significant, however the interaction of intensity and percentage of time in poverty was found to be significant, F(3,42)=4.422, p<.01. Increased time in poverty was associated with lower accuracy, with a significantly more negative association in accuracy for higher intensity items (r=−.661, p<.001 for correlation between time spent in poverty and 100% intensity vs. r=−.463, p=.01 for time spent in poverty and 90% intensity). To further link face labeling deficits and negative outcomes, we found significant negative associations between total accuracy for higher intensity faces and peer problems and conduct problems as assessed by the Strengths and Difficulties Questionnaire (r=−.371, p=.011 and r = −.298, p = .044, respectively; Figure 1). Our results demonstrate that children who have spent more time in poverty are overall less accurate at labeling emotional expressions, particularly for the higher intensity expressions. This difficulty in emotion recognition was also related to parentally reported conduct and peer problems, suggesting a link between emotion labeling deficits and increased risk for behavioral problems.

1059/EARLY LIFE ADVERSITY AND DIURNAL CORTISOL PROFILES ACROSS THE LIFESPAN: SELF-ESTEEM AS A PSYCHOLOGICAL PATHWAY

Samuele Zilioli, PhD, Psychology, University of Macau, Macau, Macau, China, Xiaoming Li, PhD, Department of Health Promotion, Education, and Behavior, South Carolina University, Columbia, SC

A large body of empirical evidence has demonstrated that harsh social and physical environments early in life are associated with a substantial increase in the risk of chronic medical conditions. The hypothalamus-pituitary adrenal (HPA) axis has been proposed as an essential biological intermediary of the long-term effects of early life adversity on poor health outcomes across the lifespan. Although much is already known about the biological mechanisms through which early life stress calibrates the activity of the HPA axis, little empirical evidence is available as to which psychological mechanisms carry these early experiences across the lifespan. In the current study, we tested whether early life adversity was associated with individual differences in diurnal cortisol secretion, and whether this link was mediated by self-esteem. Following previous work, we combined three sources of childhood adversity: exposure to stressful events, parental relationship quality, and exposure to physical/emotional abuse. Data from two large and ethnically diverse samples of individuals varying in early life adversity are reported. In both adults (N=1,463) and children (N=645) early life adversity was associated with lower levels of cortisol at awakening and this association was mediated by low self-esteem. In the adult sample early life adversity was associated with a flatter cortisol slope and this link was also mediated by low self-esteem. Similarly, we found a significant indirect pathway through which greater adversity was linked to a flatter cortisol slope via self-esteem among children (see figure). Lastly, in line with the premise that caregiver’s psychological functioning can affect children’s cortisol production, we found that those children who had a caregiver with high self-esteem experienced a steeper decline in cortisol throughout the day compared to those children whose caregiver reported low levels of self-esteem. Our results provide strong support for the idea that self-esteem is a plausible psychological mechanism through which early life adversity may get embedded in the activity of the HPA axis across the lifespan. To conclude, some of the deleterious effects on health that are attributed to low self-esteem—which contains psychological residue of early life stressors—may be mediated by the dysregulation of the HPA axis.

1294/ACETAMINOPHEN INCREASES RISK-TAKING BEHAVIOR VIA REDUCED SENSITIVITY TO LOSS

Alexis A. Keaveney, B.S. Psychology, Ellen Peters, PhD, Baldwin M. Way, PhD, Psychology, The Ohio State University, Columbus, Ohio

Here we examined the effects of acetaminophen, which has anti-inflammatory effects in the brain, on risk-taking behavior. Acetaminophen leads to reduced evaluation extremity in response to emotionally evocative images (Durso, Lutrell, & Way, 2015). This change in evaluative processing could lead to altered decision-making, particularly in an emotionally-evocative risk-taking context. In this study, 144 undergraduates received acetaminophen or placebo and later completed the Balloon Analogue Risk Task (BART). Acetaminophen led to significantly more risk-taking on the BART compared to placebo, (t(140)=2.30, p=.023. A follow-up analysis of the BART data revealed no significant difference between drug condition on the first trial of the BART, (t(141)=0.09, p=.93, indicating initial risk-taking was unaffected by drug. Condition differences emerged in response to a loss. Immediately following a burst, the placebo group engaged in significantly less risk-taking on the following trial, (t(66)=−2.50, p=.015, while those on acetaminophen did not, (t(72)=−0.06, p=.96. This suggests acetaminophen leads to an insensitivity to the negative consequences resulting from risk-taking behavior, an effect suggesting further study as an estimated 50 million Americans consume acetaminophen each week. A replication study is currently underway and will be completed by November 2015.
1457/THE INHIBITORY EFFECT OF FACEBOOK USE ON STRESS RECOVERY: A PILOT STUDY
Jitske Tiemensma, PhD, Holly Rus, BA, Psychological Science, University of California Merced, Merced, CA

Background: A conflicting body of research suggests that Facebook use may both enhance and undermine psychosocial constructs related to well-being. Despite these associations, to date there has been no objective measurement of the potential impact of Facebook use on health in the context of stress. This pilot study aimed to examine the impact of Facebook use on stress recovery.

Methods: Forty Facebook users (14 males, mean age 19.7±1.7) were randomly assigned to either the experimental group (Facebook use) or the control group (quietly sitting) during 30 minutes of recovery after experiencing the Trier Social Stress Test. All participants completed measures of mood and subjective well-being. Objective physiological markers (blood pressure, heart rate, and salivary cortisol) were collected at baseline and during recovery.

Results: Compared to the control group, participants in the experimental group showed a slower recovery from stress in terms of feeling anxious (p<.05) and tense (p<.05). Participants in the experimental group also showed impaired recovery of salivary cortisol concentrations compared to the control group (p<.05). There were no significant differences in blood pressure and heart rate during recovery.

Conclusion: This exploratory study is the first to incorporate objective physiological markers in investigating the complex relationship between Facebook and health. Participants who used Facebook after experiencing acute social stress showed an impaired recovery with regard to salivary cortisol and feelings of anxiety and tension compared to the control group. Results suggest that Facebook use may impair or delay recovery from acute stress.

Thursday, March 10 from 2:45 to 3:45 pm

Cardiovascular Disease

1518/HEALTH LOCUS OF CONTROL LONGITUDINALLY PREDICTS MAJOR ADVERSE CARDIAC EVENTS
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Objective: It has been theorized that a potential determinant of health may be locus of control (HLOC), the extent to which individuals believe control for their own health rests with their actions, chance, or the actions of others. However, limited literature has examined the possibility of HLOC predicting health outcomes. Previous research has shown HLOC may be associated with health behaviours important to cardiac patients, including physical activity. This study aimed to explore if HLOC could longitudinally predict cardiac outcomes.

Methods: A sample of outpatients referred for myocardial perfusion single photon emission computed tomography stress testing at the Montreal Heart Institute were recruited (n=602) and mailed a questionnaire package at a two-year follow-up, including a sociodemographic questionnaire and the Multidimensional Health Locus of Control scale, form C (featuring internal, doctor, chance, and others sub-scales). Four years later, patients were contacted by telephone and mail questionnaire to report medical events and procedures that had occurred since the last follow-up. A major adverse cardiac event (MACE) was defined as a cerebrovascular accident, myocardial infarction, angioplasty, or bypass surgery. Secondary events included an angiography, exercise or persantine stress test, electrocardiogram, echocardiogram, pacemaker installation, or valve replacement.

Results: Overall, 8% of the sample experienced a MACE by follow-up, while 41% experienced a secondary event. Higher Internal HLOC scores were found to predict lower incidence of MACE at follow-up (β=.07, t=2.25, p=.03) in a logistic regression model. However, Internal HLOC did not predict secondary events (β=.02, t=1.12, p=.26). Neither MACE nor secondary events were predicted by Chance, Doctor, or Others HLOC scores. All analyses were controlled for age, sex, and education. Multiple imputation was used to compensate for non-response and missing data.

Conclusions: Possessing a stronger internal health locus of control, that is believing control of one’s health rests primarily with one’s actions, was found to predict lower rates of major adverse cardiac events in a sample of cardiac outpatients. This is consistent with previous literature suggesting internal HLOC may be associated with health behaviours. Future research should examine if protective behaviours, such as physical activity, mediate this relationship with cardiac outcomes. In this study, other facets of health locus of control did not seem to be associated with cardiac outcomes.

1445/SURVIVOR REGRESSION OF INCIDENT CORONARY HEART DISEASE IN THE GAZEL COHORT
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Background and objectives
A growing body of evidence suggests that the association of psychological variables with coronary heart disease (CHD) may depend upon socioeconomic status (SES). Here, we examined the moderating effect of occupational grade on the prospective association between depression and CHD in a large sample of working individuals from the GAZEL cohort.

Methods
A total of 10,541 GAZEL participants (7855 men, mean age: 47.8 ± 3.5 years) free of CHD completed the Center of Epidemiologic Studies Depression scale (CES-D) in 1993. Age, sex, and occupational grade (low, medium, high) were obtained from company records. Alcohol consumption, smoking height, weight, physical activity, history of parental CV diseases, sleep disorders, hypertension, dyslipidemia and diabetes were self-reported. All participants were followed-up for medically certified diagnoses of non-fatal CHD from January 1, 1994 to December 31, 2014. Associations between depression as well as covariates and incident CHD events were estimated with Hazard Ratios (HR) and 95% confidence intervals (CI) computed in Cox regressions. The follow-up ran from January 1, 1994 to the date of the first validated CHD event or the date of the last follow-up questionnaire, whichever occurred first.

Results
After a median follow-up of 21 years, 592 (5.6%) participants received a diagnosis of CHD. Neither depression nor occupational grade was associated with the incidence of CHD events in the whole population. However, there was a significant interaction between depression and occupational grade in both age-standardized (P=0.003) and multi-adjusted (P=0.009) models. The association was significant among participants of low occupational grade in multi-adjusted [HR (95% CI): 1.99 (1.12-3.48)] models. There was no association in the medium category and there was even an unexpected, negative association among participants of high occupational grade that was significant in the multi-adjusted model [HR (95% CI): 0.68 (0.46-0.98)]. Sensitivity analyses
using the CES-D score as a continuous variable yielded similar results and exploratory analyses based on CES-D subscores found that the interaction with occupational grade was significant for depressed affect (P=0.03) but not for somatic complaints (P=0.17).

Conclusions

The association between depressive symptoms and CHD depends upon occupational grade. From a research perspective, these results may account for previous conflicting results and constitute a deviation from previous datasets taking into account the moderating role of SES. From a clinical perspective, the present results urge clinicians to consider depressive symptoms as a CV risk factor on their own when experienced by individuals of low occupational grade.

1272/TRADITIONAL CARDIOVASCULAR RISK FACTORS ARE STRONGER PREDICTORS OF INCIDENT CARDIOVASCULAR DISEASE IN ADULTS WITH Versus WITHOUT LIFE-TIME DEPRESSIVE DISORDER: DATA FROM THE NATIONAL EPIDEMIOLOGIC SURVEY ON ALCOHOL AND RELATED CONDITIONS (NESARC)

Brittany M. Pololka, B.S.; Jessica Burton, M.S.; Elizabeth A. Vrany, M.S.; Jesse C. Stewart, Ph.D., Psychology, Indiana University - Purdue University Indianapolis, Indianapolis, IN

The effect of traditional cardiovascular disease (CVD) risk factors on CVD outcomes may be potentiated by depression, although few studies have tested this hypothesis. Thus, we examined lifetime depressive disorder (DD; major depressive disorder and/or dysthymic disorder) as a moderator of the association of CVD risk factors (BMI, tobacco use, and hypertension) with incident CVD among 23,681 CVD-free adults (mean age=47.6 years, 47% non-white) who participated in Wave 1 (2001-2002) and Wave 2 (2004-2005) of the NESARC study. At Wave 1, respondents self-reported height and weight (used to calculate BMI), lifetime use of 5 types of tobacco products (used to create a three-level tobacco use variable: current, former, never [reference]), and physician diagnosis of hypertension (yes, no). Additionally, the structured Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV was administered to assess lifetime history of DSM-IV DD (n=4,562, 17%). At Wave 2, self-reported physician diagnoses of myocardial infarction, angina, or arteriosclerosis in the past year were coded as incident CVD cases (n=1,078, 4%). A logistic regression model (adjusted for age, sex, race/ethnicity, education, hypercholesterolemia, diabetes, lifetime anxiety disorder, and NESARC sampling design) simultaneously testing CVD risk factors revealed main effects of DD (OR=1.31, 95% CI 1.13-1.52, P<.001), current tobacco use (OR=1.41, 95% CI 1.24-1.60, P<.001), former tobacco use (OR=1.18, 95% CI 1.08-1.28, P=.01), and hypertension (OR=1.41, 95% CI 1.30-1.53, P<.001) for incident CVD. BMI did not predict incident CVD (P=.38). In a separate model testing interactions, BMI x DD (P=.02), current tobacco use x DD (P=.009), and hypertension x DD (P=.001) were significant. Thus, we reran models stratified by DD. As shown in Table 1, BMI, current tobacco use, and hypertension were stronger predictors of incident CVD in respondents versus without a lifetime depressive disorder. Findings from this large, nationally representative sample suggest that depressive disorders may potentiate the effect of traditional CVD risk factors on CVD outcomes. Inflammatory responses to BMI, tobacco use, and hypertension may be exaggerated in depressed adults due to dysfunction in the parasympathetic nervous system and HPA axis, systems that normally exert anti-inflammatory effects.

1506/PRE-SURGICAL PSYCHOLOGICAL INTERVENTIONS LEAD TO REDUCED LEVELS OF ADRENALINE AND CORTISOL AFTER SURGERY IN CORONARY ARTERY BYPASS GRAFT PATIENTS: THE PSY-HEART STUDY

Stefan Salzmann, Dipl.-Psych., Frank Euteneuer, PhD, Charlotte J. Auer, Dipl.-Psych., Johannes A. Laferton, PhD, Clinical Psychology and Psychotherapy, Philipps University of Marburg, Marburg, Hessen, Germany, Manfred Schofleudt, PhD, Institute of Medical Psychology and Behavioral Immunobiology, University Clinic Essen, Essen, Nordrhein-Westfalen, Germany, Rainer Moosdofr, MD PhD, Clinic for Cardiac and Thoracic Vessel Surgery, Heart Center, Winfried Rief, PhD, Clinical Psychology and Psychotherapy, Philipps University of Marburg, Marburg, Hessen, Germany

Background: Outcomes of coronary artery bypass graft (CABG) surgeries are associated with patients’ pre-surgical expectations. Pre-surgical psychological interventions targeting patients’ expectations could help to buffer patients stress response and to improve recovery after heart surgery. This study examines whether pre-surgical psychological interventions are capable of influencing the biological stress response after CABG-surgery.

Methods: Randomized controlled trial with assessments at 10 days before surgery, post psychological intervention (day of hospital admission, but before surgery) and post-surgery (6-8 days later). Eligible patients (N=92) scheduled for elective on pump CABG or CABG with valve replacement surgery were approached before hospital admission. Standard medical care (SMC) was compared to two additional preoperative psychological interventions: Either the expectation manipulation intervention (EMI) to optimize patients’ expectations about course and outcomes, or the same amount of therapeutic attention with a focus on a good therapeutic relationship and emotional expression, but without specifically working on expectations (supportive therapy, or SUP). Main outcomes were plasma adrenaline, noradrenaline and cortisol levels and patients’ disability expectations post-surgery.

Results: EMI (P=.018) and SUP (P=.009) led to significantly lower post-surgery adrenaline levels compared to SMC only. SUP led to lower cortisol levels compared to SMC after surgery (P=.021); time and treatment group interacted significantly (F=2.01; P=.029; r²=.147) while controlling for disability expectations, demographic, psychological and medical variables. Higher disability expectations at baseline were associated with higher adrenaline levels after surgery (F=5.682; P=.021; r²=.071), and patients’ baseline expectations were associated with changes of patients’ adrenaline levels over time (F=10.32; P<.001; r²=.122).

Conclusions: In addition to standard medical care, preoperative psychological interventions seem to be able to buffer psychobiological stress responses and could thus facilitate recovery from CABG-surgery.

Trial Registration: This study is registered at www.clinicaltrials.gov (NCT01407055).

Figure 1: Descriptive group means for plasma adrenaline levels and treatment groups (Standard Medical Care=SMC, Supportive Therapy=SUP, Expectation Manipulation Intervention=EMI) at baseline (pre-surgery), post psychological intervention (but prior to surgery) and post-surgery with error bars indicating standard error of the mean (SEM). * = significant group differences at P<.05.

Adrenaline levels before and after psychological intervention and after surgery

Table 1. Logistic Regression Analyses Examining the Associations of Traditional CVD Risk Factors with Incident CVD Stratified by Depressive Disorder Status

<table>
<thead>
<tr>
<th></th>
<th>No Lifetime Depressive Disorder</th>
<th>Lifetime Depressive Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>BMI (z-scored)</td>
<td>0.58 0.93-1.04</td>
<td>1.09* 1.01-1.19</td>
</tr>
<tr>
<td>Current tobacco use</td>
<td>1.31 1.15-1.50</td>
<td>1.75† 1.34-2.30</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.26 1.16-1.37</td>
<td>2.48‡ 2.02-3.02</td>
</tr>
</tbody>
</table>

N=22,319 in the No Lifetime Depressive Disorder sample. N=4,902 in the Lifetime Depressive Disorder sample. Analyses were adjusted for age, sex, race/ethnicity, education, hypercholesterolemia, diabetes, lifetime anxiety disorder, and NESARC sampling design.

* significantly different than No Lifetime Depressive Disorder
† significantly different than No Lifetime Depressive Disorder
‡ significantly different than No Lifetime Depressive Disorder
Thursday, March 10 from 2:45 to 3:45 pm

**Adverse Childhood Experiences**

**1580/MORPHOLOGICAL AND RESTING BRAIN ALTERATIONS IN LOCALIZED PROVOKED VULVODYNIA (LPVD) ARE ASSOCIATED WITH EARLY LIFE ADVERSITY**

Arpana Gupta, PhD, Division of Digestive Diseases, Dept. of Medicine, Andrea Rapkin, MD, OB/GYN, Kareem Hamudani, BS, Jean Steins, RN, Division of Digestive Diseases, Dept. of Medicine, Kelsey Crim, BS, Linda Goldman, MSN, OB/GYN, Kirtsten Tillisch, MD, Enercan A. Mayer, MD, PhD, Jennifer S. Llabas, PhD, Division of Digestive Diseases, Dept. of Medicine, University of California Los Angeles, Los Angeles, CA

Background: Localized provoked vulvodynia (LPVD) affects almost 15% of females and is characterized by localized sensitivity of the vulvar vestibule that is provoked by genital contact. Investigation of central processes in LPVD suggest altered sensory processing and modulation, including central sensitization, dysregulation of endogenous pain modulatory systems, and attentional enhancement of pain perception. Despite a growing body of knowledge about the relationship of early life stress in vulvodynia symptoms, and recent breakthroughs in the identification of vulvodynia related biological abnormalities with levels of the brain, a comprehensive understanding of how these various factors interact has not emerged.

**Aim:** To determine associations between early adverse life events (EALs) and identified alterations in 1. Morphology, and 2. Resting state networks in LPVD compared to healthy controls (HCs).

**Methods:** Structural and functional magnetic resonance imaging was conducted in a sample of 87 age-matched premenopausal females (29 LPVD, 29 HCs, 29 IBS). T1 image segmentation and regional parcellation was performed with Freesurfer into 165 regions. Linear contrast analysis was applied to test for group differences in regions of interest based on prior literature. Group independent component analysis (gICA) in GIFT 2.0c was performed to investigate group differences in functional connectivity of resting state networks involved in sensorimotor and salience networks. Controlling for age, morphological and resting state activity of regions showing group differences were correlated with EAL total and subscale scores (general, physical, emotional, and sexual).

**Results:** Morphology: Surface area of left precentral gyrus was positively correlated with EAL physical score, r(25) = -.40, p = .04. Cortical thickness of the left postcentral sulcus was positively correlated with EAL sexual score, r(25) = .40, p = .04. Resting State: In LPVD compared to HCs, bilateral supplementary motor area had greater connectivity in the sensorimotor network and this was positively correlated with EAL emotional score r(25) = .48, p = .01. In the salience network, the left putamen was positively correlated with EAL emotional score r(25) = .41, p = .03 in LPVD compared to HC.

**Conclusions:** The morphological and functional alterations associated with pain modulation found between LPVD compared to HCs were positively correlated with several EAL subscale scores. This suggests that higher levels of EALs are associated with alterations in those key regions that are often related to sensorimotor and tonic contractions of pelvic floor muscles found LPVD patients. This may help explain how EALs contribute to central brain and symptom abnormalities found in LPVD.

**1166/EARLY-LIFE ADVERSITY INTERACTS WITH FKBP5 GENOTYPES: GENE-BY-ENVIRONMENT INTERACTION IN THE OKLAHOMA FAMILY HEALTH PATTERNS PROJECT**

William R. Lovoalto, PhD, Psychiatry and Behavioral Sciences, VA Medical Center and University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, Mary-Ann Enoch, MD, Laboratory of Neurogenetics, NIH, NIAAA, Bethesda, MD, Ashley Acheson, PhD, Psychiatry, University of Texas Health Sciences Center, San Antonio, San Antonio, TX, Andrew J. Cohoon, MPH, Psychiatry and Behavioral Sciences, Kristen H. Sorocco, PhD, Donald W. Reynolds Department of Geriatric Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, OK, Andrea S. Vincent, PhD, Cognitive Science Research Center, University of Oklahoma, Norman, OK, David Goldman, MD, Laboratory of Neurogenetics, NIH, NIAAA, Bethesda, MD

Exposure to stress during critical periods of development can have adverse effects on adult health behaviors, and genetic vulnerabilities may enhance these stress effects. We examined the interaction of nontraumatic early-life adversity (ELA) and FKBP5 genotypes, AA/AG vs. GG (rs9296158) polymorphisms, on psychological, physiological, and behavioral characteristics of 252 healthy young adults, 18-25 years of age. FKBP5 is a molecular cochaperone that contributes to the conformation and functional status of the glucocorticoid receptor (GR). FKBP5 is therefore essential for normal cortisol signaling and regulation of gene expression via GR pathways, although its overexpression leads to deficient GR function. ELA was measured by self-report and scaled as experiencing 0, 1, or >1 categories of physical or sexual abuse or separation from parents before age 15 years. During development, stress cortisol exposure demethylates an FKBP5 intronic enhancer region, thus increasing long term FKBP5 expression, with greater upregulation occurring in A-allele carriers. As such, GR function may be environmentally sensitive in A-allele carriers and therefore suitable for study of gene-by-environment (G x E) effects. Compared to FKBP5 GG homozygotes (N = 118), healthy young-adult AA/AG carriers (N = 132) had progressively worse performance on the Stroop color-word task across 0, 1, and >1 levels of ELA exposure (Genotype x ELA, F = 5.14, p = .007), indicating a G x E interaction on working memory in early adulthood. In addition, heart rate response to mental stress was diminished overall in AA/AG carriers (F = 5.15, p = .024). AA/AG carriers also had elevated scores on the temperament trait of Reward Dependence (F = 4.01, p = .046). Diminished working memory and attenuated autonomic responses to stress are both associated with risk for alcoholism and other substance use disorders, as is the trait of elevated reward dependence. The present data suggest that FKBP5 in the GR pathway may be a point of vulnerability to ELA, as seen in this group of nontraumatized young adults. FKBP5 is a potential target for more extensive studies of the impact of ELA on health and health behaviors in adulthood. (Supported by the Department of Veterans Affairs and NIH, NIAAA AA12207)
Recent models propose that deoxyribonucleic acid (DNA) methylation of neuroregulatory genes is a molecular mechanism underlying the increased risk for mental disorders associated with exposure to early life adversity. The oxytocinergic system plays a key role in social adaptation in humans. The goals of this study were to evaluate the impact of exposure to early life adversity on methylation of the oxytocin receptor gene (OXTR) and their associations with childhood trajectories of anxiousness and disruptiveness. Drawing from a large longitudinal cohort of individuals followed since age 6, participants (n=46) were selected for high or low exposure early life adversity based on the prospective reports of childhood SES and exposure to violence and abuse. Information on behaviors, trajectories of anxiousness and disruptiveness behaviors was collected yearly from age 6 to 12 using teachers’ reports. At 21 years of age, participants provided blood samples for OXTR methylation analysis. Results indicated that early life adversity was associated with DNA methylation on 5 CpG sites of the OXTR gene among females (n=23), but was not associated with OXTR methylation profile among males (n=23). Among females, OXTR methylation on 4 CpG sites was associated with childhood trajectories of anxiousness, but not of disruptiveness. Furthermore, methylation of a CpG site on the promoter region of the gene mediated the relationship between early life adversity exposure and childhood trajectories of elevated anxiousness among females. These results suggest that the early social environment shapes the epigenetic regulation of the OXTR gene among females, providing a potential pathway through which early life adversity influence their risk for internalizing disorders later in life.

**1237/ADULT HEALTH CONSEQUENCES OF CHILDHOOD BULLYING AND VICTIMIZATION IN BLACK AND WHITE MEN**

Karen A. Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Dustin A. Pardini, PhD, Criminology and Criminal Justice, Arizona State University, Tempe, AZ, Laisze Lee, MS, Psychiatry, University of Pittsburgh, Pittsburgh, PA

Recent evidence suggests that being bullied in childhood is associated with adverse health consequences later in life but that being the bully (without being a victim of bullying) is not. This paper examines the adult health consequences of being a bully and/or victim of bullying of boys between the ages of 10 and 12 years of age and addresses whether there are race differences in the pattern of results. Boys enrolled in the Pittsburgh Youth Study when in the first grade were assessed frequently through young adulthood for family and child characteristics. Between the ages of 10-13, measures of bullying and victimization were administered biannually to the participant and caregiver and averaged. In their thirties, 312 men who lived near Pittsburgh were recruited for an evaluation of their health behaviors, cardiovascular risk factors, socioeconomic status (SES), stress, and psychosocial attributes. Linear regression analyses examined the influence of bullying, victimization, and their interaction, adjusted for race, family Hollingshead during the same time period, teacher ratings of hyperactivity and impulsivity at ages 7 – 9, followed by tests for race interactions. P-values < .05 are reported below. Results showed that greater bullying in childhood was associated with adult smoking, lower body fat and metabolic syndrome scores. Blacks higher in bullying and whites higher in victim scores used more pot weekly. Greater bullying scores were associated with higher adult physical and verbal aggression, anger, and hostile attitude scores and more recent negative life events, especially work events. Neither bullying nor victim scores impacted CRP or IL6 levels. Greater victim scores were associated with lower adult SES (income and perceived status), and higher hostile attitudes and unfair treatment scores. Significant interactions for victim and bully scores showed that more social support, less perceived stress, and more purpose in life as adults were reported by those low on bully scores and more recent negative life events, especially work events. Neither bullying nor victim scores showed significant interactions on waist-to-hip ratio (WHR) and depression in predicting 3 measures of glycemic control 10 years later: non-diabetic insulin resistance (HOMAIR), pre-diabetes, and diabetes. We found that depression amplified the influence of WHR on diabetes risk (RR=2.16; 95% CI: 1.18; 3.98) in fully adjusted models net of the effects of age, race, gender, education, physical activity, sleep problems, and relevant interactions among predictors. Follow up simple slope analyses confirmed the detrimental effect of depression at higher levels of WHR: at 1 sd above mean, RR=2.48 (95% CI: 1.10; 5.59). Depression was associated with higher insulin resistance (b=22; p=007) and risk for prediabetes (RR=2.44; 95% CI: 1.12; 1.79) in fully adjusted models but no synergistic effects between WHR and depression were present at nondiabetic levels. We found evidence that depression, independently and synergistically with WHR, predicted dysregulated glycemic control 10 years later. These results confirm the role of depression as a key risk factor for diabetes and suggest that identifying combinations of risk factors from multiple domains is key for understanding multifactorial diseases such as diabetes.

**1426/IMMIGRANT STATUS IS ASSOCIATED WITH DIFFERENCES IN DIABETES TREATMENT: DATA FROM THE CONTINUOUS NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES)**

Lizetta Hinchliffe, M.A., Elizabeth A. Vroon, M.S., Jay S. Patel, B.A., Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN, Mary de Groot, Ph.D, Medicine, Indiana University School of Medicine, Indianapolis, IN, Jesse C. Stewart, Ph.D, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN

The disproportional burden of diabetes on racial and ethnic minority groups is well-established. Treatment disparities may be one mechanism maintaining these disparities. Previous research has examined treatment disparities among racial and ethnic minority groups, but less is known about such disparities among groups varying in immigrant status. Thus, our aim was to examine relationships between two indicators of immigrant status (being foreign-born and primarily speaking a language other than English) and two classes of diabetes medications (oral hypoglycemic agents [OHA] and insulin). Participants were the 2,106 adults (mean age=62 years, 49% female, 62% non-White) from NHANES 2005-2012 who reported a diabetes diagnosis. Pargament's maturity was used to control for religiosity (n=541, 67%) if they indicated being born in a country other than the US. Participant’s primary speaking language was determined to be non-English (n=334, 16%) if the survey was conducted in a language other than English or through a translator.

**Friday, March 11 from 10:45 am to 12:00 pm**

The Psychobiology of Diabetes

**1592/DEPRESSION AMPLIFIES THE INFLUENCE OF CENTRAL ADIPOSY MPON DIABETES RISK 10 YEARS LATER: FINDINGS FROM MIDUS**

Vera Tsenkova, PhD, Institute on Aging, University of Wisconsin Madison, Madison, WI

Central adiposity is a major influence on diabetes risk but significant variability in this relationship is unexplained: most obese people never develop diabetes, suggesting the presence of important moderating effects. Depression has emerged as a key influence on glycemic control and to our knowledge, no previous work has investigated whether the presence of depression amplifies the relationship between adiposity and glucose regulation. We used a national sample of adults (MIDUS; N=1255) to examine the interplay among baseline measures of waist-to-hip ratio (WHR) and depression in predicting 3 measures of glycemic control 10 years later: non-diabetic insulin resistance (HOMAIR), pre-diabetes, and diabetes. We found that depression amplified the influence of WHR on diabetes risk (RR=2.16; 95% CI: 1.18; 3.98) in fully adjusted models net of the effects of age, race, gender, education, physical activity, sleep problems, and relevant interactions among predictors. Follow up simple slope analyses confirmed the detrimental effect of depression at higher levels of WHR: at 1 sd above mean, RR=2.48 (95% CI: 1.10; 5.59). Depression was associated with higher insulin resistance (b=22; p=007) and risk for prediabetes (RR=2.44; 95% CI: 1.12; 1.79) in fully adjusted models but no synergistic effects between WHR and depression were present at nondiabetic levels. We found evidence that depression, independently and synergistically with WHR, predicted dysregulated glycemic control 10 years later. These results confirm the role of depression as a key risk factor for diabetes and suggest that identifying combinations of risk factors from multiple domains is key for understanding multifactorial diseases such as diabetes.
Participants who reported taking a prescription medication in the past month were asked to show the interviewer all medication containers, and the interviewer recorded each medication’s complete name. From these data, we coded past-month use of an OHA (yes/no) and insulin (yes/no). Separate logistic regression analyses (first adjusted for demographic factors and then further adjusted for cardiovascular factors and diabetes severity indicators) modeled associations of nativity (US-born versus foreign-born) and language (English versus non-English) with each diabetes medication type. As is shown in Table 1, results indicated that both immigrant status variables were associated with higher odds of taking an OHA and lower odds of using insulin. Specifically, foreign-born adults had 69% greater odds of being on an OHA and 62% lower odds of being on insulin than US-born adults. Similarly, adults primarily speaking a non-English language had a 72% greater odds of being on an OHA and a 54% lower odds of being on insulin than English-speaking adults. The pattern of results from this large, nationally representative sample suggests that immigrants with diabetes in the US may receive more conservative diabetes care. Factors at the level of the patient (willingness to use insulin), provider (willingness to prescribe insulin), and system (access to and cost of insulin) could underlie the observed differences in diabetes treatment.

### Table 1. Logistic Regression Analyses Examining the Associations Between Immigrant Status Indicators and Diabetes Medication Type

<table>
<thead>
<tr>
<th></th>
<th>Foreign-born</th>
<th>Non-English</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>OHA</td>
<td>1.55 (0.94-2.57)</td>
<td>1.67* (1.04-2.67)</td>
</tr>
<tr>
<td>Insulin</td>
<td>0.34** (0.23-0.50)</td>
<td>0.45* (0.26-0.77)</td>
</tr>
<tr>
<td></td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>OHA</td>
<td>1.69* (1.07-2.83)</td>
<td>1.72* (1.05-2.83)</td>
</tr>
<tr>
<td>Insulin</td>
<td>0.38** (0.23-0.60)</td>
<td>0.46* (0.24-0.89)</td>
</tr>
</tbody>
</table>

**Adjusted for age, sex, race/ethnicity, education, marital status, and NHANES sampling design.**

**Adjusted for age, sex, race/ethnicity, education, marital status, clinical cardiovascular disease, hypertension, hypercholesterolemia, smoking status, body mass index, duration of diabetes, hemoglobin A1c level, retinopathy, kidney disease, and NHANES sampling design.**

1368/PROFILES OF DISORDERED EATING BEHAVIORS IN TYPE 1 DIABETES

Natalia O. Dmitrieva, PhD, Psychological Sciences, Northern Arizona University, Flagstaff, AZ; Ashley M. Moskovich, Ph.D., Lisa K. Honeycutt, M.A., Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC; Nancy L. Zucker, Ph.D., Psychology and Neuroscience; Psychiatry and Behavioral Sciences, Duke University; Duke University Medical Center, Durham, North Carolina; Rhonda M. Mervin, Ph.D., Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC

Recent work has shown that disordered eating behaviors (DEB) are relatively common in type 1 diabetes (T1D), and predispose T1D patients to greater risk of earlier and more severe diabetes-related complications. Current research on DEB in T1D often does not discriminate between patterns of disordered eating, rather focusing on overall level of symptomatology. However, individuals with T1D and DEB may exhibit very different profiles of DEB symptomatology (e.g., skipping meals, binge eating, omitting necessary insulin for weight loss purposes or any combination of these behaviors), which may present very different subsequent complications (e.g., frequent hypoglycemia vs. diabetic ketoacidosis), and prefered treatment approaches. The current study was to (1) identify common latent subtypes of DEB symptomatology among adults diagnosed with T1D; (2) validate DEB profiles with symptoms that were identified via clinical diagnostic interview and a naturalistic setting; and (3) investigate the metabolic correlates of DEB profile membership. Latent class analysis was used to estimate profiles of DEB symptomatology on the 16-item Diabetes Eating Problem Survey-Revised among 326 participants with T1D recruited to take part in a survey of eating attitudes and behaviors in T1D. The 4-class model fit the best model fit, showing the following profiles of DEB in this sample: “Low Pathology” (20.6%), “Overeating” (43.1%), “Uncontrolled Eating” (27.6%), and “Diabulimia” (8.7%). A subgroup of participants (n=83) also took part in a clinician-administered semi-structured diagnostic interview of eating disorders and in a 3-day ecological momentary assessment study of DEB behaviors in T1D. Results showed that profile membership was associated with clinical diagnosis (p<.001, Fisher’s exact test), percent of meals with insulin restriction over 3 days (F(3, 74)=12.365, p<.001), timing of meals characterized by insulin restriction, percent of meals with binge eating (F(3, 72)=5.098, p<.01), overall hemoglobin A1c (F(3, 69)=16.053, p<.001), interstitial blood glucose across 3 days (F(3, 68)=10.600, p<.001), and percent of time in hyperglycemic state (as defined by blood glucose > 180mg/dL) across 3 days (F(3, 69)=11.475, p<.001). In general, “Diabulimia” group membership was most strongly linked with hyperglycemia and insulin restriction, indicating that this subgroup of T1D patients may be at greatest need of treatment. The current study demonstrates the significance of characterizing the diversity of disordered eating in T1D, as well as the need for developing targeted treatments.

1546/EVENING CHRONOTYPE IS ASSOCIATED WITH INSULIN RESISTANCE IN ADULTS WITHOUT RECURRENT DEPRESSION

Briana J. Taylor, MS, Laura B. Samuelsson, MS, Psychology, Christopher E. Kline, PhD, Health and Physical Activity, Robert T. Krafty, PhD, Biosciences, University of Pittsburgh, Pittsburgh, Pennsylvania; Julian F. Thayer, PhD, Psychology, Ohio State University, Columbus, Ohio; Ellen Frank, PhD, Psychiatry and Psychology, David J. Kupfer, MD, Psychiatry and Clinical and Translational Science, Martica H. Hall, PhD, Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania

Background: Evening chronotype, characterized by later bed and wake times, is associated with adverse metabolic health, including weight gain and increased risk for type 2 diabetes. Evening chronotype has been found to be particularly detrimental to metabolic health among medical populations with metabolic conditions; however, to date, no study has examined evening chronotype among psychiatric populations known to be at-risk for metabolic conditions, such as those with recurrent depression. Understanding the additive or synergistic association between chronotype and depression in relation to metabolic health is needed in order to develop precision-based approaches to treatment. Here, we examined a behavioral measure of chronotype in relation to the homeostatic model assessment of insulin resistance (HOMA-IR) in a sample of adults with and without recurrent depression.

Methods: Participants were 81 adults (53 women, mean age = 59.86 ± 9.63). Thirty-four (42%) participants had a history of recurrent depression. Participants recorded their bed and wake times using the Pittsburgh Sleep Diary across an average of 42.8 ± 1.63 days, and mid-sleep point on free-days (Friday and Saturday nights) was calculated. Mid-sleep point represents a behavioral measure of chronotype, with earlier mid-sleep points representing morning types and later representing evening types. Lifetime depression history was clinician-assessed using the Structured Clinical Interview for DSM-IV. Fasting blood samples were assayed for glucose and insulin, from which HOMA-IR was calculated. Hierarchical linear regression tested the association between chronotype and HOMA-IR, controlling for age, sex, BMI depression history and average sleep duration. Moderators of the association between chronotype and metabolic health were also examined.

Results: Evening chronotype was associated with greater HOMA-IR (β = .247, p = .02). This effect was moderated by depression such that the relationship was stronger for those without a history of lifetime depression (β = -.378, p = .008). The association between evening chronotype and HOMA-IR was also stronger for those with lower BMI (< 28 BMI; β = -.359, p < .001).

Conclusion: The current study provides additional support for the role of chronotype in metabolic health risk, particularly among those without recurrent depression. Specific bio-behavioral and psycho-social mechanisms linking chronotype to metabolic health outcomes need to be examined in order to identify more specific targets for intervention.

This study was supported by grants from the National Institutes of Health (P01 AG20677, T32 HL07560, T32 MH019986-15 and UL1 RR024153).
128/CORTISOL IN HAIR PREDICTS TYPE 2 DIABETES STATUS IN AFRICAN-AMERICAN ADULTS
Matthew Lehrer, MS, Kinesiology and Health Education, The University of Texas at Austin, Austin, Texas, Julie Mastowsky, PhD, Susan K. Dubois, MD, Kinesiology and Health Education, The University of Texas at Austin, Austin, TX, Mark L. Laudenslager, PhD, Psychiatry, University of Colorado, Denver, CO, Mary A. Steinhardt, Edd, LPC, Kinesiology and Health Education, The University of Texas at Austin, Austin, TX
Context: Chronically-elevated cortisol levels increase with type 2 diabetes mellitus (T2DM) prevalence in white adults. This relationship has yet to be shown in black adults, who have higher hair cortisol concentrations and T2DM risk than those of Caucasian descent.
Objective and Design: We used the analysis of cortisol in hair (CORT) to examine associations of long-term cortisol levels with T2DM prevalence in a group of African-American adults. In exploratory analyses, we also studied the ability of hair DHEA concentration using enzyme-linked immunoassay analysis (ELISA), HbA1c was assessed, and T2DM status was determined as HbA1c > 6.5% (according to National Institute of Diabetes and Digestive and Kidney Disease criteria) or previous T2DM diagnosis.
Results: In logistic regression analyses, hair cortisol predicted T2DM status (odds ratio = 3.22, 95% confidence interval 1.11 – 9.35), independent of sex, hair-washing frequency, minutes of exercise per week, and depressive symptoms. In exploratory analyses, the CORT/DHEA-ratio also predicted T2DM status (OR = 3.60, 95% confidence interval 1.26 – 10.32).
Conclusions: Cortisol in scalp hair predicts T2DM status in African-American adults similar to previous studies using white participants. The cortisol/DHEA-ratio assessed in scalp hair may offer promise as an indicator of chronic HPA-axis dysregulation.

Friday, March 11 from 10:45 am to 12:00 pm
The Psychobiology of Pregnancy
1184/ PRENATAL CORTISOL EXPOSURE AND INFANT CORTISOL REACTIVITY: MODERATION BY MATERNAL PARTNER SUPPORT
Jenna C. Thomas, MSE, Psychology, University of Calgary, Calgary, AB - Alberta, Canada, Katie R. Krzyzki, PhD, Psychology, Alberta Children's Hospital, Calgary, AB - Alberta, Canada, Nicole Letourneau, PhD, Nursing, Tavis S. Campbell, PhD, Psychology, Gerald F. Giesbrecht, PhD, Paediatrics, University of Calgary, Calgary, AB - Alberta, Canada
Background: Biological embedding occurs when social environments alter biological and developmental processes in enduring ways to have a long-term impact on an individual’s health. Fetal development is particularly susceptible to biological embedding through exposure to adverse environmental stimuli and stress. Prenatal cortisol exposure is thought to be one mechanism through which stress during pregnancy is conferred to the fetus. However, there is some evidence that environmental factors, such as social support, can buffer or ‘reprogram’ the negative effects of excessive prenatal cortisol exposure. This study examined the potential moderating effects of partner support on the association between prenatal cortisol exposure and a putative developmental risk factor in infancy: cortisol reactivity to stress.
Methods: In a sample of 295 women and their infants, we examined the effect of the maternal cortisol awakening response (CAR) in early and late pregnancy on infant cortisol reactivity in response to laboratory challenge at 3 and 6 months postnatal. Maternal reports of perceived partner support were assessed in early and late pregnancy, and at 3 and 6 months postnatal.
Results: Partner support provided in the first three months postnatal significantly moderated the association between early prenatal cortisol exposure and infant cortisol reactivity at 3, b = -0.06, p < .01, and 6, b = -0.05, p < .05, months of age. Specifically, a heightened maternal CAR in early pregnancy was associated with greater cortisol reactivity at 3 and 6 months, only in infants whose mothers reported low levels of partner support in the first 3 months postnatal. In contrast, infants whose mothers reported high levels of partner support had infants who were less reactive postnatal.
Conclusions: The findings suggest that cortisol exposures in early gestation “program” fetal HPA axis function, but ‘reprogramming’ is possible in the intergenerational context. Clinical Implications: Greater paternal involvement in caregiving has been associated with fewer child behavior problems and better psychological adjustment in later childhood. Our findings provide initial support for the notion that partner support in the early postnatal period may reduce infant cortisol reactivity and thereby reduce the risk for later behavior problems.

1177/SEXUALLY DIMORPHIC EFFECTS OF PRENATAL MATERNAL CORTISOL AND PSIYCHOLOGICAL DISTRESS ON INFANT HPA AXIS
Julia C. Poole, BA (Honours), Psychology, Letourneau Nicole, PhD, Faculty of Nursing, Tavis Campbell, PhD, Psychology, Gerry Giesbrecht, PhD, Paediatrics, University of Calgary, Calgary, AB, Canada
Background: In utero exposure to maternal cortisol during gestation is an established risk factor for developmental psychopathology. Maternal cortisol is believed to influence fetal development through structural and functional reorganization of physiological systems, such as the HPA axis. Both animal and human studies suggest that male and female fetuses are affected by maternal psychological distress in unique ways that result in sexually dimorphic outcomes. Nevertheless, few human studies have directly assessed the associations between prenatal cortisol exposure and infant cortisol reactivity and mood. We have assessed whether this effect is moderated by prenatal psychological distress or by fetal sex, both of which are clearly linked to developmental psychopathology.
Methods: Pregnant women’s (N=294) cortisol and psychological distress were prospectively assessed at two time points in pregnancy: ~15 weeks gestation (T1), and ~32 weeks gestation (T2). Maternal salivary cortisol and self-reports of psychological distress (Profile of Mood States) were measured four times a day over two days at each time point. At 3 months postpartum, infant cortisol (N=227) was assessed before (baseline) and after (5 min, 20 min, 40 min) a stressor (i.e., blood draw).
Data Analysis: Multilevel models were used to model trajectories of infant cortisol as a function of prenatal maternal cortisol, distress, and sex and their interactions. Separate analyses were conducted for the T1 and T2 exposures to determine if exposure timing influenced the results. Findings: Although infants of mothers with high distress at T1 had high cortisol at both time points, this was only reported for T1. Findings revealed both additive and interactive effects of prenatal cortisol and distress on infant reactivity. Furthermore, these effects were sexually dimorphic: prenatal cortisol and distress exposure had essentially opposite effects on male and female cortisol reactivity. Specifically, females were affected by prenatal exposure to high maternal distress, whereas males were not (p = .011). Additionally, females were affected by blunted patterns of diurnal maternal cortisol, whereas males were affected by exaggerated patterns of midurnal maternal cortisol (p = .005).
Discussion: Results showed that the associations between maternal cortisol during pregnancy and infant cortisol reactivity is moderated by sex. The findings suggest that sex differences in the effects of prenatal cortisol and distress on infant cortisol reactivity are a plausible mechanism by which maternal experiences during pregnancy contribute to sex differences in the development of psychopathology.

1260/ PRENATAL GLUCOCORTICOID ADMINISTRATION INFLUENCES CHILD HPA AXIS REGULATION
Michelle N. Edelmann, PhD, Psychology, University of Denver, Denver, CO, Curt A. Sandman, PhD, Psychiatry & Human Behavior, Laura M. Glynn, PhD, Department of Health, University of California, Irvine, California, Elysia P. Davis, PhD, Psychology, University of Denver, Denver, Colorado
Due to the rapid developmental changes that occur during the fetal period, prenatal influences can affect the developing central nervous system with lifelong consequences for physical and mental health. One proposed mechanism by which this occurs is via glucocorticoids, which can pass through the blood-brain barrier and target receptors throughout the central nervous system. The synthetic glucocorticoid, betamethasone, is routinely given prenatally to fetuses at risk for being born preterm. Due to imprecision in the diagnosis of preterm labor and clinical interventions, about a third of these babies will be born at term. Few studies have examined the lasting consequences of prenatal exposure to betamethasone on the regulation of the hypothalamus-pituitary-adrenal (HPA) axis in healthy children. The purpose of this study is to examine whether prenatal exposure to betamethasone alters diurnal cortisol in children who were born full term. Unlike endogenous glucocorticoids, betamethasone readily passes the placental barrier and thereby provides a more direct test of glucocorticoid exposure. Children (mean age of 8 years) were separated into two groups: children prenatally treated with betamethasone (n=18) and children naïve to prenatal synthetic glucocorticoids (n=61). To measure the circadian release of cortisol, multiple salivary samples were collected on a single day in the child’s home, including: at time of awakening: 30, 45, and 60 minutes after awakening; 30 minutes after the last feeding in the morning. Children prenatally treated with synthetic glucocorticoids showed a typical diurnal cortisol pattern that peaked in the morning (the cortisol awakening response) and gradually decreased throughout the day. Multilevel modeling revealed that even after accounting for covariates, children exposed to prenatal betamethasone had a blunted cortisol awakening response and diurnal slope compared to controls (p’s <0.01). These data suggest
that prenatal exposure to synthetic glucocorticoids disrupts the circadian regulation of the HPA axis among children born at term. As disrupted circadian regulation of cortisol has been linked to a variety of health problems, future research is needed to determine whether children exposed to prenatal synthetic glucocorticoids are at risk for poor mental and physical health.

1139/PRE-PREGNANCY BODY MASS INDEX AND GESTATIONAL WEIGHT GAIN MEDIATE THE ASSOCIATIONS BETWEEN NEIGHBOURHOOD SOCIOECONOMIC STATUS AND BIRTH OUTCOMES

Zahra M. Clayborne, BSc (Hons), Psychology, Gerald F. Giesbrecht, PhD, Paediatrics, University of Calgary, Calgary, Alberta, Canada, Rhonda C. Bell, PhD, Agricultural, Food & Nutritional Science, University of Alberta, Edmonton, Alberta, Canada, Lianne M. Tomfohr-Madsen, PhD, Psychology, University of Calgary, Calgary, Alberta, Canada

Lower neighbourhood-level socioeconomic status (SES) has been repeatedly associated with increased risk of adverse birth outcomes, even after controlling for individual-level SES. Few studies have empirically assessed mechanisms underlying the associations. Using data from the Alberta Pregnancy Outcomes and Nutrition (APeON) study (n = 1,974), a prospective pregnancy cohort in Alberta, Canada, the objectives of this study were to (1) examine relationships between neighbourhood SES and birth outcomes, and (2) explore the psychological and biological pathways that may underlie the relationships. Census-tract data was used to create a measure of neighbourhood SES. Using information from maternal questionnaires and medical records, four mediators (symptoms of depression, stressful life events, pre-pregnancy body mass index (BMI), gestational weight gain (GWG)), and six birth outcomes (low birth weight, small for gestational age (SGA), large for gestational age (LGA), macrosomia, preterm birth, Apgar scores <7) were examined. After adjusting for individual-level covariates, results from logistic regression analyses indicated that lower neighbourhood SES was directly associated with an increased risk of low birth weight (OR: 1.47, 95% CI: 1.12-1.93). Simple mediation analyses revealed significant indirect relationships between lower neighbourhood SES and increased risks of both preterm birth (b = 0.61, 95% CI: .010-.120) and macrosomia (b = 0.050, 95% CI: 0.017-.095) through higher pre-pregnancy BMI. Serial mediation analyses further revealed a significant indirect relationship between lower neighbourhood SES and increased risk of preterm birth through higher pre-pregnancy BMI and gestational weight gain (b = 0.014, 95% CI: .004-.031). These findings support past Canadian studies showing direct relationships between neighbourhood SES and adverse birth outcomes, and suggest that neighbourhood-level SES may influence birth outcomes through maternal weight.

Friday, March 11 from 1:30 to 2:30 pm
Brain, Body, Environment Interactions

1558/STRESSOR-EVOKED INTERLEUKIN-6 REACTIVITY CORRELATES WITH BRAINSTEM ACTIVATION IN HEALTHY MIDLIFE ADULTS.

Kimberly G. Lockwood, BA, Anna L. Marsland, PhD, Peter J. Gianaros, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Acute psychological stressors increase levels of circulating inflammatory markers, such as interleukin(IL)-6. Individual differences in the magnitude of these stressor-evoked inflammatory responses may relate to future inflammatory disease risk, however, the neural bases of these responses are uncertain. Previous work indicates that stressor-evoked IL-6 responses are partly driven by the autonomic nervous system (ANS), suggesting that functional brain systems orchestrate stressor-evoked ANS responding which might mediate IL-6 reactivity. We tested this possibility by assessing associations of functional neural activity in ANS control regions with magnitude of IL-6 response to acute psychological stress. Participants were 61 healthy adults (30-51 yrs; 33% male, 67% female) who completed the same stressor protocol in separate neuroimaging and laboratory sessions. In both, participants completed a Stroop color-word task and a multisource interference task. During neuroimaging, participants completed the tasks while undergoing functional magnetic resonance imaging (fMRI). During the laboratory session, blood samples were taken after 30 min of rest and 30 min after completing the two stressors. Voxel-wise region-of-interest (ROI) analyses focused on cortical, subcortical, and brainstem regions implicated in visceral control. ROI analyses used false-discovery rate thresholds to control for multiple tests. IL-6 reactivity covaried inversely with stressor-evoked activation in the dorsal pons (-4, -26, -24; t = 4.11, k = 265, PFD < 0.05). This association withstood correction for age, sex, and BMI. No other associations (positive or negative) with IL-6 were observed at corrected statistical thresholds. These results indicate that individual differences in stressor-evoked inflammatory responses relate to stressor-evoked activity in the pons. Our findings align with evidence that stressor-evoked brainstem activity relates to immune function via efferent and afferent autonomic pathways.
REACTIVITY TO SOCIAL THREATS: ASSOCIATIONS WITH SOCIOECONOMIC DISADVANTAGE

We examined whether the neural sensitivity to social threats may be further associated with children's hostility bias to peer's intent, which can be developed. Advancing the neurobiological understanding and measurement of these two emotions may ultimately contribute to more effective and sustainable empathy among professional caregivers.

1397/BR...
Eighteen studies involving 349 total participants met inclusion criteria, reporting 27 statistical maps and 192 activation coordinates. Studies utilized a variety of social, cognitive and affective task paradigms, as well as resting state metabolism paradigms. MKDA revealed consistent activations in right anterior insula and left parahippocampal gyrus (voxelwise pFWE<.05). Additional significant clusters were observed encompassing medial prefrontal and bilateral temporal cortices, cerebellum, and brainstem. In analyses comparing experimental design, increased immune stimulation more consistently activated anterior insula and medial frontal cortices, while studies using endogenous immune activity more consistently activated parahippocampal gyrus, cerebellum, andpons. The consistently reported activity within paralimbic, temporal, and insular cortices suggest that these systems might be associated with immune function across several distinct psychological paradigms. Comparisons of experimental design suggest that acute immune stimulation may preferentially recruit classical viscerosensory and visceromotor cortical areas, whereas individual differences in immune function might overlap with concomitant autonomic representation in the brain.

Supported by R01HL089850-08.

Friday, March 11 from 1:30 to 2:30 pm

Oncology: From Genes to Neuropathy

1142/STRESS MANAGEMENT-ASSOCIATED REDUCTIONS IN PRO-METASTATIC AND PRO-INFLAMMATORY LEUKOCYTE GENE EXPRESSION PREDICT 11-YEAR RISK OF DEATH IN BREAST CANCER PATIENTS

Laura C. Bouchard, M.S., Hannah M. Fisher, B.S., Psychology, University of Miami, Coral Gables, FL; Jamie M. Stagl, Ph.D., Psychiatry, Massachusetts General Hospital Cancer Center, Boston, MA; Bonnie B. Blomberg, Ph.D., Alain Diaz, Ph.D., Microbiology and Immunology, University of Miami Miller School of Medicine, Miami, FL; Devika R. Jatagir, M.S., Chelsea R. Amiel, B.A., Lisa M. Guenkenauf, M.S., Psychology, University of Miami, Coral Gables, FL; Suzanne Lechner, Ph.D., Psychiatry, University of Miami, Miami, FL; Charles S. Carver, Ph.D., Psychology, University of Miami, Coral Gables, FL; Susan Lutgendorf, Ph.D., Psychology, University of Iowa, Iowa City, IA; Steven W. Cole, Ph.D., Medicine, University of California, Los Angeles, Los Angeles, CA; Michael H. Antoni, Ph.D., Psychology, University of Miami, Coral Gables, FL.

Objective: Cognitive-behavior stress management (CBSM) predicts longer survival in breast cancer (BCa) patients. A potential biobehavioral mechanism to explain this effect is reduction of leukocyte pro-metastatic and pro-inflammatory gene expression. We showed that CBSM produces favorable changes in such genes over 6-12 months in BCa patients. Here we explored whether these changes in gene expression predict odds of survival at median 11-year follow-up.

Methods: Stage 0-III BCa patients were recruited 2-12 weeks post-surgery to participate in an RCT comparing 10-week group-based CBSM to a psychoeducation control. At study entry, 6-month, and 12-month follow-up, women reported demographic and health information confirmed by medical chart review and completed psychosocial questionnaires. A subset of 53 women provided blood samples for longitudinal analysis of leukocyte gene expression by microarray analysis. We focused on expression of specific pro-metastatic genes (MMP9, LMNA), pro-inflammatory genes (IL1A, IL1B, TNFSF10, TNFRSF21, IL6), and the COX2 enzyme (PTGS2), as these are relevant for cancer disease progression and are decreased post-CBSM. Survival data were collected at median 11-year follow-up from a state tumor registry. Logistic regressions were used to assess associations between 6-12 month changes in leukocyte gene expression and odds of survival controlling for age, race, partner status, and receipt of chemotherapy.

Results: Mean survival was 8.34 years (SD=3.40). Controlling for covariates, decreases in LMNA, PTGS2, and IL1A expression significantly predicted greater odds of survival (ps<0.05). Increases in TNFRSF21 and IL6 and greater odds of survival (ps<0.10). When restricted to women with invasive disease (stage I-III) at study entry, all results held and additional marginal associations emerged between decreases in TNFRSF21 and IL6 and greater odds of survival (ps<0.10).

Discussion: In the first year of treatment for primary non-metastatic BCa, favorable changes in leukocyte gene expression are related to increased odds of survival. If these changes are maintained, they may provide favorable changes in leukocyte gene expression after early intervention with CBSM as one potential biobehavioral mechanism through which psychosocial interventions affect clinical disease outcomes of BCa patients.

1680/OVARIAN CANCER SURVIVORS WITH SYMPTOMS OF PERIPHERAL NEUROPATHY ALSO HAVE HIGHER LEVELS OF SYMPTOMS CONSISTENT WITH VAGAL NEUROPATHY

Dana H. Bobhjberg, PhD, Psychiatry, University of Pittsburgh Cancer Institute, Pittsburgh, PA; Michael S. Gold, PhD, Charles C. Horn, PhD, Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA; Grace Campbell, PhD, Acute and Tertiary Care, Susan Sereika, PhD, Heidi Donovan, PhD, Health and Community Systems, University of Pittsburgh School of Nursing, Pittsburgh, PA.

Background: Persistent numbness and tingling in the extremities are a hallmark of chemotheraphy-induced peripheral neuropathy (CIPN) due to damage to somatic afferent nerves subserving pain pathways. Yet to receive research attention is the possibility that vagal afferents may share the same vulnerability to chemotherapy, altering viscerosensory input to the brain. We examined a critical prediction of this hypothesis, that cancer survivors evidencing CIPN will also report higher levels of persistent diffuse symptoms consistent with vagal neuropathy.

Methods: A secondary analysis was conducted using data from a subset of respondents to a survey of randomly selected members of the National Ovarian Cancer Coalition, with a history of ovarian cancer treated with chemotherapy and no evidence of current disease (n=563). The mean age of the sample was 53.1 yr; 71.7% were married; 54.5% were college graduates. A validated questionnaire was used to assess symptom severity (0-10) at its worst over the past week for 22 commonly reported symptoms, at a mean of 50.3 months post-treatment. Seven of the classic CIPN symptoms of numbness and tingling (N/T) were used to create study groups: 0 (n=116); low 1-3 (n=92); medium 4-6 (n=64); and high 7-10 (n=53) for evaluation of relationships with the severity of other symptoms reported. Levels of significance were Bonferroni-corrected for the number of comparisons (p<0.0024).
Results: Across the 21 symptoms examined, 14 showed significant relationships with N/T. Particularly strongly related was pain severity F(1,362)=25.15, p<.001, which corroborated N/T as indicative of CIPN. Consistent with the study hypothesis, other symptoms showing significant relationships to CIPN included: fatigue, F(1,362)=17.56, p<.001; bowel disturbance, F(1,362)=16.22, p<.001; nausea, F(1,362)=13.06, p<.001; vomiting, F(1,362)=10.77, p<.001; and abdominal bloating, F(1,362)=10.16, p<.001; in contrast, nonsignificant relationships were found for: sexual problems, hot flashes, urinary problems, headaches, mood, weight loss, and weight gain.

Conclusions: Ovarian cancer survivors with CIPN also reported higher levels of symptoms related to affects on visceral afferent signaling. These results suggest the importance of new research efforts to examine mechanisms and clinical implications of vagal neuropathy in ovarian cancer survivors.

1567/NEUROFEEDBACK AS TREATMENT FOR CHRONIC CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY (CIPN)
Sarah Prinsloo, PhD, Palliative, Rehabilitation, and Integrative M, Diane Novy, PhD, Larry Driver, MD, Pain Medicine, Lois Ramondetta, MD, Gynecologic Oncology, Cathy Eng, MD, Gastrointestinal Oncology, Gabriel Lopez, MD, Richard Lee, MD, Palliative, Rehabilitation, and Integrative M, MD Anderson Cancer Center, Houston, TX, Randall Lyle, PhD, Marriage and Family Therapy, Mount Mercy University, Cedar Rapids, Iowa, Lorenzo Cohen, PhD, Palliative, Rehabilitation, and Integrative M, MD Anderson Cancer Center, Houston, TX
Background: CIPN is a common side effect of chemotherapy, leading to impairment in daily activities and diminished quality of life. Neurofeedback (NF) is a brain-training paradigm that induces neuroplasticity to modulate brain activity and therefore improve CIPN symptoms. Methods: Seventy-one (62 female; mean age=63; 52 breast, 8 gynecologic, 11 other; average length of symptoms=24 mos) cancer survivors >3 months from completing chemotherapy who reported >3 on the NCI’s neuropathy rating scale, were randomized to a NF group (35) and underwent 20 sessions of EEG NF or a wait-list control group (WL; 36). We used quantitative electroencephalography (qEEG) neural imaging to determine any EEG patterns unique to CIPN and then provided NF to change aberrant brain signatures. The qEEG, Patient Health Questionnaire (PHQ), and Brief Pain Inventory (BPI) were measured from blood samples collected serially across the course of gestation as well as postpartum. We focus on the hormones estradiol and placental corticotropin releasing hormone (pCRH) because mood disturbance during the perinatal phase is most likely mediated by the high exposures to reproductive and stress hormones that occur during this life phase. We propose a novel approach for measuring PPD by utilizing several instruments to gather information on postpartum mood: CESD (Center for Epidemiological Studies Depression Scale), EPDS (Edinburgh Postnatal Depression Scale), STAI (State-Trait Anxiety Inventory), and PSS (Perceived Stress Scale). We performed exploratory factor analysis on the full list of items from all scales. The number of components retained by the optimal coordinate, minimum average partial correlation, and parallel analysis all support a 3-factor structure, confirmed by chi-square test (X²=1435, p<.001). Using varimax rotation, we identified the following factors that together explain the data: Mid-gestation (25 weeks) pCRH was correlated with Factor 1 (p<0.01), EPDS and CESD (p<0.03; 0.06). Late-gestation (37 weeks) pCRH was correlated with Factors 2 and 3 (p<0.01; p<0.04), and no other metrics. These results support the notion that prenatal hormones are implicated in PPD etiology. Different hormones may exert influence upon different aspects of PPD, and our factor analysis approach may shed light on biomarkers for symptom clusters that are not evident in approaches limited to traditional instruments. Additionally, there may be critical periods of sensitivity in which reproductive and stress hormones may influence different aspects of mood. A clearer understanding of PPD symptoms could improve our ability to recognize the disorder, and a better knowledge of PPD biomarkers could offer vital opportunities for interventions.

1685/PRENATAL ENDOCRINE PREDICTORS OF SYMPTOM CLUSTERS IN POSTPARTUM DEPRESSION
Molly Fox, PhD, Pediatrics, UC Irvine, Orange, CA, Laura Glynn, PhD, Psychology, Chapman University, Orange, CA, Laura Glynn, PhD, Psychology, Chapman University, Orange, CA, Laura Glynn, PhD, Psychology, Chapman University, Orange, CA
Background: CIPN is a common side effect of chemotherapy, leading to impairment in daily activities and diminished quality of life. Neurofeedback (NF) is a brain-training paradigm that induces neuroplasticity to modulate brain activity and therefore improve CIPN symptoms. Methods: Seventy-one (62 female; mean age=63; 52 breast, 8 gynecologic, 11 other; average length of symptoms=24 mos) cancer survivors >3 months from completing chemotherapy who reported >3 on the NCI’s neuropathy rating scale, were randomized to a NF group (35) and underwent 20 sessions of EEG NF or a wait-list control group (WL; 36). We used quantitative electroencephalography (qEEG) neural imaging to determine any EEG patterns unique to CIPN and then provided NF to change aberrant brain signatures. The qEEG, Patient Health Questionnaire (PHQ), and Brief Pain Inventory (BPI) were measured from blood samples collected serially across the course of gestation as well as postpartum. We focus on the hormones estradiol and placental corticotropin releasing hormone (pCRH) because mood disturbance during the perinatal phase is most likely mediated by the high exposures to reproductive and stress hormones that occur during this life phase. We propose a novel approach for measuring PPD by utilizing several instruments to gather information on postpartum mood: CESD (Center for Epidemiological Studies Depression Scale), EPDS (Edinburgh Postnatal Depression Scale), STAI (State-Trait Anxiety Inventory), and PSS (Perceived Stress Scale). We performed exploratory factor analysis on the full list of items from all scales. The number of components retained by the optimal coordinate, minimum average partial correlation, and parallel analysis all support a 3-factor structure, confirmed by chi-square test (X²=1435, p<.001). Using varimax rotation, we identified the following factors that together explain the data: Mid-gestation (25 weeks) pCRH was correlated with Factor 1 (p<0.01), EPDS and CESD (p<0.03; 0.06). Late-gestation (37 weeks) pCRH was correlated with Factors 2 and 3 (p<0.01; p<0.04), and no other metrics. These results support the notion that prenatal hormones are implicated in PPD etiology. Different hormones may exert influence upon different aspects of PPD, and our factor analysis approach may shed light on biomarkers for symptom clusters that are not evident in approaches limited to traditional instruments. Additionally, there may be critical periods of sensitivity in which reproductive and stress hormones may influence different aspects of mood. A clearer understanding of PPD symptoms could improve our ability to recognize the disorder, and a better knowledge of PPD biomarkers could offer vital opportunities for interventions.

1581/ACCULTURATION, BLUNTED MATERNAL CORTISOL LEVELS ON INFANTS STRESS RESPONSE CORTISOL LEVELS IN THE MEXICAN-AMERICAN POPULATION
Myin Melchor, BA, Psychology, California State University, San Marcos, Vista, CA
Background: CIPN is a common side effect of chemotherapy, leading to impairment in daily activities and diminished quality of life. Neurofeedback (NF) is a brain-training paradigm that induces neuroplasticity to modulate brain activity and therefore improve CIPN symptoms. Methods: Seventy-one (62 female; mean age=63; 52 breast, 8 gynecologic, 11 other; average length of symptoms=24 mos) cancer survivors >3 months from completing chemotherapy who reported >3 on the NCI’s neuropathy rating scale, were randomized to a NF group (35) and underwent 20 sessions of EEG NF or a wait-list control group (WL; 36). We used quantitative electroencephalography (qEEG) neural imaging to determine any EEG patterns unique to CIPN and then provided NF to change aberrant brain signatures. The qEEG, Patient Health Questionnaire (PHQ), and Brief Pain Inventory (BPI) were measured from blood samples collected serially across the course of gestation as well as postpartum. We focus on the hormones estradiol and placental corticotropin releasing hormone (pCRH) because mood disturbance during the perinatal phase is most likely mediated by the high exposures to reproductive and stress hormones that occur during this life phase. We propose a novel approach for measuring PPD by utilizing several instruments to gather information on postpartum mood: CESD (Center for Epidemiological Studies Depression Scale), EPDS (Edinburgh Postnatal Depression Scale), STAI (State-Trait Anxiety Inventory), and PSS (Perceived Stress Scale). We performed exploratory factor analysis on the full list of items from all scales. The number of components retained by the optimal coordinate, minimum average partial correlation, and parallel analysis all support a 3-factor structure, confirmed by chi-square test (X²=1435, p<.001). Using varimax rotation, we identified the following factors that together explain the data: Mid-gestation (25 weeks) pCRH was correlated with Factor 1 (p<0.01), EPDS and CESD (p<0.03; 0.06). Late-gestation (37 weeks) pCRH was correlated with Factors 2 and 3 (p<0.01; p<0.04), and no other metrics. These results support the notion that prenatal hormones are implicated in PPD etiology. Different hormones may exert influence upon different aspects of PPD, and our factor analysis approach may shed light on biomarkers for symptom clusters that are not evident in approaches limited to traditional instruments. Additionally, there may be critical periods of sensitivity in which reproductive and stress hormones may influence different aspects of mood. A clearer understanding of PPD symptoms could improve our ability to recognize the disorder, and a better knowledge of PPD biomarkers could offer vital opportunities for interventions.
cognitive, and behavioral differences in the developing fetus. Minority groups may be at increased risk as they experience higher levels of stress and unique culturally relevant stressors, including acculturation, which is a process in which an individual adjusts his/her own values to match the mainstream values of the host country. However, it is unclear if acculturation is associated with the maternal-fetal programming of stress. Cortisol, the end product of the hypothalamic-pituitary (HPA) axis, has been suggested as the mechanism contributing to the fetal programming of stress. Stress-related changes in maternal cortisol are linked to alterations in neonate cortisol levels, an early marker of risk for mental health behaviors in offspring. The current study aimed to investigate the relationship between maternal acculturation and cortisol levels on the development of the acute stress response in offspring. It was hypothesized that maternal acculturation and blunted cortisol levels during pregnancy would negatively be associated with the neonatal stress response.

Forty pregnant Mexican-American women were recruited as part of an ongoing longitudinal study. Maternal acculturation and salivary cortisol was assessed during the first trimester of pregnancy. Acculturation was measured through the Acculturation Rating Scale for Mexican Americans, which measures both Mexican and Anglo cultural orientation. Maternal salivary collection was collected four times/day for 3 days and area under the curve (AUC) computed. Infant acute stress response was assessed within the first week of birth during a mock medical exam, in which salivary cortisol was collected at three time points (baseline, reactivity, and recovery). Results show a negative relationship between Mexican Orientation and infant stress recovery (p = 0.005), such that neonates of mothers that adhere more to Mexican culture show lower levels of infant salivary cortisol at recovery, a typical response. Results also show positive relationship between maternal salivary cortisol (AUC) and infant stress recovery (p =0.04), such that infants with increased recovery cortisol levels (atypically high levels of stress) were more likely to be born from mothers with a larger salivary cortisol AUC. Together this work suggests that both maternal cultural stressors and HPA activity are associated with fetal development of the HPA axis, highlighting the long-term effects stress during pregnancy can have on the developing fetus in vulnerable at risk populations. These findings suggest the needed for culturally relevant obstetrics care that address cultural adaptation.

1694/ CBSM EFFECTS ON STRESS OUTCOMES AMONG LOW-INCOME MOTHERS: ROLE OF ETHNICITY AND PRENATAL ANXIETY
Guido Urizar, PhD, Psychology, California State University, Long Beach, CA, Anthony Rodriguez, M.A., Psychology, UCLA, Los Angeles, CA, Ilona Yim, PhD, Psychology & Social Behavior, UCI, Irvine, CA, Chris Dankel Schetter, PhD, Psychology, UCLA, Los Angeles, CA
Elevated stress and cortisol patterns during pregnancy may lead to significant long-term health problems for low-income mothers and their infants. Yet, few studies have examined how to regulate stress outcomes in this population. The current randomized trial examined the impact of a prenatal cognitive behavioral stress management (CBSM) intervention on reducing perceived stress (Perceived Stress Scale) and salivary cortisol levels (Area Under the Curve) compared to a control (AC) group. CBSM stress and cortisol were examined by ethnicity and prenatal anxiety levels. Our sample consisted of 100 low-income pregnant women (mean age=27±4 years; 75% annual income<$19K; 71% Latina) with low (n=53) or high anxiety (n=47) during pregnancy (>17 on the Prenatal Anxiety Scale). Women were randomized (stratified by anxiety) to either an eight-week CBSM group intervention or AC group and provided seven salivary cortisol samples (four morning samples, 12pm, 4pm, and 8pm samples on one collection day) at baseline (1st trimester, <16 weeks of gestation), immediately after their prenatal program (2nd trimester), during the third trimester, and at three months postpartum. Women in the CBSM group intervention (n=55) attended weekly sessions in which a clinically trained researcher taught relaxation and coping skills, whereas women in the AC group (n=45) received weekly print-based prenatal health information by mail. Results showed that women high in prenatal anxiety benefited more from the CBSM intervention than those low in anxiety. More specifically, high anxiety women receiving the CBSM intervention showed lower perceived stress levels over time compared to high anxiety women in the AC group F(2, 37)=6.32, p<.01. Among high anxiety women, non-Latina women receiving the CBSM intervention demonstrated lower cortisol levels over time compared to Latina women F(4, 34)=4.93, p<.05. No intervention effects were found for women low in anxiety. These findings support prenatal CBSM group interventions in improving stress outcomes among high anxiety women and suggest the need to further test and culturally tailor these interventions for Latinas.

Friday, March 11 from 4:15 to 5:00 pm
The Psychobiology of Hypertension
1208/ CARDIOVASCULAR REACTIVITY PATTERNS AND PATHWAYS TO HYPERTENSION: A MULTIVARIATE CLUSTER ANALYSIS
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A substantial evidence links exaggerated maternal stress induced blood pressure reactivity to future hypertension but the results for heart rate reactivity are less clear. For this reason multivariate cluster analysis was carried out to examine the relationship between heart rate (HR) and systolic (SBP) and diastolic (DBP) blood pressure reactivity patterns and physician-diagnosed hypertension in a large prospective cohort (N = 671; age range 55-60 years, 52.2% female). HR, SBP, and DBP were continuously recorded during a baseline period and a stress battery. These stress tests were defined as the arithmetic difference between baseline and stress battery means for HR, SBP, and DBP. Four distinct clusters emerged with statistically different HR, SBP, and DBP reactivity patterns; Cluster 1 was characterised by a relatively robust blood pressure and HR response, Cluster 2 by a relatively modest HR and blood pressure response, Cluster 3 by relatively blunted reactivity overall, and Cluster 4 by exaggerated blood pressure reactivity only. Overall, cluster membership significantly predicted hypertension diagnosis at 5 year follow-up, OR = 1.55, 95% CI 1.25-1.94, p < .001, at follow-up, sensitivity analyses, with Cluster 1 as a reference cluster, revealed Cluster 3, OR = 2.03, 95% CI, 1.00-4.13, p = .05, and Cluster 4, OR = 3.79, 95% CI, 1.72-8.33, p = .001, conferred the greatest risk. BMI, measured at time of stress testing, was revealed as a mediator of the increased hypertension risk for Cluster 3 as adjustment for BMI abolished the increased risk; the increased hypertension risk for Cluster 4 withstood adjustment for a host of confounders including, among others, hypertension medication use, BMI smoking status, alcohol consumption, depressive symptomatology, and socioeconomic status at time of stress testing. These results provide novel evidence of a potential pathway linking blunted reactivity to hypertension and support the already established direct link between exaggerated blood pressure reactivity and hypertension. Moreover they reinforce the consideration of multivariate patterns of stress reactivity in the prediction of disease.

1294/ A PRELIMINARY REPORT ON ETHNIC DIFFERENCES IN BAROREFLEX FUNCTION UNRAVELING THE CARDIOVASCULAR CONUNDRUM
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Health disparities exist such that in comparison to European Americans (EAs), African Americans (AAs) have an elevated risk for mortality from the top leading causes of death in America, including cardiovascular disease. AAs show signs of vascular dysfunction, which leads to greater total peripheral resistance (TPR) mediated by blood pressure (BP) elevations. Yet, a recent meta-analysis found AAs to have greater vagally mediated heart rate variability (vHRV) at rest and to show a positive relation to EAs that is considered cardio-protective and is associated with lower TPR and BP. We termed this counterintuitive pattern of findings in AAs the Cardiovascular Conundrum. However, the physiological mechanism underlying this phenomenon has not yet been explored. Interestingly, the baroreflex is comprised of three branches, adjusting (i) inter-beat intervals (IBIs)/vHRV (ii) TPR, and (iii) stroke volume (SV) in

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accordance with changes in BP – a process known as the baroreflex. Thus, differences in baroreflex function may help explain how AAs maintain higher TPR and BP activity despite higher vagal activity in comparison to EAs. The following study tests these notions in 69 college age participants (48 females, 25 AAs) who completed a 5-minute resting-baseline period while attached to a beat-to-beat BP device and a 3-lead electrocardiogram. Baroreflex function was analyzed using a custom program that assesses baroreflex sensitivity (BRS; the magnitude of changes in cardiovascular activity in accordance with BP changes) and effectiveness (BEI; the ratio of BP changes that elicit changes in cardiovascular activity) of the baroreflex. The root mean of successive differences (RMSSD) was calculated as the index of vmHRV. In line with previous research, AAs showed greater RMSSD in comparison to EAs (t(67) = 2.15, p = .036). Analyses also showed a trend of AAs to have slightly higher B1 BRS in comparison to EAs (t(67) = 1.43, p = .157), suggesting that in AAs, the baroreflex is more sensitive to changes in BP in comparison to EAs. However, AAs showed lower BEI of the B1 (t(67) = 1.15, p < .05) and TPR (t(67) = 3.25, p < .01) branch of the baroreceptor in comparison to EAs. No significant results were yielded for SV. These data suggest that in AAs in a resting state, TPR is not as effectively regulated in response to changes in BP, and despite higher vagal tone (higher vmHRV), BP and TPR is not effectively regulated via the baroreflex in comparison to EAs. Overall, these preliminary data suggest that AAs are able to maintain both higher vmHRV and greater TPR and BP by way of a less effective baroreceptor in comparison to EAs. These results have major implications for health disparities – BEI should be a primary target in helping minimize the mortality rate from CVD and other related diseases amongst AAs.

1511/CHILDREN’S CARDIOMETABOLIC RISK PREDICTED BY PSYCHOSOCIAL STRESS REPORTS AND STRESS BIOMARKERS
Nathalie Michels, PhD, Isabelle Sioen, PhD, Stéfana De Henauw, Prof., Public Health, Ghent University, Gent, OV, Belgium
Objective: Psychosocial stress might be a potent predictor of cardiometabolic risk. Since cardiometabolic risk already accumulates during early life, our goal is to test questionnaire data and two biomarkers, salivary cortisol and heart rate variability (HRV), as predictors of total cardiometabolic risk and its four subscales in ‘healthy’ children. Methods: In 301 Belgian children (6-12y), cardiometabolic risk was measured by (1) waist circumference (WC); (2) diastolic (DBP) and systolic (SBP) blood pressure; (3) high-density lipoprotein (HDL) and triglycerides (TRG); (4) glucose homeostatic model assessment (HOMA). Total metabolic risk was calculated using the sum of sex- and age-specific z-scores of the components xWC=xSBPzDBP/2+(TRGz-HDL)z/2HOMA. Psychosocial stress reports were collected by the Coddington life event questionnaire on stressors, strengths and difficulties questionnaire on behavioral problems and self-reported negative emotions. As stress biomarkers, a 5-minute HRV measurement and a 2-day cortisol collection (including daily output and the cortisol awakening response) were performed. Linear regressions were adjusted for age, sex and socioeconomic status. Additional adjustments for diet and physical activity did not change the results.

Results: WC was not significantly predicted by the stress measures. Blood pressure was predicted by more behavioral problems (β=0.089) and low parasympathetic activity in HRV measures (β=0.104). Lipid status was predicted by overall cortisol output (β=0.184) and more behavioral problems (β=0.079). HOMA was predicted by more stressors (β=0.122) and higher cortisol awakening response (β=0.124). Total cardiometabolic risk was predicted by more stressors (β=0.219) and behavioral problems (β=0.193).

Discussion: The results confirm stress as a predictor of cardiometabolic health already during childhood and therefore urge for stress interventions early in life. Only the subcomponent waist was not influenced by the stress measures. The two biological stress systems had different effects: cortisol (marker of the HPA-axis) was associated with unhealthy glucose and lipid homeostasis while HRV (marker of the parasympathetic activity) was associated with blood pressure. Within the next months, associations with hair cortisol (more chronic exposure) will be tested, to present at the congress.

Friday, March 11 from 4:15 to 5:00 pm

Pain

1124/CHRONIC PAIN IS ASSOCIATED WITH LONELINESS AND REDUCED SOCIAL FUNCTIONING
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Experiencing pain can be a socially isolating experience. When in pain, people often report wanting to be “left alone,” and pain can cause people to disengage from important social and recreational activities. Additionally, pain can exacerbate depressive thoughts, making people feel lonelier than they are. Thus, chronic pain might lead to pervasive feelings of loneliness. Over time, it may also lead to reduced social support and greater social strain. The current study analyzed data from 239 adults who reported having no bodily pain over the past four weeks and 139 adults who reported having daily bodily pain over the past four weeks. Average age of the sample was 53.66 years and 53.6% (n = 217) of the sample was female. Social functioning was assessed by a trained experimenter in a phone interview. Participants completed a questionnaire assessing social support and strain across different domains (i.e., family, friends, spouses, and coworkers), in addition to ratings of loneliness. They completed a follow up interview between one and four years after their initial phone interview (average time between interviews = 1.67 years, Range = 0.50 – 4.41 years later). At the time of the initial phone interview, those reporting daily pain had higher levels of loneliness than those without pain, F(1, 409) = 20.56, p < .001. They also reported having less family support (F(1, 396) = 21.55, p < .001) and more social strain from family and friends than pain-free adults (F(1,396) = 17.88, p < .001 for family, F(1,406) = 6.31, p = .01 for friends). No associations were found for support or strain from spouses or coworkers (all p > .05). Those who reported daily pain at the time of the initial interview also reported higher levels of loneliness at follow up, even after controlling for loneliness at the initial interview (B = -0.30, SE = 0.12, p < .018). Cumulatively, these results reveal that the experience of pain is associated with increased loneliness, lower perceived levels of social support, and higher levels of social strain. Future longitudinal research should test factors and mechanisms that promote resilience to pain-related social disruptions.

128/THE IMPACT OF ANXIETY DISORDERS ON WORK PRODUCTIVITY AMONGST NON-CARDIAC CHEST PAIN PATIENTS
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Background: Anxiety disorders affect 40% of emergency department patients with non-cardiac chest pain (NCCP). NCCP is a well-recognized source of disability and work absenteeism. Findings suggest that work absenteeism ranges to 29% amongst NCCP patients. Purpose: This study aims to explore the association between the presence of anxiety disorders and loss in work productivity amongst NCCP patients. Procedure: This cross-sectional study includes 441 emergency department patients with NCCP. The presence of anxiety disorders and work productivity were assessed with the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV) and an abbreviated version of the health cost questionnaire during a phone interview. Main findings: The study reveals that NCCP patients with anxiety disorders are 2.9 (95%, CI = 1.99-4.25) times more likely to report reductions in work productivity than patients without anxiety disorders. Patients with anxiety disorders also report a decrease in work productivity (F(1,441) =34,770, p = 0.000) than patients without an anxiety disorder. Finally, the number of anxiety disorders is positively correlated with loss in work related productivity in these patients (r= .313, p <.001). Conclusion: These findings illustrate the contributing effect of anxiety disorders on work productivity. Loss in NCCP patients with anxiety disorders are at higher risk of having reduced work productivity. Psychological interventions preventing and targeting anxiety symptoms could enhance work productivity amongst NCCP patients.

1314/HOW DOES OUR DEFINITION OF RECURRENT NON-CARDIAC CHEST PAIN AFFECT ITS PREVALENCE AND CLINICAL RELEVANCE?
Guillaume Foldes-Busque, Psy.D., Ph.D., Joanne Castonguay, B.A., Isabelle Denis, Psy.D., Ph.D., Psychology, Université Laval, Quebec, Quebec, Canada, Richard Fleet, M.D., Ph.D., Patrick Archambault, M.D., M.S., Emergency Medicine, Centre hospitalier affilié universitaire de Lévis, Quebec, Quebec, Canada, Clermont Dionne, Ph.D., Medicine, Université Laval, Quebec, Quebec, Canada
Introduction: Non-cardiac chest pain (NCCP) is a prevalent condition in medical settings. Despite a generally favorable prognosis, NCCP is a source of functional impairments in 17 to 63% of patients. It is generally accepted that NCCP is often a recurrent or chronic condition. However, the prevalence of recurrent NCCP varies greatly across studies, ranging from 45 to 80%. The fact
that these prevalence rates differ greatly from those of functional impairments related to NCCP raises questions about the clinical relevance of some current definitions of recurrent NCCP.

Objectives: 1) To compare the prevalence rate of recurrent NCCP according to different definitions and 2) to document their association with clinically significant level of functional impairment.

Method: A total of 428 (Mean age = 53.6, SD = 15.6; 54% males) emergency department consecutive patients with NCCP were recruited and followed up over a 6-month period. Patients were interviewed, through the phone, on NCCP and associated levels of impairment in the social, family, work and physical domains.

Results: At the 6-month follow-up, 23% of patients reported moderate to severe levels of impairment in social, family, work or physical domains. Also, 53% reported at least 1 episode of chest pain, 23% reported at least monthly chest pain and 14% suffered from weekly or daily episodes. Moderate to severe level of functional impairment was observed in 41% of patients with at least 1 NCCP episode in the last 6 months. Of those patients, 71% reported 1 episode of NCCP or more per month. Specifically, 56% of patients suffering from at least monthly chest pain and 58% of patient with 1 or more NCCP episodes each week reported significant levels of impairment.

Conclusions: Over half of patients reporting at least 1 recurring episode of NCCP 6 month after consulting in a emergency department were significantly impaired by their symptoms. Defining NCCP recurrence as at least 1 monthly episode in the last 6 months captured only 36% of patients that reported significant impairment in everyday functioning. Alternative and more comprehensive definition of recurrent NCCP will also be discussed.

Friday, March 11 from 4:15 to 5:00 pm

Psycho-oncology

167/REACTIONS TO A NEW CANCER CAREGIVER ROLE DIFFERENTIALLY RELATED TO OBJECTIVE AND SUBJECTIVE PHYSICAL AND MENTAL HEALTH

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Studies have shown the adverse effect of global stress of caregiving on the caregivers’ mental health and physical health. However, lack of specificity in the sources of caregiving stress and the role of gender, and self-report in existing studies have limited research and clinical implication. This study aimed to address these concerns by investigating various aspects of caregiving stress around the time of cancer diagnosis and including biological stress markers. Family caregivers of newly-diagnosed colorectal cancer patients (N=92, 75% female, 64% Hispanic, age M=51, time since diagnosis M=3 months) were included in the subsequent analysis. Various aspects of caregiving (i.e. lack of family support, impact on daily schedule, and self-esteem as a caregiver) were assessed using the Caregiver Reaction Assessment. Self-reported physical health (PH) and mental health (MH: MOS SF-12) and biological stress markers using salivary cortisol (at waking and change from waking to bedtime) were outcomes that were examined simultaneously. Age, ethnicity, and familial relationship (spouse vs. non-spouse) served as covariates.

General linear modeling revealed after controlling for covariates, females reported poorer PH (B=-6.70); lack of family support related to higher awakening cortisol and poorer MH (B=4.59, -3.10); and impact on schedule related to poorer MH (B=3.34), ps<.05. In addition, impact on schedule x gender interaction effect was significant on cortisol change (p<.001). Disrupted daily schedule related to greater change from waking to bedtime which was only the case among males.

Findings pinpoint family members’ stress reaction to their new caregiver role, particularly the perception of lacked family support is readily manifested in biomarkers and self-reported MH shortly after cancer diagnosis. During this time, family cancer caregivers may benefit from psychosocial interventions designed to improve their effective recruitment of other family members’ support and sharing of caregiving responsibility. Findings also suggest gender plays a significant role, whereby increased disruption in daily schedule by engaging in the caregiver role may indicate greater social integration among men whose caregiver role is traditionally unexpected. Further investigations of specificity of caregiving stress and gender in long-term health outcomes are warranted.

1268/COGNITIVE BEHAVIORAL STRESS MANAGEMENT EFFECTS ON MOOD IN BREAST CANCER PATIENTS PRESENTING WITH ELEVATED CANCER-SPECIFIC DISTRESS IN THE WEEKS AFTER SURGERY

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Objective: Cognitive-behavioral stress management (CBMS) improves adaptation to primary treatment for breast cancer (BCa), including decreasing depression and increasing positive mood. It is plausible that patients experiencing the greatest cancer-specific distress in the weeks after surgery stand to benefit most from CBSM-related mood improvements. This study tests whether women who present at baseline with greater cancer-specific thought intrusions experience greater CBMS effects on depressive symptoms and positive mood over the initial year of treatment.

Methods: Women with Stages 0-III (BCa) recruited 2-12 weeks after surgery were randomized to either a 10-week group CBSM intervention or a 1-day psychoeducational (PE) control group. They completed questionnaires at study entry (T1), 6 (T2), and 12 (T3) month follow-ups. Cancer-specific distress was measured by the intrusion subscale of the Impact of Event Scale (IES). Mood was measured with the positive affect (PA) and depression subscales of the Affect Balance Scale (ABS).

Results: Of 240 women recruited at study entry, 175 provided complete data at follow-up (CBSM = 90, PE = 85). We divided the sample at the median on initial IES-intrusion scores. We conducted a 2 (CBSM vs. PE) X 2 (high vs. low intrusion) X 3 (Time) split-plot design repeated measures ANOVA. Controlling for age, stage and time since surgery, we found a significant three-way interaction for depression, F(2, 334) = 3.98, p=.02, and a marginally significant interaction for PA, F(2, 330) = 2.42, p=.09. In the high intrusive group, depression declined significantly over the study within the CBSM condition (M = 11.37, 9.48, 8.45, for T1,T2, T3, respectively; p <.002) but not in PE subgroup, (M = 10.78, 9.63, 9.98, for T1 to T3, respectively; p > .05). The groups diverged most at 12 month follow-up. In the low intrusive group, both CBSM and PE subgroups showed a decline in depressive symptoms and an increase in PA over time, but no condition x time interaction were observed (see figure 1).

Discussion: CBMS influenced depressive symptoms and positive mood most among (BCa) patients experiencing high levels of cancer-specific distress in the weeks after surgery. This pattern of results suggests that CBMS was important for promoting better mood states well after the intervention training period as these women moved into early survivorship.
105/REDUCTIONS IN LEUKOCYTE AdVERSITY-RELATED GENE EXPRESSION WITH STRESS MANAGEMENT DURING PRIMARY TREATMENT FOR BREAST CANCER PREDICT GREATER DISEASE FREE SURVIVAL AT 11 YR FOLLOW-UP
Michael H. Antoni, Ph.D., Laura Bouchard, M.S., Psychology, University of Miami, Coral Gables, Florida, Jamie Stagl, Ph.D., Psychiatry, Mass General Hospital, Boston, MA, Lisa Gudenkauf, M.S., Desvika Juagtr, M.S., Psychology, University of Miami, Coral Gables, Florida, Suzanne Lechner, Ph.D., Psychiatry, University of Miami School of Medicine, Miami, Florida, Charles S. Carver, Ph.D., Psychology, University of Miami, Coral Gables, Florida, Steve Cole, Ph.D., Medicine, UCLA, Los Angeles, California, Susan Latgendorf, Ph.D., Psychology, University of Iowa, Iowa City, Iowa, Marc Lippman, M.D., Medicine, Bonnie Blomberg, Ph.D., Microbiology/Immunology, University of Miami School of Medicine, Miami, Florida

Objectives. Cognitive behavioral stress management (CBSM) improves disease outcomes in breast cancer (BCa) patients. Biobehavioral mechanisms to explain these effects may include reducing the leukocyte conserved transcriptional response to adversity (CTRA) (up-regulated pro-inflammatory, down-regulated antiviral and antibody-related genes) influences on disease recurrence. We tested whether changes in CTRA gene expression occurring with group-based CBSM delivered during primary treatment for non-metastatic BCa predicted greater disease free survival (DFS) over the long term.

Methods. Women with Stage 0 – III BCa were recruited < 12 wks after surgery and provided blood, mood, demographic and health information before randomization to 10 wk CBSM (N = 120) or psychoeducation control group (N = 120). Survival analyses (Weibull Accelerated Failure) examined CBSM effects on DFS (time to recurrence/new cancer) over 8 – 15 yrs (11 yr mdn). Mixed model analyses examined effects on leukocyte expression of 53 genes reflecting CTRA in women with viable blood samples over 6 – 12 months. Cox regression models assessed CTRA prediction of 11 yr DFS.

Results. Average DFS was 5.92 (SD = 3.9) yrs. Those randomized to CBSM showed greater DFS in all cases (HR=0.45; 95% CI [0.17, 1.18]; p=0.083) and in 197 cases of invasive disease (Stage I – III) (HR=0.24; 95% CI [0.07, 0.82]; p=0.011) controlling for age, stage, tumor size, Her2/neu status, and hormone therapy. CBSM was associated with greater decreases in CTRA gene expression, and specifically decreased expression of pro-inflammatory cytokines and chemokines and pro-metastatic tissue remodeling genes, and increased interferon-related genes, all p’s < .05. Decline in CTRA gene expression over the initial 6 – 12 mo period predicted decreased 11-yr disease recurrence risk, after controlling for potential confounders, p < .05.

Conclusions: CBSM delivered early in primary treatment for BCa predicts longer 11yr disease free interval. CBSM alters the expression of genes mediating inflammation, antiviral immunity and antibody processes during the initial year of primary treatment, and these changes, in turn, predict long-term disease outcomes. CBSM also improved affect in this cohort, and these changes paralleled reductions in CTRA gene expression. Thus CBSM may improve affective status and adversity-related gene programs in ways that promote better health outcomes over the long term, identifying a biobehavioral oncology pathway to exploit in future work.

Friday, March 11 from 4:15 to 5:00 pm
Modulating Mental Health Through External Factors
1288/OMEGA-3 SUPPLEMENTATION AND THE NEURAL CORRELATES OF MOOD AND IMPULSIVITY: A DOUBLE-BLIND, RANDOMIZED, PLACEBO-CONTROLLED TRIAL IN MIDLIFE ADULTS
Annie T. Ginty, PhD, Psychiatry, Matthew F. Muldoon, MD, Psychology, University of Pittsburgh, Pittsburgh, PA, Dora Kuan, MS, Psychology, Pittsburgh, Pittsburgh, PA, Brittny Schirda, MS, Psychology, The Ohio State University, Columbus, Ohio, Thomas W. Kamarck, PhD, Psychology, J.R. Jennings, PhD, Psychiatry, Stephen B. Manuck, PhD, Peter J. Gianaris, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Cross-sectional evidence suggests that higher consumption of the long-chain, n-3 polyunsaturated fatty acids (PUFAs), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), relates to reduced negative affect and impulsivity in both psychiatric and non-psychiatric populations. Clinical trials also show n-3 supplementation to have efficacy in the treatment of some psychiatric disorders involving dysregulated mood and impulse control (e.g., major depressive disorder). It is possible that n-3 PUFAs relate to mood, impulsivity, and other adverse behaviors, in part, by affecting the functionality of corticolimbic and corticostriatal brain systems. We tested this possibility in a double-blind, randomized placebo-controlled design in a healthy population by obtaining pre- and post-intervention measures of corticolimbic and corticostriatal system activity changes evoked by standardized affective and reward-based fMRI tasks known to engage these systems. Pre- and post-intervention measures of negative affect and impulsivity were collected using both questionnaire and ecological momentary assessment (EMA). The trial included 272 community volunteers, 50.7% female, 30-54 years old, who consumed <300mg of n-3 daily, and each was assigned to 18 weeks of either n-3 supplementation providing 1400mg/day of EPA+DHA or a matching soybean oil placebo. There were no significant differences between n-3 supplementation and placebo groups on any demographic, affective, or neural measures at baseline. Post-supplementation participant blinding was verified, and red blood cell EPA+DHA increased 64% in the active treatment group. There were no group-by-time interactions for any questionnaire or EMA measures of mood and impulsivity. Likewise, no group-by-time interactions were observed for fMRI responses evoked within corticolimbic or corticostriatal regions engaged by our affective and reward processing tasks. Post-hoc sensitivity analyses showed no relationship between change in EPA and DHA blood levels and any of our study variables, nor were there any gender-by-treatment group-by-time interactions. Future research may be needed to examine higher doses of supplementation and possibly psychiatric populations exhibiting clinical alterations in neural activity linked to dysregulated mood and impulsivity.

1517/BIIFIDOBACTERIUM LONGUM 1714 REDUCES STRESS-INDUCED CHANGES IN ANXIETY AND SALIVARY CORTISOL AND ALTERS NEUROCOGNITIVE PERFORMANCE AND RESTING EEG IN HEALTHY VOLUNTEERS
Andrew P. Allen, PhD, Psychiatry and Neurobehavioural Science, and APC Microbiome Institute, William Hatch, PhD, INFANT Research Centre, and Department of Pediatrics & Child Health, Yuliya E. Borre, PhD, APC Microbiome Institute, Paul J. Kennedy, PhD, Psychiatry and Neurobehavioural Science, and APC Microbiome Institute, Andriy Tenko, PhD, Department of Electrical and Electronic Engineering, Geraldine Boylan, PhD, INFANT Research Centre, and Department of Pediatrics & Child Health, University College Cork, Cork, Cork, Ireland, Eileen Murphy, PhD, Alimentary Health, Alimentary Health, Cork, Cork, Ireland, John F. Cryan, PhD, Anatomy & Neuroscience, and APC Microbiome Institute, Timothy G. Dinan, PhD, Gerard Clarke, PhD, Psychiatry and Neurobehavioural Science, and APC Microbiome Institute, University College Cork, Cork, Cork, Ireland

Introduction: Precise targeting of the microbiome-gut-brain axis with psychobiotics - live microorganisms with a potential mental health benefit –is a novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions. Preclinical studies have identified B. longum 1714 as a putative psychobiotic with an novel approach for the management of stress-related conditions.
Healthy male volunteers (N = 22) ingested B. longum 1714 or placebo daily for four weeks each in a repeated-measures design. Participants completed study visits at baseline, post-placebo and post-probiotic. Acute stress was assessed using the socially evaluated cold pressor test, and daily stress was assessed via validated online questionnaires. Cognitive performance was assessed using the CANTAB platform and neurophysiological activity via electroencephalography (EEG).

Results: In response to acute stress, B. longum 1714 led to a reduction in cortisol output and a blunted increase in subjective anxiety. Self-reported daily stress was lowered during daily psychobiotic consumption. There was a subtle improvement over placebo in visuospatial memory performance in paired associate learning (PAL) in the B. longum 1714 group. Fz mobility was higher following B. longum 1714 consumption compared to baseline and placebo.

Conclusions: B. longum 1714 is a potential psychobiotic, associated with attenuated responses to acute stress, a modest improvement in cognitive performance and altered resting EEG. Further studies are warranted to evaluate the benefits of this putative psychobiotic in relevant stress-related conditions.

Acknowledgements

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1379/EFFECTS OF SINGLE-DOSE INTRANASAL OXYTOCIN ON RECOGNITION OF BASIC EMOTIONS AND COMPLEX MENTAL STATES IN FACIAL EXPRESSIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND AND AIM: Facial expressions serve both as instant guides to basic emotional states and as complex windows of social emotions, intentions, and mental states. Studies suggest that intranasal administration of oxytocin (IN-OT) enhances the ability to recognize facial expressions of both basic emotions and complex mental states. The aim of this systematic review and meta-analysis of studies applying single-dose, placebo-controlled IN-OT prior to tasks of either basic or complex facial emotion recognition and to explore moderation by participant characteristics.

METHODS: A systematic literature search was conducted in PubMed with an extensive array of search terms, e.g., (Oxytocin AND (facial expression) OR (nonverbal communication) OR (reading AND mind AND eyes)) AND (nasal OR intranasal). Inclusion criteria were single-dose, placebo-controlled, and blinded administration, and report of performance accuracy in one of two types of facial emotion recognition tasks: a) emotion labelling tasks (ELT) of basic emotions or b) Reading the Mind in the Eyes Test (RMET) of complex mental states. Effect sizes (ES; Hedge’s g) were calculated and combined with a random effects model. The moderating effects of task type (ELT, RMET) and states. Effect sizes (ES; Hedge’s g) were calculated and combined with a random effects model. The moderating effects of task type (ELT, RMET) and characteristics (population, age, gender) were explored.

RESULTS: A total of 15 independent studies, comprising 20 independent participants (N = 673), were met the inclusion criteria. IN-OT improved facial emotion recognition across both task types (g = 0.18; 95%CI: 0.065-0.291, p < 0.002). We found no indications of publication bias. Neither participant characteristics (autism spectrum disorder, schizophrenia, healthy population, age, gender) nor task types (ELT, RMET) moderated the effects of IN-OT on facial emotion recognition (ranges: g: 0.021-0.391, p: 0.003-0.894).

CONCLUSIONS: The results confirm that IN-OT improves facial recognition. Although effects were small (IN-OT = 6), this study provides new evidence of IN-OT's effects on facial emotion recognition, and how to conduct such research in a specific way.

1200/SIT, STEP, SWEAT: ASSOCIATIONS OF ANXIETY AND DEPRESSION WITH SEDENTARY BEHAVIOR AND PHYSICAL ACTIVITY OVER SIX YEARS

Sarah Hiles, PhD, Femke Lamers, PhD, Yuri Milaneschi, PhD, Brenda Penninx, PhD, Psychiatry, VU University Medical Center, Amsterdam, North Holland, The Netherlands

Objective: Lifestyle is thought to strongly influence physical and mental health. Physical inactivity may be a risk factor or a consequence of anxiety and depression. The current study examined cross-sectional and bi-directional longitudinal relationships of anxiety and depression with activity levels in a large prospective cohort of people with and without anxiety and depression.

Method: Participants were drawn from the Netherlands Study of Depressive and Anxiety (N= 2932; 18-65 years old; 34% male). At baseline, 57% had a current anxiety or depressive disorder, 21% had a remitted disorder, and 22% were healthy controls. At baseline, 2, 4, and 6 years, participants completed a diagnostic interview and self-report questionnaires assessing psychopathology symptom severity and physical activity levels, namely participation in organized sports, general physical activity (metabolic equivalent minutes), and sedentary behavior (hours sitting). Analyses were controlled for socio-demographic, health and other lifestyle characteristics.

Results: Across assessment waves, anxiety or depression diagnosis was associated with significantly lower sports participation and general physical activity, compared with controls (p < .001). In line with dose response relationships, higher anxiety and depression severity were associated with lower sports participation and general physical activity, and additionally with increased sedentary behavior (p < .001). Longitudinally, current or remitted disorder and higher anxiety or depressive symptoms at one assessment was
associated with less sports participation two years later (p < .001). Additionally, current disorder and depressive symptoms predicted lower general physical activity (p < .01) and more sedentary behavior (p < .04) two years later. For the reverse direction, although a lower level of sports participation was associated with presence of disorder and higher anxiety and depressive symptoms two years later (p < .05), neither general physical activity nor sedentary behavior was associated with later psychopathology outcomes.

Conclusion: There was a close association between psychopathology and low levels of physical activity, particularly for low sports participation, which was bi-directionally associated with psychopathology over time. Mechanisms may involve physiological, psychological and social factors, which could be utilized to jointly improve mental and physical health.

1298/TESTING THE RESERVE CAPACITY MODEL IN THE MIDLIFE IN THE UNITED STATES STUDY
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Objective: Rich conceptual models posit how socioeconomic status and psychosocial factors “get under the skin,” yet few studies have empirically tested entire models in a single study. The present study tests the Reserve Capacity Model (Gallo & Matthews, 2003) for understanding psychosocial, behavioral, and biological factors linking socioeconomic status and health outcomes (conceptual model to be tested shown in Figure 1 with dashed lines indicating non-central paths).

Methods: The sample of 1,254 participants came from the Midlife in the United States (MIDUS) study. Childhood socioeconomic status (SES) and major stressful life events were assessed using retrospective self-reports. Adult SES (used to calculate change from childhood to adulthood SES, ΔSES) and the remaining psychosocial factors (psychosocial resources, negative mood) and health behaviors (smoking, alcohol use, dietary, sleep, physical activity, other risky behaviors) were assessed via concurrent self-report. Seven biological systems, including 20 biomarkers, measured allostatic load. Number of chronic medical conditions was coded from medical history collected via interview. All data came from MIDUS II with the exception of childhood SES which came from MIDUS I. Path analysis was conducted to test the complete conceptual model, and adjusted for non-independence in the MIDUS data due to some siblings and twins with cluster robust standard errors.

Results: Higher childhood SES and ΔSES predicted fewer chronic medical conditions in midlife (p < .01). When entered into the full path analysis to test the hypothesized pathways linking SES with health, consistent with the Reserve Capacity Model, higher childhood SES and ΔSES were uniquely associated with higher psychosocial resources and lower stress, which in turn were associated with lower negative mood, which was associated with better health behaviors and lower allostatic load scores, which were finally associated with fewer chronic medical conditions (all paths significant at p < .05). Contrary to expectation, psychosocial resources did not buffer the relation of life stress with negative mood, but did buffer the deleterious effects of low SES on mood and sleep. The full model accounted for 79% of the association of childhood SES and 28% of the association of ΔSES with number of chronic medical conditions.

Conclusions: In the first complete test of the Reserve Capacity Model including every conceptual component, findings broadly supported the model and suggest that it explains a substantial portion of the SES–health gradient, particularly for childhood SES and to a lesser extent trajectories of SES from child to adulthood.

Saturday, March 12 from 1:30 to 2:30 pm

Modulating Sleep

1343/VULNERABILITY TO STRESS-RELATED SLEEP DISTURBANCES MODERATES THE RELATIONSHIP BETWEEN EARLY LIFE SOCIOECONOMIC STATUS AND SLEEP IN ADULTHOOD
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Early adversity can alter the trajectory of one’s life. For example, research indicates that lower childhood socioeconomic status (CSES) is associated with adverse health outcomes in adulthood. Converging evidence suggests that lower CSES may also predict poorer sleep in adulthood. A greater understanding of factors that modify the effects of CSES on sleep in adulthood is needed to inform precision medicine approaches to preventing and treating the effects of early adversity on sleep health. The aim of the present study was to investigate whether individual differences in vulnerability to stress-related sleep disturbances (V-SRSD) moderate the relationship between CSES and sleep in adulthood.

The sample consisted of 111 adults [mean age=60.0349.55; 63.06% female; 55.86% history of major depressive disorder (MDD)]. A composite index of self-reported CSES was created using maternal and paternal education, ownership of home and car, family financial difficulties, and residential stability before the age of 15. V-SRSD was assessed by the Ford Insomnia Response to Stress Test. Sleep outcomes were gold-standard measures of subjective sleep quality (Pittsburgh Sleep Quality Index) and polysomnography (PSG) assessed total sleep time, wake after sleep onset, and absolute spectral power in the delta electroencephalography band (0.5-4.0 Hz; delta EEG). Hierarchical linear regression analyses tested the main effect of CSES on sleep and its interaction with V-SRSD, adjusting for sex, age, history of MDD, and apnea-hypopnea index. There was a main effect of childhood adversity, where lower CSES was positively correlated with delta EEG (β=0.179, p=0.051). V-SRSD moderated the association between CSES and sleep depth, such that low CSES participants with greater V-SRSD exhibited lowered delta EEG power (β=-0.432, p=0.004). There were no main effects for CSES or interactions with V-SRSD for sleep quality, duration, or continuity.

This study is the first to identify V-SRSD as a moderator of the association between CSES and sleep in adulthood. Early adversity was associated with decreased sleep depth as measured by quantitative EEG only in individuals who exhibited greater V-SRSD. Our results suggest that individuals exposed to early adversity who are also the most vulnerable to stress are at the greatest risk for sleep disturbances in adulthood. Given the well-established effects of sleep disruption on mental and physical health, our findings support the need to incorporate sleep in precision medicine intervention models for high-risk individuals.

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1082/BIDIRECTIONALITY BETWEEN SLEEP SYMPTOMS AND CORE DEPRESSIVE SYMPTOMS AND THEIR LONG-TERM COURSE IN MAJOR DEPRESSED PATIENTS
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Introduction. It is unclear how sleep symptoms and core depressive symptoms interact during depressive episodes and remission. The purpose of the present study was to investigate the bidirectional dynamic relationship between sleep symptoms and core depressive symptoms and to identify subgroups differing with respect to their course.

Methods. The weekly state of depressive symptoms in depressed primary care patients (N=267) was assessed retrospectively every 3 months for 3 consecutive years. The bidirectional relationship between sleep and core symptoms was estimated by means of manifest Markov modeling. Data-driven subgroups were estimated with parallel processes – latent class growth analyses.
Results. Sleep and core depressive symptoms were bidirectionally related (p<0.01). Three classes with substantially different courses of sleep and core symptoms were derived. Sleep symptoms decreased out of sync with core symptoms in one class: sleep symptoms declined less steeply than core depressive symptoms (see figure 1).

Conclusions. The present study identified subgroups of depressive patients that showed either synchrony of change between sleep and core symptoms, or a-synchrony of change, while treated for MDD. This indicates that sleep symptoms should be treated alongside depression in patients with an a-synchronous decrease of sleep and core symptoms in order to increase the chance of complete remission.

1075/SLEEP PROBLEMS AND PAIN: A LONGITUDINAL COHORT STUDY IN EMERGING ADULTS
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Background: Sleep and pain are thought to be bidirectional related on a daily basis in adolescents with chronic pain complaints. In addition, sleep problems have been shown to predict the long-term onset of musculoskeletal pain in middle-aged adults. Yet, the long-term effects of sleep problems on pain duration and different types of pain severity in emerging adults (aged 18-25) are unknown. This study investigated the cross-sectional and longitudinal relationships between sleep problems and chronic pain, and musculoskeletal pain, headache, and abdominal pain severity in a general population of emerging adults. We studied whether these relations were moderated by sex, and if symptoms of anxiety and depression, fatigue, or physical inactivity mediated these effects.

Methods: Data of participants from the longitudinal Dutch TRacking Adolescents’ Individual Lives Survey were used. Follow-up data were collected in 1753 participants who participated in the fourth (N=1668, mean age: 19.0 years [SD=0.6]) and/or fifth (N=1501, mean age: 22.3 years [SD=0.6]) assessment wave. Autoregressive cross-lagged models were used for analyses.

Results: Sleep problems were associated with chronic pain, musculoskeletal pain, headache and abdominal pain severity, and predicted chronic pain and an increase in musculoskeletal pain severity at three years follow up. This prospective effect was stronger in females than in males, and was mediated by fatigue but not by symptoms of anxiety and depression. Physical inactivity. Only abdominal pain had a small long-term effect on sleep problems.

Conclusion: Our results suggest that sleep problems may be an additional target for treatment in female emerging adults with musculoskeletal pain complaints.

1162/SLEEP HABITS AND SUSCEPTIBILITY TO UPPER RESPIRATORY INFECTION AND ILLNESS: THE MODERATING ROLE OF SUBJECTIVE SOCIOECONOMIC STATUS
Aric A. Prather, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Denise Janicki-Deverts, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA, Nancy E. Adler, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Martica H. Hall, PhD, Psychology, Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, PA, Sheldon Cohen, PhD, Psychology, Carnegie Mellon University, Pittsburgh, PA

Poor sleep, characterized by short sleep duration, poor sleep efficiency, and poor subjective quality, has emerged as a prominent modulator of immune function with implications for risk for acute infectious illness. Emerging evidence suggests that sleep is socially patterned such that poor sleep occurs at greater frequency among those low in socioeconomic status (SES). Given that low SES individuals are at elevated risk for a variety of acute and chronic illnesses, SES may serve as a previously unrecognized vulnerability factor in understanding the link between sleep and risk for infectious illness.

To examine this possibility, we combined archival data from three viral challenge studies that used similar procedures. A total of 734 men and women (aged 18 to 55) were included in these analyses. Measures of self-reported sleep duration, efficiency, and subjective quality were obtained using the Pittsburgh Sleep Quality Index. Years of education served as our objective measure of SES while subjective SES was measured using the subjective social status ladder. Participants were quarantined and administered rhinovirus (RV) or influenza and monitored over 5 (RV) or 6 (influenza) days for the development of a clinical cold (defined by infection and signs of illness). Regression analyses revealed that shorter self-reported sleep duration and poorer sleep efficiency were associated with increased likelihood of development of a clinical cold (duration: b=-0.15, SE=0.05, p=0.004; efficiency: b=-0.01, SE=0.01, p=0.04), independent of confounds (age, sex, race, BMI, pre-challenge antibodies, season of trial, study number, and virus). Subjective sleep quality was unrelated to cold susceptibility.

Moderation analyses revealed that the prospective link between sleep duration and likelihood of infection and a clinical cold varied as a function of subjective SES, independent of covariates and objective SES (interactions terms: infection: b=-0.01, SE=0.00, p<0.03; clinical cold: b=-0.01, SE=0.00, p=0.03). Specifically, shorter sleep duration predicted increased likelihood of developing a clinical cold in participants low (-1 standard deviation (SD); b=-0.28, SE=0.07, p=0.002) but not high on subjective SES (+1 SD; b=-0.01, SE=0.07, p=0.92). A similar relationship was observed in predicting likelihood of infection. The influence of sleep efficiency on cold susceptibility was not moderated by SES measures. Furthermore, objective SES failed to significantly modify associations between sleep and cold risk.

These findings suggest that short sleep duration and efficiency serve as predictors of cold susceptibility and that low subjective SES may reflect a social factor that confers increased vulnerability to infectious illness among short sleepers.

Saturday, March 12 from 1:30 to 2:30 pm
Neuroscience of Connection

1500/HOLDING HANDS ALLEVIATES PAIN AND REDUCES PAIN-SPECIFIC BRAIN RESPONSES
Marina Lopez Solis, PhD, Tor Wagner, PhD, Psychology And Neuroscience, University Of Colorado Boulder, Boulder, Colorado

Social attachment and romantic bonding are powerful reinforcers associated with approach behaviors, openness and stress reduction. Social support (e.g., holding hands with a significant other) has been shown to modulate physical pain in real-life settings (e.g., during childbirth and cancer/renal disease treatment). Despite the beneficial effects of holding hands when coping with pain and stress, this strategy is disregarded in conventional medical settings, possibly due to a lack of objective measures proving evidence for its beneficial effect. For example, does hand holding only affect subjective pain reports due to a reporting bias or does it actually reduce pain-specific brain activity? We assessed the effects of social support from the romantic partner on brain responses to acute thermal pain in healthy women (N=30), using a hand-holding paradigm. Holding hands with the romantic partner (vs. holding a squeezeable device) significantly reduced pain-related intensity and unpleasantness, anticipatory anxiety, and increased perceived comfort. fMRI results showed significant reduction of the Neurocognitive Pain Signature (a multivariate fMRI pattern sensitive and specific to physical pain,). This reduction was specific to pain-activation and did not occur for either anticipation or rating periods. Reductions in pain intensity and unpleasantness were parametrically associated with activation reductions in pain-processing regions and evaluative/self-referential regions. These results suggest that holding hands with the romantic partner in a pain-related context exerts a protective effect that is associated with a reduction in pain-specific brain representations. This is a promising step towards further validating the protective effects of hand holding during acute painful procedures.

1601/CIRCULATING INTERLEUKIN-6 COVARIATES WITH RESTING BRAIN NETWORK CONNECTIVITY AND TOPOLOGY IN MIDLIFE ADULTS
Thomas E. Kraynak, BA, Anna L. Marsland, PhD, Stephen B. Manuck, PhD, Peter J. Gianaris, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Systemic inflammation is recognized in the pathophysiology of neurodegenerative and psychiatric disorders. Mediators of systemic inflammation, including interleukin(IL)-6 and other cytokines, are known to impact brain structure and function in regions supporting cognitive and affective processes. However, it is unclear how cytokines relate to large-scale brain networks that encompass multiple brain systems and support these processes. Accordingly, we used an unbiased network-based approach to test whether IL-6 is associated with resting network connectivity in a large sample of cognitively normal midlife adults (N=364, age M(±SD)=40.37(6.74), 175 males). Participants underwent a fasting blood draw and resting state fMRI assessment. We constructed individual subject functional connectivity network matrices by

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correlating all pairs of extracted fMRI BOLD signal time-series from 200 brain regions. Associations between large-scale networks quantified by between-region functional connectivity and inflammation were estimated for all pairwise connections, and network-level inferences were made using the network-based statistic. We estimated network topological properties within regions and tested whether these features associated with IL-6. Additional analyses were conducted adjusting for age, sex, and potential motion confounds. IL-6 covaried with a shared corticothalamic and corticobrainstem network, consisting of primary parietal, occipital, and temporal sensory cortices (43 connections between 36 regions, pFWE<0.001). Moreover, IL-6 covaried inversely within a bilateral ventromedial prefrontal – middle temporal network (26 connections between 22 regions, pFWE<0.032). In graph theory analyses, IL-6 covaried with topological features in regions identified by the network analysis, including degree and eigenvector centrality.

These findings suggest a corticothalamic pathway underlying communication between the brain and peripheral immune system, as well as an inflammation-associated reduced connectivity in networks for cognitive and affective processing. These data extend previous work relating inflammation to structural and functional integrity in isolated brain regions, and provide for a network-based interpretation of previous reports of inflammation-associated cognitive and emotional outcomes.

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1653/ASSOCIATIONS AMONG POVERTY, STRESS, AND MATERNAL BRAIN SENSITIVITY TO INFANT CRY

Pilyoung Kim, Ph.D., Christian Capistrano, B.A., Psychology, Rachel Gray, M.A., Morgridge College of Education, University of Denver, Denver, CO

Poverty is associated with greater levels of stress exposure. High maternal distress can disrupt mothers’ ability to respond to their infants in a sensitive and caring style. However, little is still known about the neurobiological processes by which poverty and stress are associated with risks during the transition to motherhood for first-time mothers.

Thus, the current study examined the associations between income, stress, and neural responses to infant cry among new mothers during the early postpartum period. A total of 28 women (age M=25.07, SD=5.64; 54% white) with their first biological child at age 0-6 months participated. Family income was assessed by the income-to-needs ratio (INR) by dividing total family income by the poverty threshold specified by the U.S. Census Bureau. The range of the income-to-needs ratio was 0.44 to 6.34 and 43% of the sample lived in poverty (INR < 1) or near poverty (INR < 2). The IMRI paradigm included four types of sounds (own baby cry, control baby cry, own cry matched noise sound, control cry matched noise sound). A whole-brain linear mixed effects model with an income-to-needs ratio as a between-subjects variable, and Sound (cry vs. noise) and Condition (own vs. control) as within-subjects factors was conducted.

Two-way interactions of family income X Sound were significant, p<0.05, corrected. Lower income was associated with mothers’ reduced responses to infant cry in the left medial prefrontal cortex (Figure 1), bilateral middle frontal gyrus, and right superior temporal gyrus. Reduced neural responses to infant cry were further associated with less positive perception of parenting, indicating difficulties in the transition to motherhood. Moreover, high levels of perceived stress, reported by mothers, mediated the links between income and mothers’ neural responses infant cry in the three prefrontal regions – indirect effects = 0.01-0.02 (95% Cs 0.001-0.04), using PROCESS.

Thus, new mothers who were exposed to low income reported higher levels of perceived stress. Perceived stress was then associated with reduced neural responses to infant cry in brain regions that were involved in emotional information processing and emotion regulation. This finding provides information to focus interventions that help lower-income mothers cope with their stress and support them in making a positive adjustment to motherhood.

Figure 1. Low income was associated with reduced responses to infant cry sounds in the left medial prefrontal cortex/anterior cingulate cortex (x=25, y=-40, z=10, k=93), p<0.05, corrected.

1501/IDENTIFYING A BRAIN MARKER FOR FIBROMYALGIA USING BRAIN RESPONSES TO PAIN AND MULTISENSORY STIMULATION

Marina Lopez Sola, PhD, Choong Wan Woo, BSC, Psychology And Neuroscience, University Of Colorado Boulder, Boulder, Colorado, Jesus Pajol, MD, Magnetic Resonance Imaging, Hospital Del Mar, Barcelona, Barcelona, Spain, Joan Deus, PhD, Clinical Sciences, Autonomous University Of Barcelona, Barcelona, Spain, Joan Deus, PhD, Clinical Sciences, Autonomous University Of Barcelona, Barcelona, Spain, Joan Deus, PhD, Clinical Sciences, Autonomous University Of Barcelona, Barcelona, Spain.

Fibromyalgia (FM) patients show characteristically enhanced unpleasantness to painful and non-painful sensations accompanied by altered neural responses. The diagnostic potential of such neural alterations in terms of their sensitivity and specificity is unknown. Here we identify a brain signature of FM status that characterizes central FM pathophysiology at the neural systems level. We included 37 FM patients and 35 matched healthy controls, and analyzed fMRI responses to (i) pressure pain and (ii) non-painful multisensory (visual-auditory-tactile) stimulation coupled with machine learning techniques to identify a brain-based FM signature. Results: (ia) FM patients showed augmented expression of the previously validated “Neurologic Pain Signature” (NPS, Wager 2013); (ib) the ‘FM-pain’ (vs. controls) brain classificatory pattern developed in this study revealed pain response amplification in sensory integration (insula/operculum) and self-referential (mostly anterior cingulate and medial prefrontal) regions and response attenuation in the right dorsolateral frontal cortex; (ii) the ‘Multisensory’ brain classificatory pattern revealed FM-characteristic response amplification in insula/operculum and self-referential (posterior cingulate and medial prefrontal) regions, and response attenuation in sensory and parietal sensory regions. A signature combining NPS, FM-pain and multisensory alterations classified patient status with 92% sensitivity and 94% specificity in out-of-sample individuals. Enhanced NPS pain responses were mediated by altered neural systems development of CVD later in life whereas FM-pain and multisensory responses predicted clinical pain. The current study provides individual-FM patient characterization based on pathophysiological, symptom-related brain features. These brain features may constitute objective neural targets for therapeutic interventions, and provide a framework for assessing therapeutic mechanisms and predicting treatment response at the individual level.

Saturday, March 12 from 1:30 to 2:30 pm

The Psychobiology of Cardiovascular Disease

1058/ADVERSE CHILDHOOD EXPERIENCES AND PATHWAYS TO LONG-TERM CARDIOVASCULAR DISEASE RISK

Jenalee Doom, MA, Institute of Child Development, Cari J. Clark, PhD, School of Public Health, University of Minnesota, Minneapolis, MN

Cardiovascular disease (CVD) is the leading cause of death in the United States (Hoyert & Xu, 2012; Roger et al., 2012). Increasingly, research targets childhood as a period of vulnerability for the development of CVD. Adverse childhood experiences (ACEs) such as poverty, maltreatment, neglect, and family violence can have been associated with development of CVD later in life (Miller et al., 2011). This study examines a wide range of childhood and adolescent ACEs in relation to objective measurement of 30-year CVD risk in young adulthood, as well as potential mediators between ACEs and adult CVD risk, including health behaviors, financial stress, depressive symptoms, educational attainment, parental relationships, and accessing needed medical care. Participants (N=11,491) in the National Longitudinal Study of Adolescent Health with CVD risk factor data and valid sampling weights were included (52.8% female; 54.7% white, 21.4% black, 15.9% Hispanic, 7.9% other). An ACEs index assessed 12 items: dating violence, other adolescent interpersonal violence, 4 forms of child maltreatment, foster care, homelessness, and parental disability, alcoholism, incarceration, and death. ACEs were assessed between waves 1 (mean age 15) and 3 (mean age 22) except incarceration, assessed at wave 4 (mean age 29). The ACEs score ranged from 0 to 9 (mean = 1.7, SD = 1.5). Framingham-based 30-year predicted risk of CVD was calculated from measures of body mass index, smoking, diabetes, systolic blood pressure, and use of antihypertensive medication assessed during an in-home exam at wave 4 (mean risk = 13%, SD = 0.1). Control variables included age, race, sex, parental education, childhood neighborhood poverty, and current household income. Using path analysis, significant effects of ACEs on CVD risk were reported. The total effect (direct plus indirect) of more ACEs on greater CVD risk was significant (see figure), β = 0.27, 95% CI: [0.178, 0.363]. The direct effect of ACEs on CVD risk was significant, β = 0.10, CI: [0.038, 0.179]. There were significant pathways between ACEs and greater CVD risk through poorer health behaviors, β = 0.02, CI: [0.012, 0.021], greater financial stress, β = 0.01, CI: [0.004, 0.015], lower educational attainment, β = 0.01, CI: [0.008, 0.016], poorer relationships with both mother, β = -0.65, CI: [-0.902, -0.398], and father, β = -0.13, CI: [-0.206, -0.061], and failing to access needed medical care, β = 0.01,
1310/Delayed Effects of Trait Anger on Progression of Subclinical Atherosclerosis

Amol S. Koldhekar, BS, School of Medicine, Thomas W. Kamarck, PhD, Psychology, Matthew F. Muldoon, MD, Medicine, University of Pittsburgh, Pittsburgh, PA; Jesse C. Stewart, PhD, Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN

Background: Considerable evidence suggests individual experiences of various negative emotions are associated with an increased risk of CAD. A prior study showed higher depressive symptoms are associated with greater 3-year increase in carotid artery intima-media thickness (CIMT), a marker of atherosclerosis, in a sample of healthy older adults, even when adjusting for other risk factors, suggesting that depressive symptoms may be involved in the progression of atherosclerosis. Measures of anxiety and anger symptoms were unrelated with CIMT changes at the 3-year mark. However, other studies suggest these factors may take longer to manifest.

Hypothesis: Increased symptoms of anxiety and anger, as well as depression, will have a positive relationship with 6-year progression of carotid artery intima-media thickness.

Methods: This was an ongoing prospective cohort study of 464 healthy men and women (age 50-70) from the Pittsburgh area. Individuals who reported chronic medical disorders, use of lipid-lowering or anti-hypertensive medications, use of medications with autonomic effects, or excessive alcohol consumption were excluded. Participants underwent an initial medical screening and were given a series of questionnaires – the Beck Depression Inventory II, Beck Anxiety Inventory, and Cook-Medley Hostility Scale – to measure depressive and anxiety symptoms, as well as the Spielberger State-Trait Anger Expression Inventory for trait anger experience. Mean CIMT was assessed by B-mode ultrasonography during baseline, 3-year, and 6-year follow-up visits. All statistical models included age, race, sex, blood pressure, fasting glucose, insulin, current smoking status, HDL, LDL, and waist circumference as covariates. 278 participants had complete baseline and 6-year follow-up data and were included in this analysis.

Results: Regression analyses show that higher trait anger at baseline was associated with greater 6-year change in CIMT ($\Delta R^2=0.028$, $p<0.01$) after taking into consideration other confounding variables. Depressive symptoms remain significant at the 6-year time-point ($\Delta R^2=0.024$, $p=0.001$). Both anger and depressive symptoms were each associated with significant independent effects when analyzed together. These relationships remained significant when analyzing subsets of patients who had developed diabetes or hypertension over the course of follow-up. Anxiety symptoms did not predict 6-year change in CIMT ($\Delta R^2=0.007$, $p>0.10$).

Conclusions: These findings suggest that trait anger may have a delayed effect on the progression of coronary artery disease, but anxiety does not. These results are consistent with the possibility that different types of emotional styles may alter cardiovascular risk through diverse mechanisms. Supported by HL056346.

1382/Autonomic Nervous System Function During Daily Life Activities in Tako-Tsubo Cardiomyopathy

Willem J. Kop, PhD, Marjan W. Trompenaars, MSc, Loes Smeijers, PhD, Department of Medical and Clinical Psychology, Center of Research on Psychology in Somatic diseases (CoRPS), Tilburg University, Tilburg, the Netherlands, Balitz M. Szabó, MD, PhD, Cardiology, Elisabeth-Tweesteden Hospital, Tilburg, the Netherlands, Nina Kupper, PhD, Medical and Clinical Psychology, CoRPS, Tilburg University, Tilburg, the Netherlands

Objective: Tako-Tsubo Cardiomyopathy (TTC) is characterized by symptoms and signs mimicking myocardial infarction combined with apical ballooning of the left ventricle that cannot be explained by underlying coronary artery disease. Typical for TTC are the frequent presence of a preceding emotional trigger and high catecholamine levels, suggesting a dysregulated stress response system in TTC patients. This condition is therefore sometimes referred to as “stress cardiomyopathy.” The present study examines whether patients with TTC show altered measures of stress-related autonomic nervous system (ANS) activity (decreased parasympathetic activity) during daily life activities.

Methods: TTC patients (N=15; mean age 67±13 years, 73% women) and a healthy comparison group (N=19; mean age 60±8, 68% women) were monitored for 24 hours using an ambulatory ECG recorder (SEAR: GE Medical) and ECG recordings were analyzed off-line (full 24-hour, daytime and nocturnal HRV).

To compare ANS activity between TTC patients versus controls, heart rate variability was measured in the frequency domain (total power (TP): 0.003-0.40 Hz), very low frequency (VLF: 0.003-0.015 Hz), low frequency (LF: 0.04-0.15 Hz) and high frequency (HF: 0.15-0.40 Hz) and the time domain (RMSSD and PNN50).

Results: TTC had lower 24-hour LF-HRV (5.44±1.06 vs. 6.43±0.79 ln msec2, $p=0.004$), VLF-HRV (6.42±0.78 vs. 6.90±0.60 ln msec2, $p=0.049$) and TP-HRV (6.9±0.99 vs. 7.52±0.63 ln msec2, $p=0.022$) compared to controls. No differences between TTC and controls were found for 24-hour HF-HRV (4.84±0.99 vs. 5.14±0.84 ln msec2, $p=0.34$) or the time domain HRV measures ($p’s>0.20$). Nocturnal HF-HRV was higher than daytime values (5.27±1.01 vs. 4.79±1.05 ln msec2, $p=0.001$ for both groups combined). TTC was associated with a tendency towards lower HF-HRV during the night compared to controls (4.95±0.91 vs. 5.53±1.03 ln msec2, $p=0.095$).

Conclusions: These findings show that low-frequency HRV indices are reduced in TTC versus controls during daily life. The implications for autonomic nervous system dysregulation in TTC require further research. Biobehavioral correlates of TTC may be related to the acute stress response that specifically involves catecholaminergic processes combined with altered autonomic nervous system activity during daily life.

1549/Cigarette Smoking Reduces High Frequency Heart Rate Variability: An Ecological Momentary Assessment Study

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Objective: Evidence from both laboratory and observational studies suggest that acute and chronic smoking leads to reduced HF-HRV, a measure of vagal regulation of the heart. However, observational studies are limited by their reliance on self-selection biases and laboratory studies lack ecological validity. Therefore, we utilized an ecological momentary assessment (EMA) strategy to study the effect of within person exposure to smoking with concurrent ECG monitoring to test the effect of smoking on HF-HRV in a sample of smokers from a trial of the automatic effects of hostility reduction. We also compared HF-HRV in these smokers and non-smoking participants in this trial.

Method: 149 healthy individuals (20-45 years, BMI <32) high in hostility wore 24-hour ECG monitors prior to randomization. Subjects also carried electronic diaries for EMA of mood, activity, physical position and smoking measured every 30±5 minutes between 10:30am and 10:30pm. HF-HRV measurements were derived from the ambulatory ECG signal corresponding to the EMA data acquisition. Smoking status was derived from the EMA diaries. A multilevel mixed model predicting ln(HF-HRV) from smoking status (between-person factor) and person-centered momentary smoking (within-person factor, treated as a random effect), controlling for physical position, medication use, and consumption of alcohol and caffeine, was estimated.
Result: 35 smokers and 114 non-smokers provided EMA and HF-HRV data for 5067 periods. Within smokers, HF-HRV was reduced by 0.32 ln ms2 (p=0.032) when participants reported having smoked cigarettes during the previous 30±5 minutes, compared to when they had not. The effect of smoking status (smokers vs non-smokers) on mean HF-HRV was non-significant (p-value=0.138); HF-HRV 5.35 ln ms2 for smokers and HF-HRV 5.59 ln ms2 for non-smokers.

Conclusion: In subjects used as their own controls during daily living, exposure to smoking significantly reduced HF-HRV. It is not clear whether this reflects a direct effect of smoking on hypothalamic-pituitary-adrenal (HPA) axis activity, or a confounding effect of stress. Further research is required to clarify this issue.

Saturday, March 12 from 2:45 to 3:45 pm

Cortisol Considerations

1271/ASSOCIATION OF CHILDHOOD ADVERSITY WITH DIURNAL HPA AXIS ACTIVITY

Naomi F. Assaf, B.S. In progress, Myriam V. Thoma, Ph.D., Xuejie Chen, M.A., Luke Hanlin, Ph.D., Danielle Gianferrante, Ph.D., Nicolas Rohleder, Ph.D., Yuliya I. Kuras, M.A., Psychology, Brandeis University, Waltham, MA

Rationale: Childhood adversity is associated with negative psychological and physiological health outcomes, and has been implicated in changes in the reactivity of the hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis coordinates the daily circadian rhythm of cortisol secretion which is at its highest half an hour after waking up in the morning and slowly decreases throughout the day. While previous studies have found that severe childhood adversity is associated with a flattened of the expected diurnal cortisol curve, a measure of HPA axis functioning, there has been limited and contradictory research among those with low to moderate levels of childhood adversity.

Method: Sixty-one adult participants completed the Childhood Trauma Questionnaire (CTQ). CTQ scores were low to moderate (mean=17.1 ± 9.2 SD). CTQ scores were significantly correlated with cortisol at wake-up (r=−.35, p=.006), as were the subscales physical neglect (r=−.27, p=.03) and physical abuse (r=−.32, p=.01). For further analyses, the sample was subdivided into previously established cutoff scores for CTQ and each subscale. Cortisol was significantly decreased at wake-up in those with low to moderate adversity (n=29) (t=−2.28, p=.027) compared to those without (n=32). Additionally, cortisol was significantly increased in the afternoon (at wake-up + 9 hours) in those with increased CTQ (t=2.79, p=.007). A repeated measures analysis of covariance was performed to assess for a within-subjects effect of cortisol between those with and without increased CTQ (time effect: F(5,55)=2.22, p=.06), in which those with increased CTQ had a blunted daily curve. Further, the same pattern of differences was observed in the high vs. low physical abuse group (time effect: F(5,55)=3.55, p=.007).

Conclusions: We found that in a group of healthy adults with low to moderate childhood adversity, cortisol at awakening was decreased, and cortisol later in the day was increased, signifying a flattening of the cortisol curve. The finding that daily cortisol level differences can be seen in those with even low to moderate levels of adversity is important because a blunted daily curve is considered a precursor of many physical health disorders associated with a dysregulated HPA axis, such as breast and lung cancer survival.

1079/DAILY ASSOCIATIONS BETWEEN DIARY-REPORTED HOT FLASHES AND CORTISOL

Carolyn Gibson, PhD, MPH, Advanced Fellowship in Women's Health, San Francisco VA Medical Center, San Francisco, CA, Rebecca Thurston, PhD, Karen Matthews, PhD, Psychology, Psychiatry, Epidemiology, University of Pittsburgh, Pittsburgh, PA

Background: Hot flashes are reported by an estimated 70-80% of women during the menopause transition. It has been proposed that cortisol dysregulation may be involved in hot flashes, but any relation between hot flashes and cortisol has received little empirical attention. The current study examined the relationship between daily self-reported hot flashes and cortisol.

Methods: Fifty-three women (49% African American) who reported daily vasomotor symptoms were enrolled in an ambulatory study. For seven days, participants used electronic diaries to report the onset of hot flush, frequency, severity, and bothersomeness, along with mood and health behaviors, multiple times each day. Participants also provided hair samples for cortisol assay, and morning and bedtime saliva samples for salivary cortisol collection over three days during the observation period. Hierarchical linear regression models were used to examine relationships between cortisol and hot flashes.

Results: Controlling for health and demographic variables, higher cortisol was associated with a higher frequency of hot flushes (β=0.05, p=0.01), while a flatter diurnal slope was associated with greater hot flash severity (β=0.09, p=0.03) and bother (β=0.10, p=0.01). These associations held after additionally adjusting for concurrent negative affect.

Conclusion: In this sample of symptomatic women in midlife, indicators of hypothalamic-pituitary-adrenal axis dysregulation were related to hot flashes that are reported as more frequently occurring, severe, and bothersome on a daily basis. To our knowledge, this is the first study to examine cortisol and daily diary-reported hot flashes, with the ability to explore relationships between cortisol and multiple aspects of hot flash experience.

1424/DOES AFFECT VARIATION HAVE AN EFFECT ON CORTISOL AWAKENING RESPONSE?

Jeffrey Proulx, PhD, Neurology, Oregon Health & Sciences University, Portland, Oregon

Positive affect (PA) and negative affect (NA) are thought of as the mediators between daily psychosocial appraisals of events and physiological outcomes (Hu & Gruber, 2008; Watson et al., 1988). However, variations in PA and NA are associated with variation in cortisol awakening responses (CAR). It is important because the health of the cortisol response system can have an effect on a range of physical health outcomes. While all data in

1509/HAIR CORTISOL CONCENTRATIONS IN RECENTLY FLED ASYLUM SEEKERS IN COMPARISON TO PERMANENTLY SETTLED IMMIGRANTS AND NON-IMMIGRANT GERMANS

Ricarda Mewes, PhD, Nadine Skoluda, MSc, Filine Seele, cand. Psych., Hanna Reich, Dipl. Psych., Urs M. Nater, PhD, Clinical Biopsychology, University of Marburg, Marburg, Hessen, Germany

Objective: Recently fled asylum seekers generally live under stressful conditions with very limited access to jobs, education, or basic health care. Their residency status is also insecure, and social support is limited. It is not clear whether stress through acculturation. Moreover, they often suffer from posttraumatic stress disorder (PTSD). Some of these factors can result in chronic maladaptive biological stress responses in terms of hyper- or hypocortisolism and, ultimately, illness. The current study aims to investigate hair cortisol concentrations as long-term markers for the endocrine stress response in recently fled asylum seekers with

and without PTSD in comparison to permanently settled immigrants and non-immigrant Germans.

Methods. Hair cortisol concentrations (HCCs) of the previous two months were compared between 24 asylum seekers without PTSD (32 years old, 58% men), 32 asylum seekers with PTSD (33 years, 44% men), 24 permanently settled healthy Turkish immigrants (24 years, all men), and 28 non-immigrant healthy Germans as the reference group (26 years, all men). The investigated asylum seekers lived in Germany for an average of six months on average (SD=4). Statistical comparisons were controlled for age, sex, and BMI.

Results. HCCs were highest in asylum seekers with PTSD (35% increase compared to the German reference group), followed by asylum seekers without PTSD (22% increase). In contrast, the permanently settled immigrants exhibited 23% lower HCCs compared to the reference group. However, only the differences between asylum seekers with PTSD and permanently settled immigrants were significant (p<0.02).

Discussion. We found relative hypocortisolism in recently fled asylum seekers, in particular in those with PTSD. Our findings add to and are in line with the very few studies investigating HCC in groups with recent or ongoing traumatization and unsafe living conditions. In contrast to the findings in the recently fled asylum seekers, permanently settled immigrants showed relative hypocortisolism. Both hyper- or hypocortisolism may set the stage for the development of stress-related illnesses.
this study is from the baseline assessment visit prior to randomization, the people chosen for this study presented with mild stress as assessed by a perceived stress scale (PSS) score ≥ 9. Participants were excluded if they scored ≤ 31 on the Modified Telephone Interview for Cognitive Status (TICS-m), a CESD depression scale score > 16, and/or took medications known to affect CNS function. For 2 days, we used EMA to assess PA and NA at home on four occasions measured by a state-Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1992). On each occasion, participants were asked to respond to the prompt “right now I feel…” to capture momentary affective states. They also provided cortisol samples on the same days of the EMA assessments. We calculated variance in PA and NA on day 1 and CAR on day 2. Two CAR patterns emerged: (1) an increasing CAR, and (2) a flattened CAR. Logistic regression in Stata 14 showed that higher variation in PA on day 1 was associated with higher logits of having an increasing CAR on day 2, B = 20, p < .01, and higher variation in NA on day 1 was associated with a higher log odds of having a flatter CAR on day 2, B = 33, p < .05. These results suggest that higher variation in PA is associated with healthier CAR the following day and that higher variation in NA is associated with more dysfunctional CAR the following day. These results increase our understanding of how psychosocial variables affect physiological outcomes and how variation in affect is associated with healthy or unhealthy cortisol patterns and a better understanding of resilience and vulnerability in later life.

Saturday, March 12 from 2:45 to 3:45 pm

Mental Health: Unique Mediators and/or Moderators

1330/A MATTER OF THE HEART: PATTERNS OF CIRCADIAN RHYTHMS OF VAGAL ACTIVITY VARY BY DEPRESSIVE SYMPTOMS IN PREDOMINANTLY HEALTHY EMPLOYEES

Marc N. Jarzok, Dr. Sc. hum., Corina Aguilar-Raad, PhD, Institute of Medical Psychology in the Center for Psychosocial Medicine, University Hospital Heidelberg, Heidelberg, BW, Germany, Raphael M. Herr, PhD, Mannheim Institute of Public Health, Social and Preventive Medicine, Heidelberg University, Heidelberg, BW, Germany, Julian Koening, PhD, Section for Translational Psychobiology in Child and Adolescent Psychiatry, Heidelberg University, Heidelberg, BW, Germany, Randy J. Nelson, PhD, Department of Neuroscience, The Ohio State University Medical Center, Columbus, OH, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH, Joachim E. Fischer, MD, MSc., Mannheim Institute of Public Health, Social and Preventive Medicine, Heidelberg University, Mannheim, BW, Germany.

Introduction: Vagal tone fluctuates in a pattern of diurnal variation, with a maximum during daytime. We previously demonstrated that blunted nighttime increase is associated with unfavorable health outcomes. Depression is known to be associated with decreased vagal tone, but studies investigating the association between circadian variation patterns (CVP) and depressive symptoms (DS) are scarce. We aim to examine the association of CVP of cardiac autonomic modulation with DS.

Methods: We analyzed RMSSD as an indicator of vagally-mediated HRV from 3133 (mean age 42±11; 79% males) 24-h HR-recordings collected at 4 distinct study sites of the Mannheim Industrial Cohort Study (MICS) in predominantly healthy working adults. Depressive symptoms were indicated by 4 items, scored 0-4 (individual range 0-16). Items asked about “how you felt and how things have been with you during the past 4 weeks. How often...” (1)”…have you felt downhearted and depressed?”; “2)”…have you felt so down in the dumps that nothing could cheer you up?”; (3)”…did you have a lot of energy?”; “4)”…have you been a happy person?”). Cronbach’s Alpha was 0.81. Three individual-level co-sine function parameters were estimated to quantify the CVP: Mesor (M, the 24h mean), amplitude (A, the distance between M and the highest maximum value of the cosine curve, and acrophase (θ, the phase shift of A). Multivariate linear regression model estimate the impact of depressive symptoms of M and A. The interaction term contributed significantly to the amplitude models, indicating that the association between amplitude and DS is moderated by sex. Beta blocker intake had no significant effect, while being physically active predicted higher M and A. Active smokers had a reduced M but increased A. Explained variance ranged between 31% (M), 17% (A) and 0% (θ), respectively. This indicates zero influence of selected explanatory variables on θ, meaning that there is no systematic phase shift difference observed in this population.

Conclusions: This is the first study investigating circadian rhythm patterns by DS in a rather healthy occupational sample. In the present study DS were negatively associated with the 24h mean (M) and in females with the oscillation (A). This indicates a blunted day night rhythm.
Table: Tests of direct and indirect pathways linking deployment stressors and HRQOL.

<table>
<thead>
<tr>
<th>Association (path)</th>
<th>IV to PTSD Sx (a1)</th>
<th>SE</th>
<th>95% CI</th>
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</thead>
<tbody>
<tr>
<td>IV to depression Sx (a2)</td>
<td>1.45*</td>
<td>.24</td>
<td>97,192</td>
</tr>
<tr>
<td>IV to alcohol misuse Sx (a3)</td>
<td>1.45*</td>
<td>.24</td>
<td>97,192</td>
</tr>
<tr>
<td>PTSD Sx to DV (b1)</td>
<td>1.45*</td>
<td>.24</td>
<td>97,192</td>
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<tr>
<td>PTSD Sx to DV (b2)</td>
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<tr>
<td>PTSD Sx to DV (b3)</td>
<td>1.45*</td>
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<td>97,192</td>
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| 1595/AGE MODERATES ASSOCIATION BETWEEN PRE-EXISTING PSYCHOLOGICAL ILLNESS AND INPATIENT OUTCOMES FOR ORTHOPEDIC TRAUMA PATIENTS  
Terrie Vasilopoulos, PhD, Anesthesiology and Orthopaedics and Rehabilitation, MaryBeth Horodyski, EdD, ATC, LAT, FNATA, Laura Zitzurski, BS, ATC, Kalia Sadavani, MD, Heather Vincent, PhD, FACSM, Orthopaedics and Rehabilitation, University of Florida, Gainesville, FL  
Background: Psychological illness has been associated with poor inpatient outcomes across multiple conditions, including orthopedic trauma. However, it is less clear if the relationship between psychological illness and inpatient outcomes depends on the age of the patient at time of injury. The purpose of the present study was to evaluate the relationship between pre-existing psychological illness and inpatients outcomes in orthopedic trauma patients and assess how this relationship was moderated by age. Methods: Data was obtained from the University of Florida Trauma Registry, which included 10,028 adult (18-85 years old) patients who were admitted to University of Florida hospital between 2000 and 2012 for orthopedic trauma related injuries. Outcomes included length of stay (days), ICU length of stay, and discharge disposition (home or not). We also obtained multiple covariates including age, sex, race, BMI, injury severity, Glasgow coma score, injuries total, year of service, Charlson comorbidity index, and history of alcohol and drug abuse. Generalized linear models were used to assess the relationship between the pre-existing psychological illness with each outcome, adjusting for the above covariates. Year of hospital service was modeled as a random effect. Results: Five percent of the sample reported having a pre-existing psychological illness. Pre-existing psychological illness, compared to those without, was associated with longer hospital stays (9.1±13.7 vs. 7.3±15.1 days; p=0.03); reduced likelihood of being discharged to home (56.5% vs. 70.5%; p<0.001); and a trend toward greater likelihood of a multi-day ICU stay (31% vs. 24%; p=0.09). Age significantly moderated this relationship in length of stay (p=0.046) and discharged to home (p=0.019); with a trend for multiple ICU days (p=0.09). Interestingly, for middle-aged adults, pre-existing psychological illness was associated with longer hospital stay (10.6±16.7 vs. 7.8±16.5 days); reduced likelihood of being discharged to home (54.6% vs. 73.4%); and a greater likelihood of a multi-day ICU stay (35.6% vs. 24.7%). However, for older adults (65+), there was no statistically significant relationship between pre-existing psychological illness and any outcome. Similarly, there was no relationship between pre-existing psychological illness and both length of stay and multiple days in the ICU for younger adults (18-39 years old). Conclusions: In orthopedic trauma patients, poorer inpatient outcomes among those with pre-existing psychological illness are a persistent issue. Furthermore, these associations seemed to be exacerbated in middle-aged adults. These poorer inpatient outcomes increase hospital costs and may negatively impact long-term patient recovery outcomes.

| IV to PTSD Sx (a2) | 48* | .13 | 22, 75      |
| IV to alcohol misuse Sx (a3) | 48* | .13 | 22, 75      |
| PTSD Sx to DV (b1) | 48* | .13 | 22, 75      |
| PTSD Sx to DV (b2) | 48* | .13 | 22, 75      |
| PTSD Sx to DV (b3) | 48* | .13 | 22, 75      |

| 1421/IMPACT OF BREATHING AT NEAR RESONANT FREQUENCY ON CARDIOVAGAL MODULATION AND ATTENTION IN PATIENTS WITH SCHIZOPHRENIA  
Bishoy Goubran, MD, Blanca Noriega, MD, Brian Villa, MD, Clinical & Translational Research, Larkin Community Hospital, South Miami, Florida, Ross W. May, PhD, Family Institute, Florida State University, Tallahassee, Florida, Prenymow Gazik, MD, Cardiovascular Medicine, Poznan University of Medical Science, Poznan, NA, Poland, Frank Fincham, PhD, Family Institute, Florida State University, Tallahassee, Florida, Marcos Sanchez-Gonzalez, MD, Clinical & Translational Research, Larkin Community Hospital, South Miami, Florida  
OBJECTIVE: Several studies have shown the benefits of paced breathing on cognition, anxiety and general well-being in healthy subjects. Paced breathing has an effect on modulation of the autonomic nervous system characterized by an increase in heart rate variability (HRV) and changes in sympathovagal balance. Since cardiac autonomic dysfunction and attention deficits have been frequently described in patients with schizophrenia, we aimed to explore the effects of breathing at near resonant frequency on HRV, and attention in subjects with chronic schizophrenia.

| IV to depression Sx (a2) | 48* | .13 | 22, 75      |
| IV to alcohol misuse Sx (a3) | 48* | .13 | 22, 75      |
| PTSD Sx to DV (b1) | 48* | .13 | 22, 75      |
| Depression Sx to DV (b2) | 48* | .13 | 22, 75      |
| Alcoholic Sx to DV (b3) | 48* | .13 | 22, 75      |
| IV to DV (c’) | 48* | .13 | 22, 75      |
| IV to PTSD Sx to DV (ab1) | 48* | .13 | 22, 75      |
| IV to PTSD Sx to DV (ab2) | 48* | .13 | 22, 75      |
| IV to alcohol misuse Sx to DV (ab3) | 48* | .13 | 22, 75      |

| *p < .05     |
METHODS: Patients with schizophrenia (n=30; Female=6) from a community clinic, completed psychometric scales for measuring negative affectivity including depression (PHQ-9), rumination (RRS), anger (STAXI-2), and anxiety (STAI). Afterwards, the heart rate monitor (Polar RS800CX) was attached to participant’s chest to collect R-R intervals. After a 10 minute rest period, participants were asked to rest in the seated position for 6 min of spontaneous breathing (SB), subsequently subjects were asked to breathe at near resonant frequency equal to 6 resp/min (0.1Hz). RB for 6 min added by a visual instruction. Attention was measured at the before and after the experiment using “digits forward task”, a component of repeatable battery for assessment of neuropsychological status (RBANS). HRV analyses were performed on the R-R interval obtained data using Kubios HRV®. Transient changes between phases SB vs. RB were minimized by excluding the first minute of each phase. Heart rate (HR), time (root mean square of successive R-R differences; RMSSD), frequency domains (low frequency: LF; surrogate of baroreflex sensitivity) and nonlinear parameters (Detrended fluctuations; DFAa2) of HRV were obtained. RESULTS: Patients’ demographics were (M ± SEM) weight (85.7 ± 4.3 kg) and age (48.2 ± 3.2 years). The Shapiro-Wilk test showed that data distribution was non-Gaussian and hence data were analyzed using non-parametric Wilcoxon signed-rank test for paired data (SB vs. RB). Compared to the SB condition there were significant (p < 0.05) changes in HR (1.2 ± 0.7 bpm), RMSSD (3.4 ± 1.6 ms), LF (1056.1 ± 361.1 ms2), and DFAa2 (r = 0.33 ± 0.09). There were significant changes in attention. However, further analysis demonstrated that rumination was significantly correlated with the change in attention after the RB exercise (r = -0.51, p = 0.02). CONCLUSIONS: Results revealed that RB exercise may improve baroreflex sensitivity and increases cardiovascular tone. Moreover, it seems that rumination plays an important role in attention deficits in this population. Since diminished parasympathetic nervous system response to real, stressful life events in newly diagnosed schizophrenia patients (p < 0.05) has been associated with symptom severity, we believe further studies are needed to show the long-term benefits of daily RB on patients with schizophrenia.

Saturday, March 12 from 2:45 to 3:45 pm

Social Factors, Inflammation, and Health

1578/CAREGIVING DISTRESS ASSOCIATES WITH ELEVATED INFLAMMATION AMONG MOTHERS OF CHILDREN NEWLY DIAGNOSED WITH CANCER

Catherine P. Walsh, M.S., Psychology, Linda J. Ewing, PhD, RN, Department of Psychiatry, Jennifer L. Cleary, undergraduate, Alina D. Vaiselis, BS, Psychology, Chelsea H. Farrell, MA, Psychiatry, Katarina Gray, BS, Anna L. Marsland, PhD, RN, Psychology, University of Pittsburgh, Pittsburgh, PA

Chronic distress associates with upregulation of innate inflammation known to predict risk for inflammatory diseases. Caring for a child newly diagnosed with cancer is a provocative psychological stressor. While most parents cope well, 25-30% of caregivers show prolonged distress that may negatively impact health behaviors and associated inflammatory processes. Here, we followed 120 mothers of newly diagnosed (18-24 months) children on their child's cancer diagnosis. Assessments of distress (Impact of Event Scale; Beck Depression Inventory; State Trait Anxiety Scale), BMI, and circulating and stimulated levels of interleukin (IL)-6 were conducted on 3 occasions; T1 (mean = 1 mo. post-dx), T2 (mean = 6.8 mo. post dx) and T3 (mean = 12.7 mo. post dx). In addition, assessments of stress (Perceived Stress Scale) sleep (Pittsburgh Sleep Quality Inventory), cigarette, and alcohol use were conducted monthly. Hierarchical linear modeling showed 29% of the variance attributable to high, increasing levels of perceived stress across the 12 mo. period (high risk: HR). When compared with the 71% who showed decreasing stress (low risk: LR), at T1 the HR group endorsed significantly more symptoms of depression, anxiety, and post-traumatic stress, poorer sleep, lower IL-6, and, among smokers, increased daily cigarette use (p < .05). Risk groups did not differ in maternal age, education, race, BMI, or the child’s treatment intensity (p < .05). T1 differences were independent of these factors changing over time, the HR group showed less improvement in sleep quality and latency (p < .05) and increased daytime dysfunction due to sleep problems (p < .05) than the LR group. The HR group also showed an accelerated increase in stimulated IL-6 (sIL-6) across the 12 mo. period (p < .05). When sleep factors were included in the model, the HR group did not significantly differ from the LR group in trajectory of sIL-6, suggesting that sleep difficulties may contribute to chronic stress and increased inflammatory health risk. These findings indicate that mothers with the highest levels of distress shortly after their child’s diagnosis are at increased risk for adjustment difficulties, sleep problems, and associated inflammation. By characterizing HR individuals at the time of diagnosis, we may be able to target them for preemptive intervention and decrease health risk. Supported by the American Cancer Society RSG118367

1616/THE INTERACTING ROLE OF EMOTION REGULATION AND STRESSFUL LIFE EVENTS TO PREDICT CORTISOL RESPONSE TO STRESS

Lydia G. Roos, BS, Kimberly A. Papay, BS, Health Psychology PhD Program, Jeanette M. Bennett, PhD, Psychology, University of North Carolina at Charlotte, Charlotte, North Carolina

Both prior exposure to stressful life events and maladaptive emotion regulation strategies are associated with increased risk for depression and other mental health problems. We have consistently linked with dysregulated physiological reactivity to acute stress, possibly through alterations in the hypothalamic-pituitary-adrenal (HPA) axis. However, the influence of the relationship between suppressive emotion regulation and stressful life events on acute stress reactivity is unknown. Using the Pittsburgh Common Cold Study 3 data, we conducted secondary analyses examining the effects of emotion regulation and stressful life events on acute stress reactivity in 213 healthy adults (average age 40 yrs; 60.85). The number and type of stressful major life events within the past year were assessed using the Life Events List, a shortened version of the List of Recent Experiences. The Emotion Regulation Questionnaire assessed both reappraisal and suppression strategies. Stress reactivity to a social-evaluative acute stress provocation (Trier Social Stress Test) was measured as the area under the curve over time (AUC) of salivary cortisol response. Hierarchical regression analyses controlling for age, sex, BMI, education, and current smoking revealed a significant interaction between exposure to negative life events occurring within the past year and suppressive emotion regulation in predicting cortisol AUC (AR2 = 0.03, p = 0.0058). Specifically, in individuals who have higher suppression levels, the number of negative life events was positively linked to greater cortisol AUC. However, in participants who endorsed lower suppression levels, the experience of negative life events was not associated with cortisol reactivity. Interestingly, this interaction was stronger for females than for males. These findings highlight the role of both emotion suppression and stressful life events in the development of stress-related health problems among patients with mental health problems.
1220/SOCIAL INTEGRATION IS ASSOCIATED WITH A STEEPER DIURNAL CORTISOL DECLINE: EVIDENCE FROM A SAMPLE OF HEALTHY WORKING ADULTS

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Purpose: Social integration (SI) is associated with reduced morbidity and mortality, but the mechanisms accounting for these effects are not clear. It is possible that SI, and the regular social activity with which it is associated, may assist in the regulation of the number of biological systems linked with health maintenance, an effect which could plausibly contribute, in part, to some of these benefits. We examined the association between SI and diurnal cortisol rhythm, parameters of which have been shown to be linked with cardiovascular disease and mortality in a number of community samples.

Method: 487 healthy, employed adults (53 % female, 19 % nonwhite, 71 % BA or greater, ages 30-54) were monitored during daily life over the course of four days in the midst of a working week (3 work days and 1 non-work day). Salivary cortisol was collected at waking, at 30 minutes, 4 hours, and 9 hours after waking, and at bedtime each day, prompted with the assistance of a handheld computer. Cortisol measures were log-transformed and, for each day, these measures were regressed within-person on time since awakening, using all but the 30 minute collection. Regression slopes were averaged over days for each subject. SI was measured using the Social Network Inventory, and was operationalized as the number of social roles in which one participates at least once every 2 weeks. Sleep patterns were measured using wrist actigraphy measured over a 7-day period.

Results: SI was associated with steeper cortisol decline, after adjusting for age, sex, race, and education (F(1, 480)=7.44, b = -.003, p = .0066). The effect was most pronounced at bedtime, at which point there was a steeper drop for high SI subjects, and a significant dose-response relationship between SI and salivary cortisol slope (b = - .14, ps<.02). Trait conscientiousness was a potential confounder (significantly associated both with cortisol slope p = .006 and with SI p = .01) as were bedtime and sleep duration (interestingly, socially integrated individuals went to bed earlier and slept longer hours (p = .01)) but SI remained a significant predictor after adjusting for these measures.

Conclusion: Socially integrated individuals show steeper cortisol declines over the course of the day, an effect that could plausibly contribute to the health-protective impact of SI. The daily interaction patterns that may trigger these effects remain to be understood.

Supported by HL40962 and AG041778.

Saturday, March 12 from 4:00 to 5:00 pm

Psychology

1171/LARGER AGE-RELATED DECLINES IN DEHYDROEPIANDROSTERONE ARE INDICATIVE OF REDUCED PHYSICAL VITALITY BEYOND THE INFLUENCE OF CHRONOLOGICAL AGE

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Given that the elderly population is projected to comprise 20% of the total United States population by 2030, it is of value to generate better predictive biomarkers of aging that are indicative of loss of vitality and impending frailty. The adrenal-derived hormone dehydroepiandrosterone (DHEA) and its sulfate-conjugated form (DHEAS), the most abundant hormones in circulation and precursors of gonadal steroids, are possible candidates. DHEA and DHEAS decline dramatically with age, and some studies have indicated that the decrease parallels age-related impairments in physical and mental abilities. However, individual variation in DHEA/DHEAS levels is visible early in adulthood, and it is possible that levels below the age-typical normal range will be associated with lower vitality beginning in middle-adulthood, prior to the onset of degenerative change in old age. This question was investigated in 1214 adults (43.2 % male; 19.1 % African American) who had participated in the National Survey of Midlife Development in the United States (MIDUS), a longitudinal study of a nationally representative adult sample between 35 and 86 years of age. Participants were evaluated during an overnight clinic stay, where they completed health history questionnaires and functional assessments of physical ability. DHEA and DHEAS were determined from a fasting blood sample in the early morning (~0800). To examine the synergistic effect of DHEA/DHEAS on physical functioning beyond the influence of age, gender, Body Mass Index (BMI), and race, these 4 covariates were accounted for in all analyses. Overall, plasma DHEA and DHEAS were significantly associated with both self-reported and functional assessments of vitality. Lower levels of DHEA (p<.01) and DHEAS (p<.01) were found to co-occur with a higher incidence of reported chronic illness conditions, comorbid causes of disability and increased risk of mortality. Pain is also a common cause and sequela of loss of vitality. As compared to participants without pain, the 426 individuals who self-reported chronic or persistent pain had both significantly lower DHEA (2.28 versus 2.38 nmol, respectively; p<.01) and DHEAS (.116 versus .119 µmol, respectively; p<.01). Finally, lower scores on performance-based measures of physical functioning, including rapidity of Chair Stands, Gait Speed, and Grip Strength, were each significantly associated with lower DHEA and DHEAS in circulation when considered with respect to expected values for age, gender, BMI, and race (Table 1). In sum, a more rapid and precipitous decline in DHEA and DHEAS appears to reflect an endogenous senescence and dysregulation of physiological systems beyond the general influence of chronological aging. When considered with respect to age- and gender-typical norms, circulating DHEA and DHEAS may serve as a sensitive biomarker that is useful as a predictor and diagnostic corollary of lost vitality in middle-age and frailty onset in the elderly.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean ± SD</th>
<th>DHEA (µmol/L)</th>
<th>DHEAS (nmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Reported</td>
<td>Chronic Conditions</td>
<td>-</td>
<td>4.06 ± 2.92</td>
</tr>
<tr>
<td>Physical Assessments</td>
<td>Gait Speed</td>
<td>1.03 ± .25</td>
<td>&lt;.01</td>
</tr>
<tr>
<td></td>
<td>Chair Stand(s)</td>
<td>11.40 ± 6.15</td>
<td>&lt;.01</td>
</tr>
<tr>
<td></td>
<td>Grip Strength (kg/force)</td>
<td>34.67 ± 12.19</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>

1575/INCREASED CIRCULATING PEPTIDE YY AND GHRELIN ARE ASSOCIATED WITH EARLY SMOKING RELAPSE

Andrine M. Lembrie, PhD, Mustafa al’Absi, PhD, Behavioral Medicine Laboratories, University of Minnesota, Duluth, MN

Background: Peptide YY (PYY) and ghrelin are two peripheral hormones that play important roles in reducing (PYY) or stimulating (ghrelin) food intake. Accumulating evidence suggests that these appetite hormones are also related to drug reward and craving. We recently found that increased peptide YY (PYY) and ghrelin were associated with decreased reported craving and increased positive affect, and that higher ghrelin levels predicted increased risk of smoking relapse.

Objectives: We conducted a study which assessed PYY and ghrelin during both ad libitum smoking and after the initial 48 hours of a smoking cessation attempt, and examined how changes in these hormones across sessions associated with smoking relapse.

Methods: The data compared smokers who were able to abstain for the first four weeks (n=37), smokers who relapsed within this period (n=54), and a nonsmoking comparison group (n=37). Plasma samples for the measurement of PYY and ghrelin and subjective measures assessing craving and mood were collected at the beginning of each session. Smoking status was verified via self-report and biochemical measures out to four weeks after cessation.

Results: The results showed that relapsers experienced greater levels of distress than nonsmokers and abstainers (p<.01). Across groups, women had higher ghrelin levels than men. Relative to nonsmokers, smokers who relapsed had higher circulating ghrelin levels, especially during the ad libitum session (p < .01). Relapsers also exhibited higher PYY than nonsmokers but only in the second (abstinent) session (p < .05).

Conclusion: These results suggest that PYY and ghrelin may be useful markers of smoking relapse but PYY is more sensitive to the stress of early withdrawal and nonsmokers. Future work is needed to extend these results to appetite, diet, and weight changes after cessation.
1160/SEX DIFFERENCES IN THE ASSOCIATION BETWEEN ACUTE STRESSOR-EVOKED INTERLEUKIN-6 RESPONSES AND C-REACTIVE PROTEIN
Kimberly G. Lockwood, BA, Anna L. Marsland, PhD, Peter J. Gianaros, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Individuals differ appreciably and consistently in the magnitude of their inflammatory responses to acute stressors, with females often showing larger responses than males. While the clinical significance of these individual differences remains unclear, it may be that greater inflammatory responses relate to increased systemic inflammation and thereby risk for chronic inflammatory disease. To test this possibility, we examined whether acute stressor-evoked interleukin (IL-6) responses associate with resting levels of C-reactive protein (CRP), a marker of systemic inflammation, and whether this association differs by sex. Subjects were 57 healthy midlife adults (30-51 years; 33% female; 68% white). Blood samples were drawn after a 30-min baseline and 30-min after two mental stress tasks: a multisource interference task and Stroop color word task. Hierarchical regressions controlling for age, sex, race, and BMI tested whether stressor-evoked IL-6 responses were associated with resting CRP and whether this association differed by sex. Results indicate that sex and stressor-evoked IL-6 responses interacted to predict CRP (AR2 = .08, B = -.133, p = .19, p = .02); in males, larger stressor-evoked IL-6 responses associated with higher CRP while in females, larger stressor-evoked IL-6 responses associated with lower CRP. These findings indicate that inflammatory responses to acute stressors associate with resting levels of CRP; however, this association differs by sex. Previous literature suggests that there are sex differences in stressor-evoked IL-6 responses, but this is the first study to show sex differences in the relationship between acute inflammatory responses and systemic inflammation. The contribution of these sex differences to inflammatory disease risk warrants further investigation.

Supported by grant NIH R01 HL089850 (PJG) & HL07560.

1110/CONFLICTING SOCIAL ROLES ARE ASSOCIATED WITH GREATER STIMULATED PROINFLAMMATORY CYTOKINE PRODUCTION AMONG MEN, NOT WOMEN
Hannah M. Schreier, PhD, Biobehavioral Health, The Pennsylvania State University, University Park, PA, Adam K. Leigh, BSc, Robin Hayes, BA, Edith Chen, PhD, Psychology, Northwestern University, Evanston, IL

Greater social integration has been linked to psychological and physiological benefits but it is unclear how multiple social roles, and potentially conflicting demands among them, influence well-being. Much research supports a role enhancement model, but few studies have examined conflict among roles specifically, or its influence on physiological health outcomes. For this study, 153 healthy adults (aged 45.8 ± 5.5 years, 78% female) listed their 3 main social roles (e.g., parent, spouse, coworker) and indicated the amount of conflict they experienced between each of the three pairs of roles using diagrams of incrementally overlapping circles; average role conflict across the three reported roles was computed. Participants underwent blood draws and leukocyte response to microbial challenge and glucocorticoid sensitivity were assessed. Whole blood collected into sodium heparin tubes was diluted with saline and incubated with either LPS (50 ng/ml; Sigma, St Louis, MO) or LPS and hydrocortisone (final concentration: 10-7 mol/L) for 6 hours at 37° C in 5% CO2. Interleukin-1beta (IL-1B), IL-6, IL-8, and tumor necrosis factor alpha (TNFa) were measured in duplicate using MSD Meso Scale Discovery Human ProInflammatory 7-Plex Base Kits. Analyses controlled for age, ethnicity, body mass index, income, and marital status. Multiple regression analyses revealed significant gender x role conflict interactions for LPS- and hydrocortisone-stimulated production of IL-1B (interaction: B = 111, SE = .050, p = .027 and B = .129, SE = .051, p = .012, respectively), IL-6 (interaction: B = .055, SE = .025, p = .030 and B = .075, SE = .028, p = .008), and TNFa (interaction: B = .089, SE = .033, p = .009 and B = .090, SE = .035, p = .011), and marginal interactions for IL-8 (interaction: B = .071, SE = .042, p = .090 and B = .066, SE = .039, p = .092). Average role conflict was unrelated to cytokine production among women. Among men, greater role conflict was associated with significantly higher LPS + hydrocortisone stimulated IL-1B, IL-6, IL-8, and TNFa (indicating decreased glucocorticoid sensitivity) and greater LPS-stimulated IL-1B and TNFa as well as marginally higher LPS-stimulated IL-6 and IL-8. Conflicting social roles with overlapping demands may take a greater toll on immune responses among men than women, possibly because men perceive role conflict differently and respond with different coping strategies.

1026/MENTAL VULNERABILITY PREDICTS HOSPITALIZATION FOR PEPTIC ULCER OVER 28 YEARS
Susan Levassor, MD, Internal Medicine, Aventino Medical Group, Rome, RM, Italy, Rikke K. Jacobsen, MSc, Research Centre for Prevention and Health, Capital Region, Copenhagen, DK-Glostrup, Denmark, Steffen J. Rosenstock, MD, Surgical Gastroenterology, Hvidovre University Hospital, Copenhagen, Capital Region, Denmark, Torben Jorgensen, MD, Research Centre for Prevention and Health, University of Copenhagen, Copenhagen, Capital Region, Denmark

Background: The association between psychosocial factors and peptic ulcer is controversial. Previous analyses of two waves of MONICA Study interviews on a population sample of adults in Copenhagen County showed an association between baseline stress, measured by an ad hoc scale, and confirmed incident ulcer over 11 years. Method: Mental vulnerability using a well-validated 12-item Danish questionnaire was determined in 3365 adults with no previous history of ulcer at their first MONICA interview in 1982-3, national medical registries were searched for diagnoses of peptic ulcer during hospitalizations through 2011, and the association was examined using Cox regression analyses adjusted for age, sex, and socioeconomic status. Results: 166 incident inpatients ulcers were detected. High mental vulnerability carried an adjusted Odds Ratio of 2.2, and medium mental vulnerability an Odds Ratio of 1.9, for developing ulcer. Also significantly associated with ulcer were smoking (OR 2.0 for current and 1.4 for previous smoking), no (OR 1.5) or heavy (OR 1.7) alcohol consumption, frequent use of non-steroidal antiinflammatory drugs (NSAIDs, OR 2.9), Helicobacter pylori serum IgG antibody positivity (OR 1.7), and lack of leisure time exercise (OR 2.1). When adjusted for the classic ulcer risk factors of socioeconomic status, smoking, H. pylori, and NSAIDs, high mental vulnerability remained significantly associated with ulcer incidence (OR 1.6, p = 0.04). After further adjustment for sedentary lifestyle, the association became a nonsignificant trend (OR 1.6, p = 0.08). Conclusion: Mental Vulnerability is a major risk factor for hospitalization with peptic ulcer over several decades. This association is in part mediated by behavior risk factors including smoking, use of NSAIDs, and lack of exercise.

Saturday, March 12 from 4:00 to 5:00 pm
Psychological Factors, Health and Mortality

1299/MATERNAL, ENVIRONMENTAL, AND SOCIAL CONTEXT PREDICTS DIARRHEAL INFECTION INCIDENCE IN YOUNG CHILDREN IN SUNDARBANS, INDIA
Sohini Mukherjee, B.A. Candidate, Laura M. Glynn, Ph.D., Psychology, Chapman University, Orange, CA

Diarrheal infection is the third leading cause of childhood mortality in India and is responsible for 15% of all deaths per year in children under 5 years of age (Lakshaminarayan & Jayalakshmy, 2015). The Sundarbans in West Bengal is amongst the poorest regions of India and is the epiphenomenon of age deprivation and the acute struggle against geographical and socioeconomic challenges. The incidence of diarrhea in this region is considerably high; about 42,000 reported cases occur per month, and one in five diarrhea cases are reported as severe (with blood in stool). In addition, 37% of children hospitalized for ailments were admitted due to diarrhea (Kanjilal et al., 2013). However, little research has been conducted to determine whether maternal characteristics and behaviours correlate with this incidence in India, though some studies have found certain
family characteristics to be protective in other areas such as sub-Saharan Africa (c.f. Boschi-Pinto et al., 2006). The objective of the current study was to investigate sociodemographic, psychological and environmental factors associated with diarrheal infection in children in West Bengal. A structured interview was administered in Bengali to women who were mothers to children aged five and under in 150 households in the village of Sonakhal of Ramchandrapur in West Bengal. Door to door data collection was carried out on a random sample of the entire village. Information regarding sociodemographic and socioeconomic characteristics of the mother were obtained as well as information about diarrheal incidence during the prior year in children five and under. A validated Bengali version of the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) was administered which assesses perceptions of overall social support, as well as particular support from significant others, family, and friends. In addition, mothers were asked to answer questions regarding their beliefs about the causes and methods of prevention of diarrhea. Among children five and under, 75% of males and 73% of females had at least one incidence of diarrhea in the past year (mean = 2.7). Predictors of incidence included household income, religion, type of home, and perceived social support (all p<.05). There were no significant associations between the age of the mother, mother’s age at marriage, caste, education level and incidence of diarrheal Notably, the effects of social support remained after adjusting for income, religion, and type of house. These findings suggest that further understanding the epidemiology of childhood diarrhea should not be limited to the thorough examination of environmental factors, but also requires focus on the role of the mother and her psychological states and social context.

1383/HEALTHY LIFESTYLE INDEX PREDICTS INCREASED CHRONIC CONDITIONS AND MORTALITY FIVE YEARS LATER
Diana Wang, B.S., Tara Gruenewald, Ph.D., Gerontology, University of Southern California, Los Angeles, CA
Introduction: While the roles of certain health-promoting behaviors in disease etiology are well known, less is understood about the physiological pathways through which the concurrent practice of multiple healthy behaviors influences health. In this study, we investigate whether concurrent engagement in multiple health behaviors predicts health condition burden and mortality risk five years later and multiple physiological pathways that may underlie these links. Methods: Data come from the second wave (Biomarker Substudy) and third wave of the National Survey of Midlife in the U.S. (n=945). The Healthy Lifestyle Index assesses engagement in five health-promoting behaviors: never having smoked, exercising regularly, sleeping 7-8 hours, consuming limited fast food, and drinking moderately. Results: Analyses examined Healthy Lifestyle Index scores as predictors of an increase of one or more major chronic conditions and mortality five years later; covariates included sociodemographic variables and baseline level of chronic conditions. Results: A higher Healthy Lifestyle Index score predicted lower odds of additional major conditions (OR=.816; p=.016) and dying (OR=.745; p=.014) five years later. AL mediated the association between a healthier lifestyle and additional major conditions, but not death. Examination of individual behaviors indicated generally insignificant prediction of odds of health outcomes with the exception of never having smoked predicting lower odds of dying and regular exercise predicting lower odds of increased condition burden. Conclusions: These findings indicate that greater engagement in a constellation of health-promoting behaviors is associated with lower odds of increased health condition burden and mortality over a 5-year period, and that an index of multi-system physiological risk may underlie greater odds of increased health conditions. Future research will examine whether engagement in specific combinations of health habits is particularly beneficial.

1399/PSYCHOLOGICAL WELL-BEING IS ASSOCIATED WITH ALL-CAUSE MORTALITY INDEPENDENT OF SOCIOECONOMIC STATUS: TEN-YEAR PROSPECTIVE EVIDENCE FROM A NATIONALLY REPRESENTATIVE US SAMPLE
Steven D. Barger, PhD, Timothy W. Broom, BS, Psychological Sciences, Northern Arizona University, Flagstaff, AZ
Psychological well-being is positively associated with longevity. However, there is evidence of publication bias in this literature and large prospective studies of this association are lacking. In addition, published effect estimates for the well-being/mortality association may be biased due to omission of important socioeconomic status (SES) indicators. SES is strongly associated with well-being and mortality and inclusion of a limited (e.g., 1 or 2) set of SES indicators may inflate the apparent association of well-being with mortality. The present study evaluated psychological well-being and all-cause mortality prospectively in a nationally representative U.S. sample of 20,241 adults free of diagnosed cancer or cardiovascular disease. We also evaluated a number of socioeconomic status indicators in multivariable models including education, family income, workforce status (out of work, retired etc.) and wealth (home ownership). Well-being was represented by a summary score of standardized items assessing life satisfaction, happiness and negative affect (alpha = 0.86). Vital status was ascertained ten years after the baseline assessment. There were 1,373 deaths over the 10-year period. Although SES variables were associated with mortality, after adjustment for demographic and SES variables a 1-standard deviation increase in well-being was associated with a 12% lower risk of dying over the 10-year follow up (adjusted hazard ratio = 0.88; 95% confidence interval; 0.83-0.93, p = 0.001). The magnitude of this difference was comparable in size to an increase of one death category. In this large probability sample of healthy US adults an aggregated psychological well-being measure was associated with survival independently of sociodemographic variables and a number of SES indicators. Because all participants were free of diagnosed disease at baseline reverse causality is less likely. Despite adjustment for a diverse set of SES indicators, we cannot exclude residual confounding as an explanation for the well-being/mortality association.

Saturday, March 12 from 4:00 to 5:00 pm

Respiratory Diseases

1236/MEDICAL RECORD RECOGNITION OF ANXIETY AND DEPRESSIVE SYMPTOMS IN PATIENTS WITH COPD AND CHF: WHO GETS MISSED?
Chelse A. Ratcliff, Ph.D., Terri L. Barrera, Ph.D., Psychiatry and Behavioral Sciences, Nancy J. Petersen, Ph.D., Shubhada Sansgiry, Ph.D., Medicine-Health Services Research, Michael Kauth, Ph.D., Psychiatry and Behavioral Sciences, Ann R. Cullen, M.D., Medical-Health Services Research, Jeffrey A. Cully, Ph.D., Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, Texas
Background: Chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) increases risk of mental health (MH) difficulties. The presence of a MH diagnoses in the electronic medical record (EMR) increases the odds of receiving MH care. Using a prospective sample of Veterans with COPD or CHF and clinically significant anxiety or depression, we examine 1) EMR recognition rates of MH diagnosis, 2) demographic, medical, and psychosocial predictors of EMR recognition, and 3) the association of EMR recognition with MH treatment. Methods: Veterans with COPD or CHF (N = 302) completed a telephone assessment of depression (PHQ-9) and anxiety (BAI), self-efficacy, health locus of control (HLOC), coping skills (Brief COPE), illness intrusiveness (IIR), and health-related QOL (SF-12 PCS, MCS). Each patient’s EMR was reviewed for the 12 months pre-study to determine whether patients had been recognized as having and/or treated for depression or anxiety. Multivariate logistic regression was used to examine the association of EMR recognition and treatment with demographic, medical, and psychosocial factors determined to be associated with recognition and treatment in univariate analyses. Results: Of the 302 Veterans with COPD or CHF and elevated depression (PHQ-9 > 10) and/or anxiety (BAI > 16), 106 (35%) had an EMR diagnosis of anxiety or depression, 112 (37%) met with a MH provider, 122 (40%) were prescribed psychiatric medications, and 166 (55%) received either type of MH treatment during the 12 months pre-study. Multivariate logistic regression including gender, ethnicity, marital status, and PHQ-9, BAI, HLOC, COPE, and SF-12 MCS scores revealed that depression symptom severity (OR = 1.09, CI: 1.01-1.18, p = 0.03), adaptive coping (OR = 1.78, CI: 1.09-2.91, p = 0.02), and being unmarried (OR: 1.68, CI: 1.00-2.81, p = 0.05) were independently positively associated with EMR recognition of anxiety or depression. Further, multivariate logistic regression including ethnicity, marital status, PHQ-9, BAI, HLOC, COPE, SF-12 MCS, and presence of anxiety or depression diagnosis in EMR revealed that patients with a recognized diagnosis were 9.65 times more likely to receive treatment (OR = 9.65, CI: 5.04-18.45, p < 0.01) and married patients were more 1.80 times more likely to engage in MH treatment (OR = 1.80, CI: 1.04-3.13, p = 0.04) to engage in MH treatment (psychotherapy or medication). Conclusions: Patients with COPD or CHF experiencing clinically significant anxiety or depression are under-recognized in the EMR, and recognition of mental health difficulties in the EMR may be an essential step in getting connected to appropriate mental health care. Independent of depression severity, being married or a poor user of adaptive coping increases patients’ likelihood of
being unrecognized. Mental health screening may need to be adjusted for patients at risk of being “missed” in order to improve quality of life and care.

1358/SOCIOECONOMIC STATUS, NATURALISTIC OBSERVED DAILY NEGATIVE AFFECT, AND ANTI-INFLAMMATORY GENE EXPRESSION AMONG YOUTH WITH ASTHMA

Samuele Zilioli, PhD, Erin E. Tobin, MA, Ledina Imami, MA, Richard Slatcher, PhD, Psychology, Wayne State University, Detroit, MI

Health and longevity track social stratification, such that low socioeconomic status (SES) confers greater risks of cardiovascular, respiratory, and psychiatric diseases as well as predicts infant and adult mortality. Grounded in the Reserve Capacity Model (Gallo & Matthews, 2003) – a health psychology framework for understanding how psychological factors, negative affect in particular, contribute to the socioeconomic gradient – the current research tested whether caregiver’s income and education were associated with individual differences in glucocorticoid receptor (GR) messenger RNA (mRNA) levels among youth with asthma (N = 102). Further, we tested whether this link was mediated by daily negative affect. Youth wore for four days an Electronically Activated Recorder, a relatively new naturalistic observation method used to capture participants’ behaviors and interactions as they occur in daily life. Whole blood was drawn after the naturalistic observation and used to measure levels of mRNA for the GR in peripheral blood mononuclear cells. Although income and education were not associated directly with gene expression, a significant indirect pathway through which income – but not education- was linked to lower GR gene expression via EAR negative affect was found. These findings remained significant after controlling for covariates, and suggest that some of the deleterious effects on health (i.e., inflammation of the airways) that are attributed to negative affect in youth with asthma may be mediated by decreased anti-inflammatory GR gene expression.

1462/PARENTAL INVOLVEMENT MITIGATES THE ASSOCIATION BETWEEN SOCIOECONOMIC DISADVANTAGE AND GLUCOCORTICOID RESISTANCE AMONG YOUTH WITH ASTHMA

Erin E. Tobin, M.A., Samuele Zilioli, Ph.D., Rebecca M. Sales, B.A., Psychology, Henriette Mair-Meijers, M.A., Center for Molecular Medicine and Genetics, Wayne State University, Detroit, MI; Derek Wildman, Ph.D., Department of Molecular & Integrative Physiology and Carl R. Woese Institute for Genomic Biology, University of Illinois, Urbana, IL; Francesca Luca, Ph.D., Center for Molecular Medicine and Genetics, Richard B. Slatcher, Ph.D., Psychology, Wayne State University, Detroit, MI

Research has clearly established the powerful effects of socioeconomic disadvantage (SED) on youth health. However, less often examined are the positive characteristics that may mitigate or buffer the negative health effects of developing in a disadvantaged home. We examined the links between SED, parental involvement from fathers and mothers, and asthma-related immune responses via lymphocyte glucocorticoid resistance among 137 youth (aged 10-17) with asthma. Results demonstrated greater father involvement was significantly related to a lower glucocorticoid resistance for IL5 (r = -.273, p < .05). When tested in separate models, father and mother involvement moderated the relationship between SED and glucocorticoid resistance for IL-5, independent of negative aspects of the parent-child relationship (i.e., parent-youth conflict). Simple slopes analyses revealed that the slope for low father involvement was statistically significant (β = .161, SE = .052, p = .003) but not the slope for high father involvement. Meaning that for youth reporting low father involvement, SED predicted greater IL-5 glucocorticoid resistance, while variability in SED did not predict IL-5 glucocorticoid resistance among youth reporting high father involvement. Similarly for mother involvement, simple slopes analyses revealed that the slope for low mother involvement was statistically significant (β = -.101, SE = .041, p = .015) but not the slope for high mother involvement. Again meaning that for youth reporting low mother involvement, SED predicted greater IL-5 glucocorticoid resistance while variability in SED did not predict IL-5 glucocorticoid resistance among youth reporting high mother involvement. Thus, youth with low paternal or maternal involvement were more vulnerable to the health-effects of living in homes with greater SED. These results highlight the importance of parental involvement, from fathers and mothers, on health-related biological processes among youth.

1591/COGNITIVE IMPAIRMENT DOMAINS ASSOCIATED WITH HIPPOCAMPAL METABOLITES AND DISEASE CONTROL IN ASTHMA PATIENTS

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Background: Compared to healthy individuals, older patients with asthma have an increased risk of cognitive impairments defined by the Montreal Cognitive Assessment (MoCA), which assess cognitive domains including: memory, attention, language, visuospatial skills, and abstraction. Central nervous system (CNS) pathways associated with such impairments are unknown. Magnetic resonance spectroscopy (MRS) can measure concentrations of metabolites in brain tissue to determine functionality and degeneration of neurons. This technique could help explore associations among asthma, cognitive function, and neuronal integrity. Methods: We therefore tested in individuals with asthma associations among left hippocampal metabolites and 1) asthma control with the Asthma Control Questionnaire (ACQ) and Asthma Control Test (ACT) and 2) cognitive function domains of memory, attention, language, abstraction, and visuospatial skills with the MoCA. Seven participants with asthma underwent a 3T MRS scan with volumes of interest placed in the left hippocampus. Total N-acetylaspartate (NAA) and Myo-Inositol (MI) concentrations were calculated in reference to creatine (Cr) and water. Results: The ratio of NAA, a marker of neuronal integrity, standardized to Cr, was significantly correlated with greater asthma control on both the ACT (r = .98, p < .001) and ACQ (r = .91, p < .01). MI, a putative marker of glial inflammation, was correlated with reduced asthma control on both the ACT (r = -.71, p =.07) and ACQ (r = .82, p < .02). Overall higher cognitive functioning as measured by the MoCA was significantly correlated with greater asthma control on both the ACT and ACQ, as well as with increased left hippocampal neuronal integrity indexed by NAA/Cr. In the cognitive domains of attention, abstraction and language contributed specifically to this association. Discussion: These findings suggest that having higher asthma control and indices of attention, abstraction and language may be burdened with mild cognitive impairments, specifically in areas of attention, abstraction and language, which are reflected in compromised CNS neuronal integrity. Consistent associations among multiple measures of disease control, hippocampal metabolites and cognitive function domains may indicate CNS pathways relevant to understating mild cognitive impairments in older asthmatic individuals.

Saturday, March 12 from 4:00 to 5:00 pm

Socioeconomic Factors

1550/LIFE COURSE SOCIOECONOMIC STATUS ADVERSELY ALLOSTATIC LOAD AND MORTALITY IN MIDLIFE AND OLDER ADULTHOOD

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Introduction: In previous research we have observed that individuals with greater life course socioeconomic status (SES) disadvantage, as well as those experiencing downward SES mobility from childhood to adulthood, have higher levels of allostatic load (AL)-a biomarker across 7 regulatory systems (cardiovascular, sympathetic and parasympathetic nervous systems). The current research tests whether the AL link. The present investigation examines whether greater life course SES disadvantage is associated with greater mortality risk and whether there is indication that greater AL plays a role in this link.

Methods: Data come from the National Study of Midlife in the United States (MIDUS; Waves 1-3). Wave 1 and 2 summary scores of SES disadvantage in childhood (parents’ education, childhood welfare status, financial situation) and adulthood (educational attainment, household income, financial situation) were used to construct tertile groupings for cumulative disadvantage (low, moderate, high) and mobility patterns (always disadvantaged, upwardly or downwardly mobile). Wave 2 AL was computed as the proportion of biomarkers across 7 regulatory systems (cardiovascular, sympathetic and parasympathetic nervous systems, HPA axis, inflammation, glucose and lipid metabolism) for which the proportion of biomarker values fell into the highest risk quartile of the biomarker distribution (24 biomarker indicators across the 7 systems). Logistic regression analyses examined the odds of Wave 3 mortality over an approximately 5-year follow-up as a function of cumulative SES disadvantage and SES mobility groups; age, sex, and disease burden were included as covariates. AL was examined as a mediator of SES-mortality associations.

Results: Odds of mortality were greater in those with moderate (odds ratio (OR) = 2.19, 95% CI[1.11, 4.35]) and high (OR = 2.30, 95% CI[1.11, 4.77]) levels of life course SES disadvantage compared to those with low levels. Examination of childhood to adult SES mobility patterns indicated higher odds of mortality in the persistently disadvantaged (OR = 2.06, 95% CI[0.92, 4.59]) and the downwardly mobile (OR = 2.27, 95% CI[1.04, 4.95]), compared to the
persistently advantaged. Greater AL also predicted greater odds of mortality and accounted for 7-15% of the greater odds of mortality in those with greater SES disadvantage.

Conclusions: Previously observed greater multi-system physiological dysregulation in those with greater life course SES adversity may have prognostic significance as indicated by the partial contribution of greater levels of AL to the greater odds of mortality in the more SES disadvantaged.

1306/METABOLIC SYNDROME SYMPTOMS ARE ASSOCIATED WITH CHILDHOOD SOCIOECONOMIC DISADVANTAGE

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Approximately a quarter of the world’s population suffers from metabolic syndrome, a cluster of symptoms that is associated with a two to three-fold increased risk of cardiovascular events or death and a five-fold increased risk of developing type 2 diabetes. Studies in several countries suggest that the prevalence of metabolic syndrome stratifies by socioeconomic status (SES), such that decreased educational level is associated with increased risk of developing this condition, above and beyond the effects of race/ethnicity and lifestyle factors. However, it is not well understood when in the human lifespan socioeconomic conditions are most strongly associated with elevated risk of metabolic syndrome, even though understanding this timing would be critical for maximizing the effects of preventative interventions. The present study sought to examine the independent roles of childhood versus adult SES in explaining the presence of metabolic syndrome components.

Methods: A sample of 332 Canadian participants (55.4% female; 73.5% Caucasian, 14.5% Asian, 12% other) between the ages of 15 and 55 (M = 36.6, SD = 10.7) was recruited. Childhood SES was assessed by coding maternal and paternal educational status and current SES was assessed by coding participants’ and their spouses’ current educational status. To examine the unique and independent associations of childhood versus current SES with symptoms of metabolic syndrome, a 2 x 2 study design was used. This design allowed for the evaluation of the effects of childhood SES and current SES orthogonal by recruiting equal numbers of individuals with low and high SES in childhood, and within each group recruiting roughly equal numbers of individuals with low and high current SES. We used the worldwide International Diabetes Federation definition for metabolic syndrome using recommended ethnicity and gender-specific clinical cut-offs for waist circumference, raised triglyceride levels, reduced HDL cholesterol, raised blood pressure, and presence of type 2 diabetes as indicated by HbA1c levels of 6.5% or higher.

Results: A significant association between childhood SES and current SES, and their interaction revealed that low childhood SES was significantly associated with an elevated number of metabolic syndrome components (F(1,322) = 4.45, p = .036), whereas current SES and their interaction were not (F(1,322) = .31, p = .58 and F(1,322) = 1.07, p = .30, respectively). This was independent of age, gender, racial background, and lifestyle indices (cigarette smoking, alcohol consumption, and physical activity levels), which were included as covariates.

Discussion: Low childhood SES was significantly associated with increased number of metabolic syndrome symptoms in adulthood, independently of current SES, demographics, and current lifestyle indices. These findings suggest that childhood may be an opportune period for targeting interventions aimed at reducing risk of metabolic syndrome.

1657/RACIAL DISPARITIES IN SLEEP: THE ROLE OF NEIGHBORHOOD DISADVANTAGE

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Recent meta-analyses reveal that individuals who are categorized as Black/African American (AA) show consistently poorer sleep than those who are categorized as White/European American (EA). However, the mechanisms for race differences in sleep are not well understood, and group disparities endure after household socioeconomic status (SES) is controlled. Neighborhood environment represents one important candidate mechanism for racial disparities in sleep. Associations between neighborhood disadvantage and health are well established and race differences in neighborhood characteristics are also well documented. However, to our knowledge no studies have considered the role of neighborhood disadvantage in sleep disparities between AAs and EAs. The current study addresses this knowledge gap by considering neighborhood characteristics as an explanation for race differences in sleep.

Data were derived from the second wave of the Midlife in the United States Study (2004-2005). Participants included in the analysis were 1182 adults who completed self-report sleep measures as part of the MIDUS biomarker protocol (20% AA; 80% EA; 57% female; Mean Age = 54.7 years, SD=11.7).

Sleep problems were assessed using the Pittsburgh Sleep Quality Index (PSQI). Neighborhood characteristics were geocoded by linking home addresses at the time of participation to tract-level data from the 2000 US Census. An aggregate index of neighborhood disadvantage was then created as the mean of five neighborhood level characteristics: percent below poverty line; percent working class; percent with highest level of education less than high school graduation; median household income (reversed); percent with highest level of education of more than a college degree (reverse). Population density was also controlled, as were the following individual-level covariates (age, gender, marital status, household income).

Multilevel models were used. An initial model estimated the main effect of race on sleep problems controlling for all covariates. Subsequent models then considered race differences in neighborhood disadvantage, and the degree to which race differences in sleep problems were attenuated by neighborhood effects. Model results are shown in Figure 1. The findings indicated that AAs had more sleep problems (B=1.44, SE=.40, p<.001) and lived in more disadvantaged neighborhoods (B=.98, SE=.11, p<.001) than EAs. Furthermore, neighborhood disadvantage was associated with sleep problems (B=.30, SE=.12, p=.016) and explained 24% of the race difference in sleep.

Overall, the findings suggest that neighborhood disadvantage accounts for a substantial portion of racial disparities in sleep problems among midlife adults.

1255/SOCIOECONOMIC ADVERSITY AND NEGATIVITY IN THE PARENT-CHILD RELATIONSHIP: COMPLEX COSTS FOR YOUNG CHILDREN'S PHYSICAL HEALTH

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Low socioeconomic status (SES) contributes to poor physical health across the lifespan. Less is known about factors that influence the SES-health connection in early childhood; however, developmental models highlight the potential role of early-established biological and psychological mechanisms (Matthews, Gallo, & Taylor, 2010). In particular, prior research supports evaluation of children’s physiological stress reactivity and qualities of the family context (Obradovic & Boyce, 2009). We tested the hypothesis that children’s respiratory sinus arrhythmia (RSA) reactivity and parent-child relationship quality would moderate the prospective association between SES and children’s physical health. Data were collected from 338 kindergarten children (M age = 5.32 years) and their primary caregivers (87% biological mothers) during the fall and spring of the kindergarten year. In the fall, parents reported on income and education level (SES) and quality of the parent-child relationship (PCR), and RSA was assessed via a standardized developmentally-challenging protocol (Bush et al, 2011). In both the fall and spring, children’s health-related impairment and
number of chronic medical conditions were assessed through parent report on the Health and Behavior Questionnaire. Multivariate regression was conducted within a structural equation modeling framework, with SES, RSA reactivity, PCR, SES x PCR, and SES x RSA regressed on spring chronic conditions and health-related impairment, controlling for baseline physical health. The model exhibited excellent fit: $\chi^2 = 4.15, p = .13; \text{RMSEA} = .06 [95\% \text{CI} 0, .13]; \text{CFI} = .99; \text{SRMR} = .02$. SES and PCR quality interacted to predict children’s health-related impairment ($\beta = -.08, p = .01$) such that children reared in lower SES environments who also had more negative relationships with their parents evidenced the greatest prospective physical health-related impairment. Parent-child relationship quality was not associated with children’s health-related impairment in the context of high SES. RSA reactivity was not a moderator; however, lower reactivity at the beginning of the year was prospectively associated with greater health-related impairment in the spring, above and beyond initial impairment ($\beta = -.14, p = .02$). Results suggest that parent-child relationship quality may modulate the influence of low SES on poor physical health in childhood, with negative relationships exacerbating the risks associated with early environments characterized by greater socioeconomic disadvantage. In addition, the prospective main effect of RSA reactivity on children’s health suggests it may be an important early cardiovascular risk factor.
1) Abstract 1185
ASSOCIATION BETWEEN CHRONIC NON-CARDIAC CHEST PAIN AND ANXIETY DISORDERS: A PRELIMINARY STUDY
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Introduction: Chest pain is one of the most common reasons for consultation in emergency departments. About 50% of patients present non-cardiac chest pain (NCCP) and up to 80% of NCCP have a chronic course. For up to 60% of patients, NCCP limit their ability to perform daily activities. NCCP are also associated with lower quality of life in 50% of patients and with high rates of psychiatric comorbidities. In fact, anxiety disorders are the most prevalent conditions in NCCP patients. Theoretical models suggest that pathological anxiety can be a triggering, aggravating and perpetuating factor of NCCP and their consequences. Objectives: 1) To establish the prevalence of anxiety disorders in emergency department patients with NCCP; and 2) to investigate the association between the presence of one or more anxiety disorders and chronic NCCP. Methods: This cross-sectional study includes 771 emergency department patients with NCCP. Sociodemographic characteristics, medical history, NCCP and anxiety disorders were assessed with a phone interview including the Anxiety Disorder Schedule for DSM-IV (ADIS-IV). Results: The prevalence of anxiety disorders was 28.9% among patients suffering from chronic NCCP. More specifically, the prevalence was 14.3% for panic disorder, 11.2% for social phobia and 10.7% for generalized anxiety disorder. Patients presenting at least one anxiety disorder were 2.6 times more likely to present chronic NCCP. Patients with panic disorder and generalized anxiety disorder were respectively 3.8 (95% CI=2.4-6.2) and 2.4 (95% CI=1.4-4.1) times more likely to present chronic NCCP. Conclusion. Anxiety disorders are highly associated with chronicity in patients with NCCP. Thus, anxiety disorders, especially panic disorder and generalized anxiety disorder, could be addressed in emergency departments and considered as potential clinical targets.

2) Abstract 1292
COPING STYLE AND DESIRE FOR TREATMENT AMONG PATIENTS IN OUTPATIENT CARDIAC REHABILITATION
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Background: After a new diagnosis, acute event, or exacerbation of chronic symptoms, many patients with cardiovascular disease enter cardiac rehabilitation (CR). The prospect of lifestyle changes required during CR may be stressful, leading to emotional distress and activation of coping strategies. Coping styles have been shown to influence markers of physical functioning post-CR. Less is known about the relation between coping and other psychological factors likely to influence functioning post-CR, including the desire to pursue burdensome treatments. Cardiac patients may be presented with a variety of treatment options and it is of interest to determine factors associated with accepting or denying treatment, especially in instances where it is costly or burdensome. This study evaluated the influence of coping styles, psychological distress, functional status, and specific cardiac diagnosis on desire for treatment among patients in CR.

Methods: 60 patients (38 men; mean age=56.9±10.8 years) in an outpatient CR program completed measures of optimism (Life Orientation Test), coping styles (Brief COPE), distress (Hospital Anxiety and Depression), and demographics before beginning CR. Patients also completed the Will to Live questionnaire assessing desire for treatment in extreme health circumstances that may be expensive or burdensome to others. Cardiac diagnosis and pre-CR exercise capacity (VO2peak) were also recorded. It was hypothesized that greater desire for treatment would be evident among younger patients, men, as well as those with greater disease severity and impairment, lower levels of distress, greater optimism, and greater use of adaptive coping styles. Results: Correlational analyses indicated that desire for treatment was not associated with demographics, including age and sex, functional status, optimism, or distress (all p>.05), but was associated with active coping (p=.01) and positive reframing (p>.001). Regression analyses indicated that active coping (β=.42, p=.01) and positive reframing coping (β=.57, p<.001) predicted desire for treatment when controlling for optimism and distress.

Conclusions: The findings suggest that coping characterized by active engagement and cognitive processing was associated with greater desire for treatment, regardless of the degree to which the treatment may have negative financial or social consequences for the patient and close others. Despite potential consequences, if patients with these coping styles are given treatment options, they will likely choose a more active rather than passive approach for disease management.

3) Abstract 1665
CONTRASTING EFFECTS: THE JOHN HENRYISM HYPOTHESIS AND HEART RATE VARIABILITY IN AFRICAN AMERICANS
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Background: Increased arterial stiffness contributes to increased incidence of cardiovascular disease (CVD) in the general population. Pulse wave velocity is a simple, non-invasive, and clinically relevant indicator of arterial stiffness. Typically, measures of pulse wave velocity are derived from common carotid and femoral artery pulse waves assessed with ultrasound-based equipment. While associated with CVD outcome, there are some limitations to this approach including operator dependence and equipment cost. Aim: To investigate associations between arterial stiffness, as indexed by a novel photoplethysmograph-based measure of pulse wave velocity, and behaviors linked to arterial health in a sample of young adult women. In addition to evaluating this measure, there is limited data on the impact of lifestyle behaviors on PWV in young adults without established CVD. Methods: Carotid-posterior-tibial pulse wave velocity (CPTpwv), blood pressure, demographic and health-related information was obtained from 77 young adult women (18-35 years). Following a five-minute supine rest period, pulse waves were assessed for five minutes using Biopac photoplethysmographic transducers placed over the left carotid and posterior-tibial arteries. Ensemble-averaged carotid and posterior-tibial waveforms were calculated. To measure for demographics and general health, results revealed a significant interaction between JH and SES (p < .05). Increasing JH was significantly associated with higher HRV; however, this pattern was only significant among individuals endorsing lower SES (p < .05). Previous research has linked greater striving among high SES AAAs with a number of poor health outcomes including hypertension and diminished sleep duration. Our results similarly suggest that the relative benefits of higher SES may not be as protective, especially for cardiovascular health, among African Americans. To our knowledge, the present data are the first to extend the contrasting effects of John Henryism to parasympathetic cardiac activity.

4) Abstract 1076
ASSOCIATIONS AMONG LIFESTYLE BEHAVIOURS AND A NOVEL MEASURE OF PULSE WAVE VELOCITY IN YOUNG ADULT WOMEN
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Background: Increased arterial stiffness contributes to increased incidence of cardiovascular disease (CVD) in the general population. Pulse wave velocity is a simple, non-invasive, and clinically relevant indicator of arterial stiffness. Typically, measures of pulse wave velocity are derived from common carotid and femoral artery pulse waves assessed with ultrasound-based equipment. While associated with CVD outcome, there are some limitations to this approach including operator dependence and equipment cost. Aim: To investigate associations between arterial stiffness, as indexed by a novel photoplethysmograph-based measure of pulse wave velocity, and behaviors linked to arterial health in a sample of young adult women. In addition to evaluating this measure, there is limited data on the impact of lifestyle behaviors on PWV in young adults without established CVD. Methods: Carotid-posterior-tibial pulse wave velocity (CPTpwv), blood pressure, demographic and health-related information was obtained from 77 young adult women (18-35 years). Following a five-minute supine rest period, pulse waves were assessed for five minutes using Biopac photoplethysmographic transducers placed over the left carotid and posterior-tibial arteries. Ensemble-averaged carotid and posterior-tibial waveforms were calculated. To measure for demographics and general health, results revealed a significant interaction between JH and SES (p < .05). Increasing JH was significantly associated with higher HRV; however, this pattern was only significant among individuals endorsing lower SES (p < .05). Previous research has linked greater striving among high SES AAAs with a number of poor health outcomes including hypertension and diminished sleep duration. Our results similarly suggest that the relative benefits of higher SES may not be as protective, especially for cardiovascular health, among African Americans. To our knowledge, the present data are the first to extend the contrasting effects of John Henryism to parasympathetic cardiac activity.
CPTpwv was also significantly associated with pulse pressure \((\tau = 0.27, p < 0.05)\), another index of arterial stiffness. Conclusions: The associations with pulse pressure and behavioral variables linked to arterial health suggest the potential value of this measure of PWV as well as the importance of early lifestyle on risk for CVD.

5) Abstract 1455
HEART RATE VARIABILITY, A 10 YEAR CARDIOVASCULAR DISEASE RISK SCORE AND PSYCHOLOGICAL FACTORS: CROSS-SECTIONAL INVESTIGATION IN A LARGE HEALTHY SAMPLE

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Background: For better prediction of cardiovascular disease (CVD) risk several risk algorithms encompassing multiple risk factors such as gender, age, blood pressure, cholesterol status or smoking have been developed. Heart rate variability (HRV), a non-invasive technique estimating cardiac autonomic control, is also sensitive to these risk factors. Low HRV, indicative of diminished vagal cardiovascular modulation, is a known predictor of cardiac morbidity and mortality and a marker of stress vulnerability. Here we examined the association between HRV and a 10 year CVD risk score, indexed by the Framingham cardiovascular disease risk score (FRS), in a large apparently healthy sample. We further tested the role of psychological factors that may be potentially associated with the FRS and HRV.

Methods: Data from a total of 647 respondents (age 41.6±11.5, 73 women) were available for analysis. FRS and a 10 year CVD risk were calculated using the most recent NIH guidelines. Measures of cholesterol and high-density lipoprotein were derived from fasting blood samples. Blood pressure was measured according to standard guidelines and time-domain HRV measures were calculated for the 24hr recording period and for nighttime separately.

Results: HRV measures were inversely correlated with FRS and a 10 year CVD risk in both genders \((p<0.001)\). Those with a 10 year CVD risk ≥10% had lower HRV measures compared with those with a 10 year CVD risk ≤10% \((p<0.001)\). Independently of gender and body mass index, higher HRV measures were associated with a lower likelihood of a 10 year CVD risk ≥10% \((p<0.001)\). In the ROC analysis, all HRV measures predicted an increased 10 year CVD risk.

Of the psychological measures higher levels of anxiety and depression may help to detect people with a higher CVD risk. Additionally our findings suggest that non-invasively identify people at a higher CVD risk. Furthermore, our findings provide some of the first evidence for multiple possible biological and behavioral pathways between Type D personality and increased morbidity and mortality.

6) Abstract 1180
POTENTIAL BIOLOGICAL PATHWAYS LINKING TYPE-D PERSONALITY AND POOR HEALTH: A CROSS-SECTIONAL INVESTIGATION

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Background: Type D personality, defined as a combination of high negative affect (NA) and high social isolation (SI), has been associated with poor health outcomes. However, pathways underlying this association are largely unknown.

Purpose: We investigated the relationship between Type D personality and several biological and behavioral pathways including the autonomic nervous system (ANS), the immune system, glucose regulation and sleep in a large, apparently healthy sample.

Methods: Data from a total of 647 respondents (age 41.6±11.5, 73 women) were available for analysis. Persons with Type D (NA and SI trait score ≥10) were contrasted with those without Type D. Measures of plasma fibrinogen levels, white blood cell count, high sensitivity C-reactive protein, fasting plasma glucose (FPG), cholesterol, high-density and low-density lipoprotein, glycated hemoglobin (HbA1c), creatinine, triglycerides, and albumin were derived from fasting blood samples. Urine norepinephrine and free cortisol were determined by high-performance liquid chromatography. Time-domain HRV measurements were calculated for the 24hr recording period and for nighttime separately.

Results: Persons with Type D had significantly higher HbA1c, FPG, and fibrinogen and lower nighttime HRV than those without Type D, suggesting worse glycemic control, systemic inflammation and poorer ANS modulation in Type D persons. In addition, those with Type D reported less social support and greater sleep difficulties while no group differences were observed for alcohol and cigarette consumption, physical activity and body mass index.

Conclusions: Findings provide some of the first evidence for multiple possible biological and behavioral pathways between Type D personality and increased morbidity and mortality.

7) Abstract 1515
REPORTED PHYSICAL ACTIVITY, OBJECTIVELY-MEASURED CARDIOPULMONARY FITNESS, AND POST-SURGICAL WELL-BEING IN BREAST CANCER SURVIVORS

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Breast cancer survivors commonly experience pain, depressive symptoms, cancer-related distress, and sleep problems following cancer surgery. Although prior research demonstrates that physical fitness positively impacts these issues during and after adjuvant cancer treatment, few studies have examined whether fitness benefits women’s well-being shortly following cancer surgery. We
addressed whether decreased physical fitness (measured by self-reported physical activity and objectively-measured cardiopulmonary fitness) contributed to post-surgical symptoms (pain, distress, and sleep problems) in breast cancer survivors. Approximately one-month following surgery but before receiving chemotherapy or radiation, women reported their typical physical activity, pain, depression, cancer-related distress, and sleep disturbances (measured by the Godin activity score) had more pain (p < 0.05), depression (p = 0.05), cancer-related intrusions (p < 0.05), and sleep disturbances (p < 0.10) than those who reported higher activity levels. In contrast, objectively-measured cardiopulmonary fitness did not predict post-surgical symptoms. These data provide evidence that women who report lower physical activity levels may experience poorer well-being following cancer surgery compared to those who report higher physical activity levels. People tend to overestimate their physical activity in subjective reports, and thus the more expensive objective measures of fitness are often thought to be more useful for predicting physical health outcomes. However, these data suggest that self-reported physical activity has a stronger relationship with well-being measures – post-surgical pain, depressive symptoms, cancer-related distress, and sleep problems – than objectively-measured fitness among breast cancer survivors.

8) Abstract 1433
A DEVELOPMENT STUDY OF A MOBILE INTERVENTION FOR REDUCING DISTRESS IN CAREGIVERS OF PATIENTS RECEIVING AUTOLOGOUS-HUMATPOIETIC STEM CELL TRANSPLANTATION: RESULTS FROM STAKEHOLDER GROUPS
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We previously demonstrated the efficacy of a brief, in-person, one-on-one stress management intervention to reduce distress in caregivers of patients receiving autologous hematopoietic stem cell transplants (allo-HSCT). The aim of the current study is to adapt this program to a mobilized intervention (e.g., iPad, iPhone, computer-based) for self-delivery in order to enhance dissemination and access. The PEP-PAL (PsychoEducation and skills for Patient caregivers) program consists of 9 sessions; Introduction to Stress, Mindfulness and Gratitude, How Thoughts Can Lead to Stress, Coping with Stress, Strategies for Maintaining Energy and Stamina, Coping with Uncertainty, Managing Changing Relationships and Communication, Getting Support, and Intimacy that are delivered via video instruction through a mobilized website. Development of PEP-PAL proceeded in three phases, of which I will be presenting the first phase (e.g., expert and stakeholder review). The initial development of PEP-PAL was developed based on a previous in-person skills based program that reduced distress in caregivers. The next phase of development, was to receive feedback from key stakeholders (e.g., caregivers, patients, clinicians). To this end, preliminary feedback was elicited from an expert review by caregiver stakeholders, a multidisciplinary palliative care team, and a patient research panel on the mock-up version of the website. Feedback from expert review (N = 9 caregiver and patient stakeholders and N = 15 palliative care experts) regarding PEP-PAL’s acceptability and feasibility will be presented. Sample feedback included “I love what you are trying to do here to meet the needs of caregivers,” ranging to “this seems like one more thing for caregivers to do.” In addition, participants and experts agreed on and requested more introduction to the program to explain the benefits for caregivers and preferred the mix of animation and live person delivery of information. Finally, technical feedback included “the music is too fast,” and also feedback for respite and resources earlier. The study team used caregiver feedback to adapt PEP-PAL sessions to best meet the needs of this population by adding introduction content, altering the aesthetic quality of the animated characters, and changing the background music and pace to enhance dissemination, engagement, acceptability, and usability. Future directions for development of Epipophobia-PAL and dissemination will be discussed.

9) Abstract 1115
YOGA FOR BREAST CANCER SURVIVORS: IMPACT ON CANCER-RELATED DISTRESS AND SLEEP
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In the years following breast cancer diagnosis and treatment, survivors’ distress gradually diminishes. However, many still continue to experience cancer-related distress and sleep problems. Yoga appears to reduce general psychological distress and cancer-related physical symptoms, but few studies have investigated yoga’s impact specifically on cancer-related distress or sleep quality. Thus, the current study investigated the effect of yoga on cancer-related distress and sleep problems among breast cancer survivors, using a secondary analysis from a randomized controlled trial. In the parent trial, breast cancer survivors stage 0-IIIA (N = 184) were randomized to a yoga group or wait-list control group to investigate the effects of yoga on inflammation, depression, and fatigue. The hatha yoga intervention consisted of twice-weekly, 90-minute classes for 12 weeks. The groups did not differ on baseline cancer information (e.g., cancer stage, months since diagnosis, adjuvant treatment status), including baseline cancer-related distress and sleep quality. Current analyses utilized measures of cancer-related distress (Impact of Events Scale; intrusion and avoidance subscales) and sleep quality (Pittsburgh Sleep Quality Index) at baseline and immediately following the intervention. Cancer-related distress declined more among women randomized to the yoga group than those who were waitlisted (ΔR2 = .016, p = .017), including greater reductions in intrusions (ΔR2 = .012, p = .037) and marginally significant reductions in avoidance (ΔR2 = .010, p = .059). Among women in the yoga group, women who practiced yoga more often experienced larger reductions in intrusions than women who practiced less (ΔR2 = .024, p = .048). Sleep quality also improved more among the yoga group compared to controls (ΔR2 = .019, p = .017). These results suggest that regular yoga practice may help breast cancer survivors to improve their sleep quality and lower their cancer-related distress; possibly enhancing longer-term physical and mental health outcomes.

10) Abstract 1528ANXIETY PRIOR TO CANCER DIAGNOSIS PREDICTS THE ONSET OF CARDIOVASCULAR DISEASE AMONG BREAST CANCER SURVIVORS
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Introduction: Cardiovascular disease (CVD) is a common co-morbidity in cancer survivors. Objective: This study examines the association between anxiety present in the year prior to breast cancer diagnosis and the risk of incident CVD in breast cancer survivors, while controlling for depression and traditional CVD risk factors. Methods: Adult breast cancer survivors (n=7,359) who were diagnosed between 01-01-1999 and 12-31-2010 with no history of CVD at the time of their cancer diagnosis were selected from the Dutch Cancer Registry. Drug dispensing data was derived from the PHARMO database Network and used as proxy for CVD, anxiety, and depression. Multivariable cox regression analysis was used to examine the predictive value of anxiety for developing CVD 1-14 years after diagnosis, while adjusting for age (year of cancer diagnosis), hypertension, hypercholesterolemia, and diabetes mellitus present in the year prior to breast cancer diagnosis. Results: During the follow-up period (median=5 years), 191 (2.6%) breast cancer survivors developed CVD. Women who were anxious in the year prior to their cancer diagnosis had a 44% increased CVD risk [HR=1.44; 95% CI=1.02-2.05] after adjustment for depression and traditional CVD risk factors. In addition to anxiety, older age [HR=1.07; 95% CI=1.05-1.08], taking medication for depression [HR=1.69; 95% CI=1.21-2.27], and hypertension [HR=1.68; 95% CI=1.18-2.41] increased breast cancer survivors’ risk for developing CVD.

Conclusion: Anxiety present in the year prior to breast cancer diagnosis increases the risk of incident CVD in breast cancer survivors, after adjustment for traditional CVD risk factors and depression.
11) Abstract 1365
PSYCHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF PROBLEM-FOCUSED AND EMOTIONAL APPROACH TO COPING STYLES IN GYNECOLOGICAL CANCER PATIENTS
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The cancer experience can be stressful, and different coping strategies have been shown to affect subsequent health outcomes. Problem-focused coping (PFC) and active coping and planning subcategorizes involve active attempts to resolve the stressor. An emotional approach to coping (EAC) attempts to explore one’s emotions, known as emotional processing (EP), or to communicate emotional experience (i.e. emotional expression; EE). Prior research demonstrates efficacy for each of these coping styles, but differing associations with psychological and physiological health outcomes are unknown. Among women with gynecological cancer we investigated associations of coping style with perceived stress, depressive symptoms, and diurnal cortisol profiles.

Women (N=45) were recruited within five years of an ovarian (n=21) or endometrial (n=24) cancer diagnosis. Subjects reported on coping styles (COPE, EAC), perceived stress (PSS), and depressive symptoms (BDI), and provided 2 days of saliva samples for calculation of diurnal cortisol slope, awakening response, diurnal mean, and nighttime cortisol levels. Hierarchical regressions adjusting for age at diagnosis, cancer type and stage were used to explore associations between coping style and both psychological and physiological stress variables.

Women with higher PFC reported significantly less perceived stress (p=.036), fewer depressive symptoms (p=.004), and was indicative of more rhythmic diurnal cortisol slope (p=.043). Individuals high in EP reported significantly less perceived stress (p=.015) and fewer depressive symptoms (p=.001). In contrast, higher EE was only significantly associated with flattened diurnal cortisol slope (p=.033), higher diurnal mean (p=.006), and increased nighttime cortisol (p=.002).

Results suggest PFC and EP are adaptive psychologically. Although these techniques reflect differences, each involve a proactive, thoughtful response to the stressor. However, only PFC was associated with adaptive physiological outcomes, pointing to an overall successful technique. In contrast, EE does not reflect positive adjustment in either domain. It’s possible the dysregulated cortisol profiles associated with higher EE may be explained by a relational adjustment to cancer, as EE is more likely to occur in the presence of a relational dyad. Further exploration is needed to clarify these relationships.

12) Abstract 1643
EARLY LIFE ORIGINS OF LEUKOCYTE TELOMERE LENGTH
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Adults displaying advanced cellular age are at an increased risk for developing several health problems (e.g. cancer, cardiovascular disease, depression) and even face an increased risk of mortality. Cellular aging can be indicated by the length of telomeres, DNA-protein complexes that cap the ends of chromosomes to protect the chromosome from degradation and damage. Although cross-species evidence suggests that the cellular aging ‘setpoint’ (i.e. telomere length at birth) predicts and individual’s longevity and provides an early marker of disease risk, the contribution of the intrauterine environment to the cellular aging setpoint is poorly understood. Previous studies provide strong preliminary evidence of an association between intrauterine experiences (e.g. perceived stress, negative life events, and obstetric risk) and fetal telomere length. The goal of the current prospective, longitudinal study was to examine which aspects of the maternal psychosocial environment contribute to the cellular aging ‘setpoint’ measured directly in newborn tissue. Maternal depression and anxiety were measured among 47 pregnant women. Leukocyte telomere length (LTL) among full term newborns was assessed in blood spots collected 24 hours after birth. The current study is among the first to measure telomere length in leukocytes derived directly from newborn tissue via heel stick blood spots. We found elevated maternal anxiety during pregnancy predicted shorter LTL among full-term newborns, even after accounting for potential confounding demographic and obstetric factors (e.g. sex, obstetric risk, gestational age at birth, etc). Furthermore, newborns exposed to moderate-to-severe maternal anxiety during fetal development had shorter LTL than newborns of mothers with minimal to mild symptoms (Figure 1). Maternal depression did not significantly influence the cellular aging ‘setpoint’. Our results indicate that the prenatal psychosocial environment influences early telomere biology. Therefore, these findings suggest that telomere biology may act as an early marker of disease risk and a plausible mechanism underlyng fetal programming of disease.

13) Abstract 1554
A PROSPECTIVE STUDY OF VISUOSPATIAL MEMORY DISFUNCTION IN IRRITABLE BOWEL SYNDROME
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Background: Impaired performance on a hippocampal mediated test of visuospatial episodic memory has recently been reported in irritable bowel syndrome (IBS), a brain-gut axis disorder associated with significant psychiatric and somatic co-morbidity. Prospective studies are required to validate that this cognitive deficit is a stable feature of IBS and to establish the neurobiology underpinning this deficit.

Method: Thirty two patients with IBS and 30 healthy age and IQ matched control participants were re-enrolled from a previous investigation and followed prospectively over a 6 month period. At Visit 1 (baseline) and Visit 2 (6 month follow-up) participants completed a series of tests assessing visuospatial episodic memory (Paired Associates Learning), cognitive flexibility/reversal learning (IED) and working memory (SWM) tests from the Cambridge Neuropsychological Test Automated Battery (CANTAB) and a computerised Stroop selective attention/ response inhibition test. At both visits, plasma proinflammatory cytokines were measured along with plasma tryptophan (Trp), kynurenine (Kyn), and the Trp/Kyn ratio. Saliva was collected to determine the cortisol awakening response (CAR) at both visits. GI symptom severity was measured using the IBS-symptom severity scale (IBS-SSS), and sleep quality
during the prior month was assessed by the Pittsburgh Sleep Quality Index (PSQI).

Results: Repeated measures analysis showed that across visits, patients with IBS exhibited impaired visuospatial memory performance on the PAL total errors \( p=0.008 \) and mean trials to success \( p=0.003 \). Impaired performance as determined by PAL total errors in IBS was evident at both Visits 1 \( p=0.042 \) and Visits 2 \( p=0.034 \). In accordance with previous findings, no group difference across visits were found on the IED total errors \( p=0.27 \), SWM total between errors \( p=0.097 \) or on Stroop interference \( p=0.92 \). The strongest relationship between biomarker measures and cognitive performance were found between plasma tryptophan \( p=0.057 \) and kynurenine \( p=0.09 \) and PAL total errors. There was no relationship between impaired visuospatial memory performance and GI symptoms or sleep quality (both \( p>0.05 \)).

Conclusions: Impaired visuospatial memory performance is a persistent feature of IBS that appears to be unrelated to biological indices of immune function or GI symptom severity or sleep disturbance. However, these results provide a preliminary indication that tryptophan and kynurenine may play a role in this deficit. The functional implications of impaired visuospatial memory in IBS are currently unclear and future studies are needed to elucidate the full impact on patients daily living. Moreover, intervention strategies are required to understand the neurobiological underpinnings of cognitive dysfunction in IBS.

14) Abstract 1579

CAESAREAN SECTION BIRTH, STRESS RESPONSIVENESS AND COGNITIVE FUNCTION IN YOUNG ADULTHOOD: THE MICROBIOME-GUT-BRAIN AXIS AND LONG-TERM NEURODEVELOPMENTAL OUTCOMES

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Background: Over recent years it has become evident that the physiological influence of the gut microbiota extends beyond the periphery to the central nervous system (CNS) via pathways of microbiota-gut-brain axis. Emerging evidence suggests that alterations in the composition of the gut microbiota across the lifespan may have a fundamental role in the pathophysiology of a number of mental health disorders. Of particular interest, is the impact of an altered gut microbial composition during critical neuromedicalization time windows in early life and the long-term consequences for brain function and behaviour. Infants born by caesarean section have a different gut microbiota composition during the first 3 years of life, and at greater risk for developing immune disorders such as asthma and metabolic disorders such as type 2 diabetes. However, it is currently unknown if c-section birth has negative consequences for neurodevelopment, and if these consequences are evident in later life.

Methods: Forty male participant born by c-section, and 40 male participants born per vaginal (natural born), matched on the basis of age (18-24 years), years of education and BMI, and free from any psychiatric history were subjected to the Trier Social Stress Test (TSST), completed a range of tests from the Cambridge Neuropsychological Test Automated Battery (CANTAB; visuospatial memory, response inhibition, cognitive flexibility, emotion recognition and theory of mind), a battery of psychometric measures assessing depression, anxiety, sleep quality, perceived stress, personality, empathy, and self-report measures of food frequency and physical activity. Salivary cortisol, plasma proinflammatory cytokines, Lipopolysaccharide Binding Protein (LBPro), and zonulin will be determined pre and post TSST. In addition, participants provided faecal samples on the day of the TSST for gut microbiota analysis.

Results: Analysis of all parameters is ongoing.

Conclusions: Given the significant rise in c-section births worldwide, the outcomes of this study may have significant public health and clinical implications. Moreover, these data will provide the first attempt to translate preclinical findings indicating the importance of the gut microbiota in programming brain development during early life, with adverse long-term consequences for psychological and physiological function.

15) Abstract 1107

PERINATAL MATERNAL DEPRESSIVE SYMPTOMS INFLUENCE THE DEVELOPMENT OF INFANT HPA AXIS REGULATION

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Background: Maternal depression is one of the most common prenatal complications affecting 13%-40% of pregnant women. The extraordinary pace of fetal development renders it particularly susceptible to maternal signals. Existing research, however, has focused primarily on the effects of postpartum depression. Objective: Using a prospective longitudinal design we evaluate the influence of maternal depressive symptoms during pregnancy and postpartum on infant hypothalamo-pituitary-adrenal axis (HPA) regulation. Methods: The current study followed 68 mothers and their full term infants between 24 and 34 gestational weeks and at 3 and 6 months postpartum. Maternal depressive symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS) during pregnancy (M=6.5, SD=4.7, range: 0-22) and at 3 months postpartum (M=4.86, SD=3.81, range: 0-16). At 6 months postpartum, the infant cortisol response to the still-face procedure was assessed. Infant salivary cortisol samples were collected at baseline, and at 15 minutes and 30 minutes after the challenge. Results: A repeated-measures ANOVA revealed that infant cortisol increased in response to the still-face procedure, \( p=0.011 \). Elevated maternal prenatal and postpartum depressive symptoms were associated with a larger infant cortisol response to the still face procedure \( p<0.05 \). Both pre- and postnatal maternal depressive symptoms jointly contributed to infant cortisol stress response \( p<0.05 \). Conclusions: The relationship between infant HPA-axis functioning and maternal depressive symptoms suggests that cumulative exposure to maternal depression across the pre- and postnatal period influences offspring stress regulation. These findings highlight key areas for future research and emphasize the importance of early-targeted intervention for maternal depression to improve developmental health outcomes in children.

16) Abstract 1174

SERUM n-3 POLYUNSATURATED FATTY ACIDS AND DEPRESSION RISK IN EARLY PREGNANCY: ADJUNCT CASE-CONTROL STUDY OF THE JAPAN ENVIRONMENT & CHILDREN'S STUDY

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Introduction: Japanese people are known to consume a large amount of fish compared to Western populations, although a recent National Health and Nutrition Examination Survey reported declining fish consumption in Japan, especially among younger generations. n-3 polyunsaturated fatty acids (PUFAs), such as docosahexaenoic acid (DHA), are important nutrients in pregnancy, but the relationship between n-3 PUFAs levels and maternal depressive symptoms remains controversial. This study examined the possible relationship between serum n-3 PUFA levels and depressive symptoms among expectant mothers in early pregnancy.

Methods: Data and specimen samples were obtained in a birth cohort study started in Toyama Prefecture in July 2012 as an adjunct study to the Japan Environment & Children’s Study. Blood samples were collected at 9–14 weeks’ gestation (75% of samples) or after 15 weeks (25%). Subjects with a Kessler Psychological Distress Scale score \( \geq 9 \) were assigned to the depressive symptoms group \( n=283 \). The control group \( n=283 \) was matched for age, educational level, and family income. Fatty acid composition was determined from serum samples by gas chromatography. Associations between fatty acid levels and incident depressive symptoms were evaluated by logistic regression.

Results: After adjusting for possible confounders, eicosapentaenoic acid and docosapentaenoic acid \( (n=3) \) showed inverse associations with risk of depressive symptoms, with respective odds ratios of 0.52 (95% confidence interval [CI]: 0.31, 0.85) and 0.56 (95% CI: 0.34, 0.92) for the highest quartile. For DHA, only the third quartile showed a significantly lower odds ratio (0.58; 95% CI: 0.35, 0.95).

Conclusions: This is the first study to report associations between some serum n-3 PUFAs and risk of depressive symptoms in early pregnancy. Further research is required to verify the causality of these associations.
17) Abstract 1623
EARLY LIFE EMOTIONAL ABUSE PREDICTS TRAJECTORIES OF DISTRESS FOR INDIVIDUALS COPING WITH A CHRONIC STRESSOR, IN PART BY AFFECTING SLEEP QUALITY
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Mothers of children diagnosed with cancer endure ongoing stress that can affect their psychosocial functioning. While many mothers cope well with their child’s diagnosis, evidence shows that 25-30% show prolonged symptoms of depression, anxiety and post traumatic stress. Early life adversity affects physical and mental health outcomes across the lifespan. As such, we tested whether early life emotional abuse would affect maternal distress following their child’s initial cancer diagnosis, and whether it would affect the trajectory of their distress over 12 month follow-up. Further, we tested whether differences in sleep quality would account for observed relationships. We tested this among 120 mothers (mean age: 38). Early life emotional abuse was assessed using the emotional abuse subscale of the Childhood Trauma Questionnaire (CTQ), and maternal psychological distress was a composite of depressive symptoms (Beck Depression Inventory), perceived stress (Perceived Stress Scale), and state anxiety (State-Trait Anxiety Inventory). Subjective sleep quality was measured using the subscale of the Pittsburgh Sleep Quality Index. These measures were assessed on 3 occasions: T1 (mean = 1 month post-dx), T2 (mean = 6.8 mo. post dx) and T3 (mean = 12.7 mo. post dx). Linear growth curve analyses found that independent of age, race, education, treatment intensity, and the minimization/denial scale of the CTQ, mothers who reported more emotional abuse in childhood exhibited greater psychological distress over the 12 mo. follow-up (β=.24, p = .01). Prior emotional, abuse was also associated with reduced sleep quality over time (B=0.26, t(106)=3.03, p<.001). Inclusion of sleep quality in the model reduced the effect of early life emotional abuse on maternal distress (B=0.21, t(117)=1.90, p=.06). These results suggest that emotional abuse in childhood may sensitize individuals to negative life events, resulting in prolonged psychological distress and related impairment of sleep quality. Interventions that aim to improve coping and sleep quality may be particularly beneficial for women who have experienced early life emotional abuse. Supported by the American Cancer Society RSG183677

18) Abstract 1682
RUMINATION MEDIATES THE INFLUENCE OF RACIAL DISCRIMINATION ON SUBJECTIVE SLEEP QUALITY
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Epidemiological data documents that African Americans experience greater prevalence of sleep disorders compared to their White American counterparts. Mounting research evidence indicates that racism and racial discrimination contribute to sleep disturbances among African Americans and other racial/ethnic minorities. However, the mechanisms by which racial discrimination disrupts sleep are unclear. It has been theorized that Perseverative Cognition, characterized by recurrent patterns of reflective (i.e., rumination) and anticipatory (i.e., worry) thinking about personally relevant stressors, may mediate the effects of discrimination on sleep. The present study is among the first to empirically examine this hypothesis. Sixty-four African American men and women (Mage = 20.18; SD=2.93) completed the Perceived Ethnic Discrimination Questionnaire (PEDQ), Pittsburgh Sleep Quality Index (PSQI), Penn State Worry Questionnaire (PSWQ), and Rumuative Responses Scale (RRS). Mediational analyses were conducted using the method suggested by Hayes (2013). After adjusting for age and gender, results revealed a significant indirect effect of racial discrimination on subjective sleep quality through rumination, 95% CI [0.09, 0.127], but not worry. Racial discrimination was positively associated with rumination (b=.46, SE=.16, p=.003), and rumination, in turn, was positively associated with poorer sleep quality (b=0.11, SE=.03, p<.001). As both racial discrimination and rumination have been directly linked to heart disease, diabetes, depression, and a number of other maladies, these results suggest that racial discrimination, sleep, and coping strategies (e.g., rumination) employed to manage racial discrimination experiences may be important targets for addressing racial disparities in health.

19) Abstract 1024
DAILY RUMINATION MEDIATES THE RELATIONSHIP BETWEEN TRAIT NEUROTICISM AND NIGHTLY SLEEP QUALITY

Neuroticism is one of the personality traits most strongly implicated in the development of sleep-related impairment and sleep-related disorders such as insomnia (van de Laar et al., 2010). However, the mechanisms through which the latter occurs are relatively untested, especially in racially and socioeconomically diverse samples. Ruminative or repetitive thinking about one’s past or present problems and feelings in a non-constructive way, may be one potential mechanism for how neuroticism leads to disturbed sleep. We investigated whether before-bedtime rumination about the previous day’s events accounts for an association between neuroticism and nightly sleep quality. A sample of 65 participants (Mage = 25.65, Men = 47.1%) assessed their neuroticism, sleep, and coping strategies (e.g., rumination) nightly on 3 occasions: T1 (mean = 1 month post dx), T2 (mean = 12.7 mo. post dx), and T3 (mean = 24.7 mo. post dx). Linear growth curve analyses found that independent of age, income, and gender, results revealed a significant (RRS). Mediational analyses were conducted using the method suggested by Hayes (2013). After adjusting for age, gender, results revealed a significant indirect effect of racial discrimination on subjective sleep quality through rumination, 95% CI [.009, .127], but not worry. Racial discrimination was positively associated with reduced sleep quality over time (B=.26, t(106)=3.03, p<.001). Inclusion of sleep quality in the model reduced the effect of early life emotional abuse on maternal distress (B=.21, t(117)=1.90, p=.06). These results suggest that emotional abuse in childhood may sensitize individuals to negative life events, resulting in prolonged psychological distress and related impairment of sleep quality. Interventions that aim to improve coping and sleep quality may be particularly beneficial for women who have experienced early life emotional abuse. Supported by the American Cancer Society RSG183677

20) Abstract 1038
METABOLIC SYNDROME IN HISPANIC YOUTH: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY / STUDY OF LATINOS
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Clarification of requisite symptoms for diagnosing metabolic syndrome (MetS) influences prevalence rates and populations considered at risk. Increasingly, children and adolescents are being classified as having MetS, and rates are likely to rise with growing childhood obesity. Three agreed upon criteria are cited in medical research: National Cholesterol Education Program’s Adult Treatment Panel (ATP), World Health Organization (WHO), and International Diabetes Federation (IDF). This study examined concordance among the 3 sets of criteria in 1464 children between the ages of 8–16 whose parents/legal guardians participated in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). Both boys and girls had the highest prevalence rates for MetS following the ATP definition (5.4% of boys and 2.2% of girls). The fewest cases were identified as having MetS following the WHO definition (0.3% of boys, 0% of girls). A confirmatory factor analysis was conducted to clarify the role of the MetS components (HDL cholesterol, triglycerides, fasting glucose, systolic and diastolic blood pressure, and waist circumference) and examine if all factors loaded reliably onto a single latent variable. Standardized loadings associated with fasting glucose did not reliably load onto the latent factor, suggesting that glucose does not cluster as strongly with the other risk factors that define MetS in Hispanic/Latino boys or girls. In girls, systolic blood pressure also did not reliably load onto the latent variable. Next, individuals were grouped as having MetS based on 1, 2, or all 3 criteria. Using confirmatory factor analyses of the latent variable, the difference between those that met criteria for 1 definition of MetS compared to 0 definitions was 20.32 waist circumference units. The difference between those that met criteria for 2 definitions and those that met for 0 definitions was 24.80 waist circumference units. There was no single participant who was classified as having MetS across all 3 definitions. There were 16 youths that met criteria for MetS based on only 1 definition, and 29 participants that met criteria for MetS based on multiple definitions. This finding indicate that prevalence rates of MetS in youth vary depending on the criteria utilized. This research calls into question the sets of criteria currently in practice, the accuracy of defining and diagnosing MetS in youth, and the utility of MetS in identifying youth in need of interventions.
21) Abstract 1484
SOCIOECONOMIC CONTEXT THROUGHOUT THE LIFESPAN AND COGNITIVE FUNCTIONING IN OLDER ADULTHOOD
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Objectives: Socioeconomic status (SES) has been shown to predict cognitive performance in older adulthood. In an effort to account for social and environmental variables not necessarily incorporated in SES (such as school quality and environmental pollution), socioeconomic context (SEC) refers to the social and economic environment surrounding an individual and can be used as a proxy for individual SES. Higher childhood SEC has been linked to better cognitive performance in older adulthood. However, most studies of SEC and cognitive functions have only looked at SEC at one time point and/or one cognitive functioning measure. To date, the relationship between lifespan SEC and cognitive performance in older adults has not been established. Methods: In the present study, the Trail Making Test A & B (TMT A & TMT B), Rey Auditory Verbal Memory Test (RAVLT), and the North American Adult Reading Test (NAART) were administered to 116 healthy older adults (Mage = 68.71, SD = 9.2). Lifespan SEC was then calculated at the county level using self-reported addresses from birth until 2015. Addresses were coded using US census data and loaded into a latent variable using SEM. SEC was split into childhood and adulthood with the cut-off at age 18. Results: Multiple regression models predicted cognitive functioning in older adulthood from childhood SEC and adulthood SEC, controlling for age, education, and current income. Higher childhood SEC, but not adulthood SEC, significantly predicted better executive function scores on TMT B (B = 0.186, p = 0.05) and better memory on RAVLT Recognition (B=0.187, p<0.05). Childhood SEC was not significantly related to estimated IQ (NAART), processing speed (TMT A), or other measures of verbal learning and memory (RAVLT). These findings suggest that childhood SEC predicts some aspects of cognitive performance above and beyond adulthood SEC, current family income, and other covariates. Childhood SEC may have substantial impact given that it overlaps with a critical period for brain development. In this sample, childhood SEC was most robustly related to Trails B. This test reflects executive functioning abilities, which develop later than other cognitive abilities. Therefore, childhood SEC may be especially important in the development of executive functioning given its delayed development relative to other cognitive abilities and may be implicated in policy development regarding early life. This work was supported by the National Institute on Aging (NIA-3048109783).

22) Abstract 1607
PSYCHOLOGICAL VULNERABILITIES EXPLAIN AN ASSOCIATION BETWEEN CHRONIC LIFE STRESS AND PAIN: THE ROLE OF RESILIENCE RESOURCES

Given the adverse effects of pain symptomatology in general populations, it is important to better understand the extent to which chronic life stress (e.g., early adversity, lifetime discrimination, toxic neighborhoods), psychological vulnerability (e.g., mood disturbances, neuroticism, rumination), and psychosocial resilience resources (e.g., optimism, social support, mindfulness) are associated with physical pain and perceived pain interference. Using latent factors of stress, vulnerability, and resilience, we expected that Psychosocial Vulnerability would explain an association between Life Stress and pain, and that Resilience Resources would be uniquely associated with pain. We also examined the extent to which Resilience Resources buffered associations between Life Stress and Psychosocial Vulnerability, and between Psychosocial Vulnerability and pain. Data were from a larger study with the effects of stress in a diverse sample of adults (N = 318; 58% African-American, 27% Hispanic) recruited from a housing development in the Bronx, NY. Self-reported psychosocial factors and pain symptomatology were concurrently assessed. Controlling for income, race, BMI, age, and gender, structural equation modeling showed that Life Stress and Psychosocial Vulnerability were both associated with greater pain severity and pain interference (βs = -.24, -.26, ps <.01). Resilience Resources were also associated with greater pain severity and interference (βs = -.13, -.20, ps <.01). Psychosocial Vulnerability accounted for the impact of Life Stress on pain severity and interference (RMSEA = .05, CFI = .97). Resilience Resources did not have a unique impact on pain (over and above the influence of Psychosocial Vulnerability), nor buffer the effects of vulnerability. Overall, these findings suggest that psychosocial vulnerabilities may explain a linkage between chronic life stress and pain. Protective resources appear to be less robustly associated with pain than vulnerabilities, but were uniquely related to lower pain interference in this sample. An important goal for future research will be to examine such associations prospectively and the utility of targeting pain management interventions to reduce stress and vulnerabilities, while enhancing protective resources.

23) Abstract 1282
HIGH ALLOSTATIC LOAD IS ASSOCIATED WITH BLUNTED CARDIAC REACTIVITY TO ACUTE MENTAL STRESS
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Over time, repeated or prolonged physiological adaptations to stress can compromise physiological functionality by creating excessive wear and tear on the body (i.e., high allostatic load). Elevated allostatic load has been discussed as a possible mechanism linking chronic stress to blunted cardiovascular stress reactivity. However, no study has examined the relationship between measured physiological allostatic load and cardiovascular reactivity. In fifty-four participants (Mean age (SD) = 20.9 (3.4) years, 45.3% female) resting allostatic load was computed using the cumulative sum of standardized scores of nine biomarkers from three physiological domains: cardiovascular (resting measures of heart rate, and systolic and diastolic blood pressures, and estimated cardiorespiratory fitness); neuroendocrine (resting plasma epinephrine and norepinephrine levels), and HbA1C (an important biomarker of diabetes risk). In hip ratio and body-mass index). Participants completed acute mental arithmetic and cold pressor stress tasks while heart rate and blood pressure were measured. Cardiovascular reactivity, derived for each task separately, was defined as the arithmetic difference between baseline and stress phase means. Allostatic load score was significantly related to heart rate reactivity to mental arithmetic only, t = .29, p = .04, AR2 = .083; the greater the allostatic load, the lower the cardiac stress reactivity. This relationship remained significant after controlling for task engagement and performance, measured at the conclusion of the stress task, and symptoms of depression, measured via the Hospital Anxiety and Depression Scale prior to stress testing, t = .29, p = .03, AR2 = .088. Allostatic load did not relate to blood pressure reactivity to either task. These results are consistent with the notion that blunted stress reactivity is associated with physiological dysregulation and provides unique support for the idea of elevated allostatic load as a candidate mechanism linking chronic stress to blunted stress reactivity later in life.

24) Abstract 1211
DAILY AFFECTIVE REACTIVITY IS ASSOCIATED WITH ONE’S OWN AND SPOUSAL HEMOGLOBIN A1C
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Emotional reactivity to daily stressors has been linked with negative health outcomes in previous research (Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013). Importantly, such associations may not be limited to the individual and may also affect close others such as the partner, particularly in older age when spouses increasingly rely on each other. This study extends individual focused approaches on the role of emotional reactivity to daily stressors for health by taking 21 simultaneous daily life assessments of affect and social stressors from both partners in 120 older adult couples (M age = 71 years; M relationship duration = 41 years) and linking social stressor-negative affect associations with glycated hemoglobin (HbA1C), a well-established biomarker of diabetes risk. In line with previous research, initial findings from multi-level models suggest that a greater degree of responding to a social stressor with negative affect is associated with higher HbA1C. Importantly, this daily emotional reactivity was also linked to higher HbA1C in the spouse, over and above individual results. Hence, findings indicate that one’s own emotional experiences may have implications not only for one’s own risk for diabetes, but also for the spouse’s. Taking this research forward, it may be important to extend the individual focus in our health care system to also consider close others.
25) Abstract 1646
THE INTERACTION OF NEUROTICISM AND SELF-ACCEPTANCE ON STRESS REACTIVITY
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Mindfulness meditation interventions, focusing on nonjudgmental acceptance, affect a variety of physiological health indicators, including stress reactivity. However, it is unclear if increased self-acceptance is the driving force behind these effects. Additionally, this relationship has not been examined in the context of personality factors, despite the fact that certain personality traits (particularly neuroticism) are associated with a variety of physiological health indicators, including cortisol reactivity. Therefore, the present study was designed to integrate these findings and examine the hypothesis that self-acceptance moderates the relationship between neuroticism and acute stress reactivity. Cross-sectional data came from the Pittsburgh Common Cold Study 3. On average, participants (N=213) were 30 years old (SD=10.85; range 18-55 years), with a relatively equal gender distribution (42.3% female). Neuroticism was assessed via the Emotional Stability subscale of the International Personality Item Pool, while self-acceptance was assessed via the Self-Acceptance subscale of the Psychological Well-Being scale. Acute stress reactivity was assessed by calculating the area under the curve (AUC) with respect to ground of the cortisol response to an acute lab stressor. Hierarchical regression analyses indicated that the interaction of neuroticism and self-acceptance accounted for a small but significant amount of the variance in the acute stress response (AR2=0.03, p<0.05), suggesting that self-acceptance moderates the relationship between neuroticism and the acute stress response. As expected, in individuals with higher self-acceptance, higher levels of neuroticism were positively linked with greater cortisol AUC. However, in those with lower self-acceptance, neuroticism was negatively associated with cortisol AUC. These results suggest that two very different types of people (i.e., higher self-acceptance and lower neurotic vs. lower self-acceptance and higher neurotic) may have a reduced or blunted cortisol response to acute stress. Thus, these provocative findings demand further investigation to tease apart the health advantage (e.g., reduced cortisol reactivity) or disadvantage (e.g., blunted cortisol reactivity) to a lower cortisol AUC response to acute stress.

26) Abstract 1415
DO UNTREATED INDIVIDUALS KNOW IF THEY EXHIBIT A WHITE COAT EFFECT?
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Objective: The white-coat effect (WCE), a phenomenon wherein blood pressure (BP) assessments in some people tend to be higher in the clinic setting than when taken outside the clinic, has been shown to be related to in-clinic anxiety and blood pressure expectancy. To further our knowledge about this, we investigated whether a person’s belief/expectation as to whether their in-clinic BP tends to be higher than their usual BP is predictive of their actual BP. Methods: The Masked Hypertension Study enrolled employed individuals, age ≥21, not taking antihypertensive medication, with a pre-enrollment screening BP ≤160/110 mmHg and no history of CHD or stroke. The Masked Hypertension Study was designed to integrate these findings and examine the hypothesis that self-acceptance is the driving force behind findings. Results: Those who expected their BP to be higher than usual in the clinic had higher awake systolic ABP (p<0.0001) and higher clinic SBP (p<0.0001); more immediately relevant, they also had a substantially higher WCE (p<0.0001, see Figure). However, it is noteworthy that almost everyone’s predicted WCE was negative (ABP clinic BP; a “masked hypertension effect”), with those who thought there would be no difference having a mean clinic SBP that was, on average, 7.7 mmHg LOWER than their mean awake ABP. (Only 6.5% of participants exhibited a WCE ≥5 mmHg; 63.4% exhibited a masked HT effect ≥5 mmHg.) Conclusion: Very few individuals exhibited a true white coat effect; however, individuals that strongly believed that their in-clinic blood pressures would be “higher than usual” showed a substantially larger WCE than others. This suggests that people tend to be correct when they expect higher than normal blood pressure measurements in the clinic.

27) Abstract 1583
PSYCHOBIOLOGICAL STRESS RESPONSES IN PATIENTS WITH FUNCTIONAL SOMATIC SYNDROMES
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Functional somatic syndromes (FSS) are debilitating illnesses that refer to a complex of somatic symptoms that cannot be fully attributed to a general medical condition. Accumulating evidence suggests an involvement of psychosocial stress and alterations in stress-responsive biological systems. However, only few studies have examined responses to acute stressors or concomitantly measured parameters from multiple stress systems. This study’s objective was therefore to study neuroendocrine and autonomic responses to a social-evaluative stressor in both FSS patients and healthy controls. This is an ongoing study. Data are available for 56 women (43.4±14.9 years, 23.7±3.3 kg/m²): 40 patients suffering from at least one FSS and 16 healthy controls. After a thorough medical and psychiatric screening to exclude conditions causing FSS symptoms as well as conditions affecting dependent variables, all participants were exposed to the Trier Social Stress Test (TSST). Salivary cortisol and alpha-amylase were repeatedly assessed (-30, -1, +10, +20, +30, +45, +60, +75, +90, +120min in relation to TSST introduction) to monitor neuroendocrine and autonomic responsiveness to the stressor. Results showed the typical delayed increase of cortisol and rapid increase of alpha-amylase (both p < 0.001) in response to the TSST. While cortisol response trajectories appeared comparable (p > 0.9), FSS patients showed lower overall levels of cortisol (p = 0.054) and slightly diminished alpha-amylase responses (p = 0.062). Baseline levels (after a 45 minute resting phase) did not differ between groups (p > 0.16). Mean stress reactivity (Area under the curve with respect to baseline) was comparable between patients and controls (both p > 0.71). This study’s preliminary findings support the notion of a general hypocortisolism in FSS while no abnormalities in the HPA stress reactivity were observed. Furthermore, our results extend previous knowledge on autonomic functioning in FSS by employing a powerful stressor of high ecological relevance. However, we did not find support for either hyper- or hypoarousal in FSS. Upon completion of this study, we will be able to address possible variations within and among different FSS as well as to acknowledge potential confounders that may contribute to findings.

28) Abstract 1181
MINDFULNESS MEDITATION MODERATES ASSOCIATIONS BETWEEN STRESS AND LOW AND HIGH ACTIVATION POSITIVE AFFECT BUT NOT STRESS AND NEGATIVE AFFECT
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The degree to which changes in emotional state explain how mindfulness meditation (MM) reduces psychological stress is unclear. The majority of studies with MM have used global assessments of recalled affect and have not differentiated between low activation positive affect (PA) and high activation PA, despite theoretical and empirical evidence that these measurement issues likely affect results. The present study examined the effects of a short-term MM
waitlist controlled intervention on perceived stress and daily affect. Participants in the MM condition were trained by a certified MM instructor for 2.5 hours, and engaged in MM on their own for one week with guided recordings. Participants (N=103) provided 491 daily assessments of stress, affect, and minutes spent meditating. Affect was separated into low activation PA (e.g., calm, relaxed), high activation PA (e.g., happy, enthusiastic), and negative affect (NA; e.g., sad, anxious). Hierarchical linear modeling was used for all analyses. Results indicated that on days where participants reported more stress than normal for them, they also reported less low and high activation PA and more NA (ps < .001). Condition (MM, control) moderated the links between stress and high activation PA (p<0.05) as well as low activation PA (p<0.01), such that those in the MM condition reported a weaker association between stress and PA, but did not moderate the link between stress and NA (p = .86). Minutes spent meditating each day moderated the link between stress and low activation PA, such that those who spent more time meditating reported a weaker association between stress and low activation PA (p<0.01), but did not moderate the relationship between stress and high activation PA (p = .13) or NA (p = .127). This research suggests that MM may protect against the loss of both high and low activation positive emotions during times of stress, but spending more time meditating may only protect against the loss of low activation PA. MM did not reduce negative affect during times of stress; this may be due to activation levels but it was not possible in the present research to differentiate cleanly between low and high activation NA. This research highlights the need to differentiate affect by activation level. Future studies should corroborate these distinctions in the effect of MM on activation levels in affect.

29) Abstract 1680 DEFAULT MODE NETWORK FUNCTIONAL CONNECTIVITY IS ASSOCIATED WITH ANXIETY IN FIRST TIME MOTHERS DURING THE POSTPARTUM PERIOD
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The postpartum period is a time of significant neurological and emotional changes. Up to 30% of new mothers will experience some form of psychosocial distress. This is in important evidence that altered neural functional connectivity (FC) may underlie various psychopathologies. In particular, altered FC in resting state networks such as the default mode (DMN) has been found in individuals experiencing anxiety and stress. In this study we set out to investigate the association between postnatal anxiety and FC of the DMN in first time mothers. 23 first time mothers (Mean age=25.48; SD= 5.20) participated in the study. Prior to the scan, the participants completed the Spielberger State Trait Anxiety Inventory (STAI). Resting state functional magnetic resonance imaging data was collected to assess functional connectivity while the mothers were not engaged in a task in the scanner for 5 minutes. Preprocessing was performed using SPM8 and the CONN toolbox was used for seed based connectivity analysis. Mean BOLD time series data was calculated for the PCC seed region for each participant. Bivariate correlations were then calculated between the PCC seed region and other voxels in the brain. Regression were performed to assess the association between participant's state anxiety and DMN FC. Group analyses reveal that maternal STAI is associated with greater positive functional connectivity between the PCC seed region and voxels within the left frontal pole (x,y,z = -28, 52, -12; t=4.57, p < 0.001, cluster size >100). This study is the first to examine the association between FC and state anxiety in first time mothers during the postpartum period. The findings provide evidence that altered patterns in FC may underlie individual variation in anxiety levels in first time mothers. PCC-frontal lobe connectivity is involved in inward attention and heightened activity of the FC network in more anxious women could be due to increased rumination or worry about the future. The postpartum period is a sensitive window characterized by structural brain changes and increased recruitment of functions such as planning. Thus, further identification of FC patterns in such an essential network such as the DMN may help clarify the biological mechanisms involved in postpartum emotion dysregulation. This knowledge could help guide the development of neural circuit-specific treatments that would benefit mother’s mental health and, thus, child outcomes.

30) Abstract 1666 SURVIVAL IN MOTOR NEURON DISEASE: AN ANALYSIS OF EXECUTIVE FUNCTIONING AND BEHAVIOR
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Amyotrophic Lateral Sclerosis (ALS) and Primary Lateral Sclerosis (PLS) are two forms of neurodegenerative motor neuron disease, which can be fatal. Accumulating evidence has revealed that cognitive and behavioral deficits are frequently comorbid with motor neuron disease. Executive functions in particular have been identified as a commonly impaired domain. The majority of impairment found in patients is mild, with a small proportion developing dementia. Patients with comorbid ALS and dementia have a shorter survival time than patients with either diagnosis exclusively. However, the implications of cognitive and behavioral deficits in patients with mild impairment are unclear. The current study examined executive functioning and behavior in patients with ALS (n = 31) or PLS (n = 6) on survival over a 5-year period. The Wisconsin Card Sorting Task (WCST) is a performance-based executive function index of perseveration and abstract thinking, which is sensitive to frontal lobe dysfunction. The Behavior Rating Inventory of Executive Functions (BRIEF-A) is a behavioral index of self-regulation in patients’ everyday environment in two subdomains (i.e., Behavioral Regulation and Meta Cognition), reported by patients and caregivers. Cox proportional hazard regressions were conducted controlling for age, disease type, onset site, disease duration, and bipap use. Greater patient-reported impairments in Behavioral Regulation and Meta Cognition were associated with a 94% and 100% increased mortality risk respectively (adjusted HR = 1.94, 95% CI 1.84 - 2.04, p = .03; adjusted HR = 2.03, 95% CI 1.95 - 2.12, p = .009). Patient WSCC perseverative errors were associated with a 30% increased mortality risk, though significance was not reached. Caregiver-reported BRIEF-A did not significantly predict survival. Patient-reported behavioral impairment is an important indicator of poor prognosis in patients with ALS. Divergence in patient and caregiver behavioral ratings may indicate that patients with ALS are particularly attuned to behavioral deficits in their everyday environment. Alternatively, patients’ poor behavior ratings may reflect psychological distress. The effect of performance-based executive function on survival merits further research. Perseverative errors on the WCST did not significantly impact survival in this small sample.

31) Abstract 1492 MULTIPLE CORTICAL AREAS INFLUENCE THE PARASYMPATHETIC AND SYMPATHETIC CONTROL OF THE RAT STOMACH
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Descending neural commands from higher brain structures profoundly influence stomach function. However, the cortical sources of these neural commands remain poorly understood. To address this issue, we have begun to define the site of origin of cerebral cortical commands for the autonomic control of the stomach. To do so, we injected rabies virus into the rat stomach and used the retrograde transneuronal transport of the virus, along with careful adjustment of survival times, to identify the location of cortical neurons that are directly or indirectly involved in stomach regulation. Bilateral, subdiaphragmatic vagal nerve sections allowed us to selectively restrict viral transport to sympathetic pathways. Transneuronal transport mediated by vagal pathways labeled layer V neurons found largely in three cortical areas: the insula (66%) and the ventromedial prefrontal cortex (28%). In contrast, transneuronal transport mediated by sympathetic pathways labeled layer V neurons found largely in three cortical areas: primary motor cortex (68%), secondary motor cortex (10%), and primary somatosensory cortex (19%). Thus, largely separate cortical networks have direct influence over the vagal or sympathetic function of the rat stomach. An important contribution of the cortical influence on sympathetic control of the stomach could be mediated by neural circuits that involve an additional synaptic relay. To explore this possibility, we extended the survival time in vagal nerve-sectioned animals to allow one additional stage of transneuronal transport. In these animals, cortical neurons were still found predominantly in three cortical areas: primary motor cortex (45%), secondary motor cortex (19%), and primary somatosensory cortex (9%). However, a notable minority of labeled neurons was also found in the medial prefrontal cortex (11%) and the insula (8%). Thus, while sensorimotor regions of the cortex have the most substantial influence, non-motor cortical regions also gain some less substantial, indirect influence on the sympathetic regulation of the stomach. These findings have important implications for understanding the neural substrate mediating top-down influences on the autonomic regulation of the stomach. The insula and prefrontal cortical network is primarily involved in cognition and affect. Our results imply that this network has a significant, direct influence on vagal function, and a less substantial, indirect influence on sympathetic function. Moreover, a sensorimotor network has the predominant influence on sympathetic regulation, with no significant role in the vagal control of stomach function. These findings suggest unique contributions to stomach regulation during a range of cognitive, emotional, and behavioral events.
32) Abstract 1285  
THE UTILITY OF HAIR CORTISOL CONCENTRATIONS IN THE PREDICTION OF PTSD SYMPTOMS AND ALCOHOL-RELATED DRINKING MOTIVES FOLLOWING TRAUMATIC PHYSICAL INJURY  
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Hair cortisol analysis represents a relatively novel, non-invasive method for retrospective assessment of cumulative cortisol. Alterations in hair cortisol concentrations (HCC) have been associated with traumatized populations and those with posttraumatic stress disorder (PTSD) and/or specific PTSD symptom (PTSS) clusters, though the direction of association is mixed: some studies report higher HCC following trauma (Luo et al., 2014; Steudte et al., 2011) while the majority of studies demonstrate lower HCC in traumatized individuals or those with PTSD/PTSS (Steudte et al., 2013; Steudte-Schmidtgen et al., 2015). These inconsistencies may be due to varied samples (e.g., limited to only males and/or females; adolescents vs. adults), study designs (e.g., prospective/longitudinal vs. cross-sectional) and the timing of HCC assessment (e.g., post-military deployment; chronic PTSD). The current longitudinal study sought to examine whether HCC predicts PTSD following civilian trauma in male and female injured adults. Further, given the high comorbidity between PTSD and substance use, we also examined whether HCC predicts alcohol-related drinking motives following trauma. Though prior research suggests that higher salivary cortisol levels are associated with drinking motives (Wemm et al., 2013), it is unknown whether this can be replicated with HCC. We obtained HCC from 35 adults (aged 18-65) who endorsed Criterion A of the DSM-IV PTSD diagnosis following a traumatic physical injury (motor vehicle accidents, falls, & physical assaults). At 2-weeks post-trauma, we collected 3 cm hair samples from the scalp, and participants completed the Posttraumatic Diagnostic Scale (Foa et al., 1997) for initial PTSS, and the Drinking Motives Questionnaire-Revised (Cooney, 2004) for social, coping, and enhancement drinking motives. Participants also completed the PTSD Checklist (Weathers et al., 1993) 6-weeks post-trauma. Given that a 1 cm sample of hair reflects the past month’s cortisol levels, this hair sample reflects both pre-and peri-trauma cortisol. Controlling for initial PTSS, hierarchical regression analyses revealed that higher HCC predicted higher avoidance symptoms of PTSD at 6-weeks post-trauma (p = .05). HCC was not associated with overall PTSS, intrusions, or hyperarousal (p’s > .05). Further, higher HCC also predicted social and coping drinking motives (p < .05); this study is the first to demonstrate a relationship between HCC and drinking motives. These results contribute to the existing literature suggesting that pre-and peri-trauma HCC may serve as a biological risk factor for the development of posttraumatic consequences, and highlight specific symptoms that may be targeted for intervention in those with high HCC in the aftermath of a traumatic injury.

33) Abstract 1602  
DIFFERENTIAL PREDICTORS OF POSTTRAUMATIC STRESS AND POSTTRAUMATIC GROWTH  
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Background: While many are resilient to traumatic experiences, a significant minority experience psychological impairment, such as posttraumatic stress disorder. This can negatively impact individuals both mentally (e.g. anxiety, depression) and physically (e.g. physical functioning, pain). Other individuals may experience posttraumatic growth and be able to more fully appreciate and enjoy life. Both posttraumatic stress and growth develop from the same antecedents and can occur concurrently. However, there is a paucity of research regarding the risk and resiliency factors that differentially predict them. Purpose: The purpose of this analysis was to determine the contributions of amenable risk and resiliency factors to the development of posttraumatic stress and growth in order to better understand these constructs and to inform treatment interventions. Methods: A longitudinal examination of lung cancer patients was used in which participants had data collected after an initial visit to their cancer clinic, then again at two and four months later. Lung cancer provided a prime model of trauma as it has the highest cancer mortality rate in the U.S. and prognosis is often grim. Additionally, it is an ongoing trauma that patients deal with on a daily basis. In addition to stable factors (gender, age, income, and trauma history), the amenable factors of social support, disclosure to social support, quality of primary social relationship, challenge appraisal, harm/threat appraisal, and benign appraisal were examined for contributions to the development of posttraumatic stress and growth. Results: The amenable predictors of one’s primary source of social support and one’s cognitive appraisal of illness differentially predicted posttraumatic stress and growth. Specifically, better quality of one’s primary social support led to greater growth (p = .007) and poorer quality led to greater posttraumatic stress (p = .02). Additionally, greater cognitive appraisal of challenge led to more growth (p = .002), while higher appraisal of harm/threat led to greater development of posttraumatic stress (p < .001). Conclusions: These findings suggest that treatment which addresses patients’ appraisal of their illness and relays to their social support the important role they play can both attenuate posttraumatic stress symptoms and foster posttraumatic growth.

34) Abstract 1559  
PTSS SYMPTOM SEVERITY AS A RISK MECHANISM LINKING COMBAT EXPOSURE TO POST-DEPLOYMENT PHYSICAL HEALTH IN GULF WAR VETERANS  
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Background: Exposure to potentially traumatic stressors during military deployment places service members at risk for poor post-deployment physical health. The relationship between stressor exposure and physical health is complex, with numerous factors potentially impacting the likelihood of subsequent health problems and decrements to health-related functioning. Posttraumatic stress disorder (PTSD) is associated with poor health in both civilians and veterans, and represents one potential pathway of risk. The present study examined associations between combat exposure and post-deployment physical health and functioning, with a focus on PTSD symptom severity as a potential mediator. Methods: Participants included 2929 (92% male; mean age: 30) Army personnel who had been deployed to the Gulf War; they completed three waves of a large-scale longitudinal study. Time 1 (T1) surveys were completed within 5 days of return from Gulf War deployment, Time 2 (T2) surveys were completed 18-24 months later, and Time 3 (T3) surveys were completed 4-5 years after T2. War zone stressor exposure was assessed at T1. PTSD symptom severity was evaluated at T1 and T2 using the Mississippi Scale for Combat-Related PTSD. Post-deployment onset physical health (symptoms and conditions) were evaluated using self-reported checklists at T3, and health-related functioning/quality of life was measured using the SF-36. Data were analyzed using latent change score models within a structural equation modeling (SEM) framework. Results: Significant bivariate associations were found among war zone stressor exposure, PTSD symptom severity, and physical health. SEM results suggest both important direct links from war zone stressors and PTSD symptom severity to health outcomes and the proposed mediational role of change in PTSD symptom severity over time. Conclusions: Findings suggest that worsening PTSD symptom severity undermines physical and functional health among Veterans deployed during the Gulf War. Also, change in PTSD symptom severity was a significant mediating mechanism linking war zone stressor exposure to indicators of physical and functional health. These findings underscore the importance of monitoring PTSD symptoms and health status over time in this and other populations of deployed veterans.
PTSD SYMPTOM CLUSTERS AS BETTER PREDICTORS OF CRP LEVELS IN IRAQI REFUGEES RESIDING IN THE UNITED STATES

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Post-Traumatic Stress Disorder (PTSD) is a condition of persistent mental and emotional stress due to traumatic exposure, and is linked to higher rates of physical illness. One possibility of PTSD attributing to higher rates of physical illness is C-Reactive Protein level (CRP), a proinflammatory marker. Findings are inconsistent in regards to the association between CRP and PTSD. With some studies showing increased CRP in individuals with PTSD (Spitzer, et al., 2009), some showing decreased CRP in those with PTSD (Sondergaard, et al., 2003), and other studies showing no association between CRP and PTSD (McCann, et al., 2011) (von Kanel, et al., 2007). Varying results in the literature regarding the association between PTSD and CRP suggests that the relationship must be further examined. To address the inconsistency in the literature regarding this topic, this study aimed to investigate whether certain PTSD symptom clusters would be able to predict CRP levels better than others, and better than PTSD as a global measure. PTSD Checklist-Civilian Version was self-administered and blood samples were collected at a community clinic from 51 Iraqi male refugees (M=35.53, SD= 11.38). PTSD symptoms were broken down to the four different symptom clusters based on the DSM-V diagnostic criteria: Avoidance, Hyper-arousal, Negative Emotionality, and Re-experiencing. Pearson Correlations were computed between CRP levels and global PTSD symptom score, the four PTSD symptom clusters, BMI and age. Five linear regressions were conducted to predict CRP levels using age, BMI, and trauma experienced in home country in all analyses, but using global PTSD, negative emotionality, hyper-arousal, re-experiencing, and avoidance symptoms in each linear regression. The results revealed a positive correlation between CRP and Global PTSD Score, negative emotionality, hyper-arousal, re-experiencing, BMI, and age. The results from the regression models revealed that negative emotionality was the only PTSD symptom cluster that was a significant predictor of CRP levels (Beta=0.30, t(46)=2.19, p<.05. The results of this study may account for the variability in research regarding PTSD and CRP, as this suggests, the relationship between PTSD and CRP levels may be driven by the negative emotionality symptom cluster. These findings can provide insight into a body of literature that has demonstrated a strong association between CRP and depression. If supported in future studies, these findings could have important clinical implications by having interventions target those depressive symptoms, which could lead to decreased inflammation and decrease the risks or severity of health problems associated with inflammation.
36) Abstract 1019
THE MODERATING ROLE OF DYSFUNCTIONAL PARENT-CHILD RELATIONSHIPS ON THE ASSOCIATION BETWEEN OUTWARD ANGER EXPRESSION AND PHYSICAL HEALTH IN YOUTH FROM LOW-INCOME FAMILIES
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Purpose/Background: The purpose of this study is to examine the role of outward anger expression on physical health outcomes (number of illnesses in the past year, two-year medical service utilization, sleep problems and health-related quality of life) while also assessing the moderating effect of parent-child dysfunction on this relationship. This is an important construct to examine as research indicates there is a relationship between unhealthy family environments, mental and physical health.
Methods: Participants were 125 parent-child dyads (M child age = 9.48 years) recruited from a primary care medical clinic (many on Medicaid). Child participants completed the Anger Expression Scale for Children and the Pediatric Quality of Life Inventory. Parents completed a sleep problems scale adapted from the Child Behavior Checklist as well as the Parenting Stress Index - Short Form. Medical records were extracted from an electronic database at the facility. Records indicated the number of illnesses reported within the past year as well as health visits attended for the child participant within the last two years.
Results: Linear regression analyses were employed with anger expression and parent-child dysfunction as predictors of number of illnesses in the past year, two-year medical service utilization, sleep problems and HRQL. As hypothesized, outward anger expression was associated with greater medical service utilization, greater number of illnesses in the past year, more sleep problems, and a lower HRQL (p < .05). Parent-child relationship dysfunction alone did not significantly predict medical service utilization, number of illnesses, or sleep problems; however, it was associated with a lower HRQL. Parent-child relationship dysfunction significantly moderated the relationship between outward anger expression with number of illnesses and medical service utilization; however, the interaction was not a significant predictor of sleep problems or HRQL.
Conclusion: Outward anger expression is related to a variety of negative health outcomes in youth. Moreover, parent-child relationships with high levels of dysfunction tend to exacerbate the effects of child anger such that greater dysfunction is associated with worse physical health. This study helps to fill gaps in the literature by providing a better understanding of the physical health outcomes associated with child anger. This study also suggests the importance of intervening with child anger and parent-child dysfunction, and urges clinicians to treat problematic anger expression and parenting relationships.

37) Abstract 1121
INFLUENCE OF PSYCHOSOCIAL FACTORS SUCH AS BURDEN OF EARLY LIFE ADVERSITIES AND LIFE EVENTS, AND THE COGNITIVE AND AFFECTIVE PROCESSING OF SUBJECTIVE CONTRADICTIONS AND CONFLICTS ON DEPRESSIVE SYMPTOMS, ANXIETY, DISTRESS, INTERPERSONAL DIFFICULTIES AND QUALITY OF LIFE AND THE TREATMENT OUTCOME
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Patients with severe depressive, anxiety, eating, somatoform, personality and trauma related disorders improve during a multidisciplinary, multimodal psychotherapeutic treatment. We explored whether the burden of early life adversities and life events, or the way of cognitive and affective processing of subjective contradictions and conflicts affect the degree of symptoms at the beginning and/or the outcome of treatment.
From 11/2008 until 9/2015 581 patients (mean age 33.7, range 14.4 - 78.75; 79.0% female) were treated as in-patients and/or in the day clinic of the Department of Psychosomatic and Psychotherapeutic Medicine of a non-profit private hospital. 39.7% suffered from a depressive disorder as main diagnosis, 9.6% from anxiety disorders, 24% from eating disorders, 5.4% from somatoform disorders, 5.4% from personality disorders and 7% from disorders related to trauma.
Interpersonal difficulties (ID) (IIP-D, total score), depressive symptoms (DE) and anxiety (AX) (HADS, Anxiety and Depression score, distress (BSCL, GSI) and quality of life (QOL) (SF-36, physical and mental component summary score) were assessed at the beginning and at the end of treatment.
"Burden of early life adversities, life events" and the way of cognitive (such as "relation to reality", "imagination", "social conformation") and affective (such as "emotionally empty relationships", "aggression inability") processing of subjective contradictions and conflicts were assessed at the beginning with a German questionnaire for the assessment of psychosomatic disease processes (FAPK).
There was a significant improvement (p<.05) of ID, DE, AX, DS and QOL during treatment. At the beginning "relation to reality" was (p<.05) associated with ID, DE, AX, DS and QOL of life; "burden" was associated (p<.05) with ID, AX and DS. "Relation to reality" and "aggression inability" were associated (p<.05) with the outcome for AX, DE, DS and QOL.

38) Abstract 1207
ENVIRONMENTAL RISK AND MATERNAL MENTAL HEALTH: DO RISK FACTORS DIFFER AMONG NON-HISPANIC, HISPANIC, AND HISPANIC-IMMIGRANT MOTHERS?
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Introduction: When mother’s mental health is compromised, children are at greater risk for poor behavioral (Goodman et al., 2011), cognitive (Peterson & Albers, 2001) and health (Zeller et al., 2007) outcomes. Despite these established links for European Americans, fewer studies have examined parental mental health and child outcomes in Hispanic immigrants. Importantly, some key risks may operate differently for Hispanic-immigrant families (Badanes et al. 2014). Thus, issues of measurement variance are important to address to accurately identify families for services.
Methods: Participants were 123 parents (98% mothers) with a child (5-46 months) in Early Head Start. Parents were 36% (n=44) non-Hispanic, 18% (n=22) Hispanic, and 46% (n=57) Hispanic immigrant. Over 86% of families were living in poverty (<200% FPL).
Results: For non-Hispanic, Hispanic, and Hispanic-immigrants. Results: For all parents, income and education were unrelated to current depression, anxiety, or parenting stress. Non-Hispanics’ ACE and economic hardship, respectively, related to parent depression (r=.58, p<.01; r=.53, p<.01), anxiety (r=.52, p<.01; r=.57, p<.01) and parenting stress (r=.42, p<.01; r=.45, p<.01). For Hispanics, ACE related to depression (r=.43, p<.05) and anxiety (r=.70, p<.01), but not parenting stress. For Hispanic-immigrants, ACE and economic hardship only related to anxiety (r=.29, p<.05; r=.37, p<.01).
Discussion: Results show that risks differ for non-Hispanic and Hispanic parents. This may indicate important measurement variance or mean that different risks predict poor outcomes for different groups. Understanding how to measure risks for Hispanic immigrant families is important considering the U.S.’s rapidly changing population. Accurately determining risks may help physicians, clinicians, and researchers to determine appropriate families to refer to intervention.

39) Abstract 1217
COPING WITH CHILDHOOD ADVERSITY: IDENTIFYING PATHWAYS TO HEALTH RESILIENCE IN ADULTHOOD
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Objective. Adverse childhood experiences (ACEs) have repeatedly been shown to have deleterious effects on mental and physical health. ACEs may lead to the development of less effective coping styles, and less adaptive coping may heighten biological reactivity to stress, thereby resulting in higher allostatic load and more health conditions. We sought to examine the long-term effects of ACEs on health conditions, reporting population rates of health conditions associated with ACEs. Secondly, we determined if problem-focused coping may be a mechanism through which ACEs influence health functioning in adulthood.
Methods. Longitudinal data were drawn from 3,865 participants in the Midlife Development in the United States study (MIDUS I; ages 25-74), and again an approximately 10-year later (MIDUS II). We examined the effects of ACEs (assessed at baseline) on the development of 30 different health conditions (assessed at follow-up). ACE items included measures of childhood financial status; parental education; parental absence, divorce, or death; emotional, physical, and sexual abuse; and mental and physical health at the age of 16.
Problem-focused coping was assessed by a 12-item scale, combining the constructs of ‘positive reinterpretation and growth,’ ‘active coping,’ and ‘planning.’ Hierarchical linear regression analyses were performed using number of ACEs as the predictor and the number of health conditions (assessed at follow-up) as the dependent measure. Additionally, mediation analyses examining coping style were performed. Socio-demographic variables (gender, age, years of education, and race) were included as covariates.

Results. Our findings demonstrated that there was a significant relationship between ACEs and the number of chronic health problems ($\beta=0.076$, $p=.002$; CI=0.896-1.116). Problem-focused coping partially mediated the relationship between ACEs and health conditions; specifically, ACEs were associated with less problem-focused coping ($\beta =-0.158$, $p=.011$; CI=0.895-1.117), and less problem-focused coping was associated with more chronic health problems ($\beta =-0.032$, $p<.001$; CI=0.971-1.019).

Conclusions. Adults who have experienced more ACEs have higher rates of health conditions and appear to demonstrate less adaptive coping styles. Individuals with less adaptive coping styles may have heightened biological responsivity to new stressors that accumulate over time, resulting in higher allostatic load and more health conditions. Additionally, poor coping skills may lead to problematic health behaviors (e.g., smoking, drinking, less exercise), thereby increasing vulnerability to health conditions. Thus, coping skills may be an ideal target for intervention among individuals who experienced increased ACEs.

40) Abstract 1480
POVERTY IS ASSOCIATED WITH BRAIN MORPHOMETRY AND INTELLIGENCE IN MIDDLE CHILDHOOD.
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Over 16 million children in the United States (22% of all children) live in families with incomes below the federal poverty line. Children growing up in poverty perform poorer than their middle-income classmates on IQ tests (Bradley and Corwyn, 2002). The structure of the superior temporal lobe (STG) has been positively associated with intellectual ability such as IQ in children (Kilroy et al., 2011). However, the relationship between poverty and the neural morphometry of specific brain regions and its association to IQ remains unclear. As gray matter reductions have been observed in previous investigations of the association between gray matter and family income, we hypothesized that lower family income was associated with reduced STG volumes. We predicted STG volumes were correlated with IQ scores; namely, reduced STG volumes were associated with lower IQ scores in accordance with the relationship between family income and educational outcomes. Thirty-five children from ages 7-10 participated in the study (age = 8.74 ± 0.65, 48% male) and completed the WASI-II as well as a structural MRI scan. Family income was defined as the income-to-needs ratio (INR) and is calculated by dividing the total family income by the poverty threshold adjusted for each family size.

Using T1-weighted MRI scans, we utilized voxel-based morphometry to conduct a whole brain analysis to examine regional gray matter volume associated with INR. A second-level group analysis, using a multiple regression with INR as a covariate (controlling for age, ethnicity, and gender), revealed a cluster in the left STG with a significant positive correlation with INR ($p<.01$ corrected, $k=120$, see Figure 1). Correlational analysis revealed a significant positive correlation between INR and IQ scores ($r = .497$ $p = .002$) and a significant positive correlation between left STG gray matter volumes and IQ scores ($r = .407$ $p = .015$).

We demonstrated that participants from families with lower INR had reduced gray matter volume in the left superior temporal gyrus. These findings suggest a relationship between family income and STG gray matter structure as well as highlight the positive relationship between gray matter volume in this region and intelligence test scores. We suggest middle childhood may be a particularly susceptible time period for intellectual development as well as highlight the role of gray matter volume and its relationship to lower cognitive ability observed in children growing up in low-income households.

41) Abstract 1007
HIGH PRE-SURGICAL ANXIETY PREDICTS SLOWER IMPROVEMENT IN SURGICAL SITE HEALING AMONG WOMEN UNDERGOING GYNECOLOGIC CANCER SURGERY
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Introduction: Endometrial cancer is the most common gynecologic malignancy and the fourth most common cancer affecting women in the US. Wound healing complications, present in up to 34% of women undergoing gynecologic cancer surgery, have been associated with increased healthcare costs, more specialized care, longer hospitalizations, and poorer quality of life. Literature demonstrating the impact of psychosocial stress on wound healing has accumulated over the past decade, but fewer studies have evaluated the potential role of psychosocial distress.

Participants. 113 women (M=61.30 years, SD=9.09 years) completed the SIGH-AD at their preoperative visit. Body Mass Index (BMI) and surgical complications (SSC) were abstracted retrospectively from participant medical records. Results: This study found that 35% of participants experienced a SSC. Mixed linear modeling was used to predict SSC scores with time since surgery (days), body mass index (BMI), and pre-surgical anxiety. Results revealed significant linear decreases in SSC scores across the follow-up period ($B = -0.069$, SE = 0.025, $t = -2.718$, $p < 0.05$). Higher pre-surgical BMI was significantly associated with higher overall SSC scores ($B = 0.071$, SE = 0.031, $t = -2.271$, $p < 0.05$). Consistent with hypotheses, higher pre-surgical anxiety was significantly associated with lower recovery of SSCs ($B = 0.025$, SE = 0.009, $t = 2.683$, $p < 0.05$). Discussion: Although highly preliminary, this study provides evidence of the role of pre-operative anxiety on surgical site healing across time in a gynecology oncology population. Notably, participants with the highest levels of anxiety recover from surgery more slowly. Given the importance of endocrine and immune function in wound healing, further research into psychoneuroimmunologic correlates would provide a more comprehensive picture of a complex process.
42) Abstract 1054
INTERVENTIONS FOR INSOMNIA IN CANCER PATIENTS: PREDICTORS OF DROPOUT, ATTENDANCE, AND TREATMENT RESPONSE
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Background: Cognitive-Behavioral Therapy for Insomnia (CBT-I) and Mindfulness-Based Cancer Recovery (MBCR) have demonstrated efficacy for improving insomnia in cancer patients. Poor treatment adherence and inadequate treatment response frequently occur for some individuals, as in any intervention. Using data from a randomized controlled trial comparing CBT-I to MBCR for cancer patients with insomnia, this study assessed predictors of dropout, attendance, and treatment response to better understand variability in outcomes.
Methods: Patients with cancer were blindly randomized to CBT-I (n = 47) or MBCR (n = 64), both delivered in a group format over eight weekly 90-minute classes. Attendance was measured as the percent of classes in which patients participated. Dropout defined as patients who attended ≤ 5 classes and failed to complete post-program assessments. Clinically significant reductions in insomnia severity (reduction of ≥8 on the Insomnia Severity Index) and dysfunctional sleep beliefs (reduction to ≤3.8 on the Dysfunctional Beliefs and Attitudes about Sleep scale) were used as indices of treatment response. For each intervention, separate multivariate logistic regression analyses examined baseline predictors of dropout and treatment response, whereas multiple regression was used to predict attendance, as in any intervention.
Results: Dropout occurred more often in MBCR (48%) than CBT-I (11%). On average, patients attended 77% of classes in CBT-I and 55% in MBCR. Among non-dropouts, treatment response of reduced insomnia severity occurred in 60% of patients in CBT-I and 24% in MBCR, whereas improved dysfunctional sleep beliefs occurred in 67% of patients in CBT-I and 30% in MBCR. In CBT-I, older age was marginally associated with higher attendance (b = 0.75, p = 0.053). In MBCR, patients with higher education were less likely to drop out (Adj. OR = 0.71, 95% CI 0.56-0.90) and attended more classes (b = 5.01, p < 0.001), while patients with more severe insomnia were more likely to drop out (Adj. OR = 1.19, 95% CI 1.01-1.40) and attended fewer classes (b = -2.58, p = 0.016). Worse baseline insomnia predicted treatment response of reduced insomnia severity in both MBCR (Adj. OR = 2.10, 95% CI 1.12-3.95) and CBT-I (Adj. OR = 1.39, 95% CI 1.07-1.81). In CBT-I, more stress symptoms predicted reduced likelihood of improved dysfunctional sleep beliefs (Adj. OR = 0.96, 95% CI 0.93-0.99).
Conclusions: Cancer patients with more severe insomnia showed the most benefit from both CBT-I and MBCR; these patients were also more likely to drop out from MBCR when they entered the program without knowing their treatment assignment. Group differences in retention may not represent real-world practice where choice among interventions is possible. Future research should consider patient preference, demographics, and baseline stress to improve treatment response and adherence.

43) Abstract 1080
ROLE OF PERSONALITY ON DIURNAL SALIVARY CORTISOL RHYTHM IN ENDOMETRIAL CANCER: WOMEN WITH HIGH EXTRAVERSION MAY BE AT RISK FOR POORER CLINICAL OUTCOMES AFTER SURGERY
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Background: High neuroticism and low extraversion have been associated with poor cancer resiliency, which may have implications for understanding the variability of clinical outcomes in cancer patients. Potential mechanisms by which personality traits may affect these outcomes include its effects on the hypothalamic-pituitary-adrenal (HPA) axis, which regulates cortisol. Normal cortisol rhythm is characterized by a negative slope, while deviations are characterized by a blunted/more positive slope with poorer clinical outcomes (e.g. tumor growth and early mortality) in cancer patients. High neuroticism is associated with a blunted cortisol slope, but these relations are less clear among other personality traits such as extraversion, especially in cancer populations. This study examined the role of personality on diurnal cortisol slope in women with endometrial cancer, this study assessed predictors of treatment assignment. Group differences in retention may not represent real-world practice where choice among interventions is possible. Future research should consider patient preference, demographics, and baseline stress to improve treatment response and adherence.
Methods: Fifty-one women (Age M = 61.25 yrs, SD = 9.02 yrs) undergoing surgery for endometrial cancer completed the NEO Five Factor Inventory (NEO-FFI) to assess for personality. Salivary cortisol samples were collected four times per day for three consecutive days at pre- and post-surgery. Hierarchical linear modeling (HLM) was used to examine the relationship between neuroticism and extraversion on diurnal cortisol rhythm at pre- and post-surgery while controlling for length of hospital stay.
Results: There was a significant effect of time of cortisol at pre- (ß = -0.98, p = .000) and post-surgery (ß = -0.88, p = .000), such that cortisol decreased linearly across the day. Contrary to our hypotheses, there was no significant relationship between personality traits and cortisol rhythm. Contrary to our hypotheses, high neuroticism would have a more blunted cortisol slope while those with high extraversion would have a more normal cortisol rhythm.
Conclusions: Contrary to the literature, our findings revealed that higher neuroticism was associated with a more blunted cortisol slope in women with endometrial cancer, but only at post-surgery. While the direction of this relationship was unexpected, it may suggest that highly extraverted individuals experience unique challenges related to stress and distress modulation in the face of illness and surgical recovery. Future research should explore this further and examine possible interventions in this population.

44) Abstract 1096
HOW DO PATIENTS PERCEIVE CHANGES AFTER BREAST CANCER DIAGNOSIS? THE ROLE OF A BIOBEHAVIORAL INTERVENTION
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Introduction: Cancer diagnosis is associated with negative life changes for many patients. However, many patients also report positive life changes following diagnosis. While research has focused on the outcomes of perceived positive changes after cancer, less is known about what predicts these positive changes, particularly compared to negative changes. Thus, this study compared predictors of perceived positive versus negative changes after cancer diagnosis.
Methods: A two-group, longitudinal design was used. The sample included 154 breast cancer patients participating in a biobehavioral intervention. Study arm was assigned on the basis of preference. Hospitalization was the primary stressor used on the outcomes of perceived positive and negative changes after cancer.
Results: Patient-reported changes included a wide variety of topics (e.g., close relationships, life balance, meaning in/enjoyment of life, health behaviors, side effects, activities of daily living, self-care, etc.). Higher IES and CES-D scores predicted higher number of perceived negative changes (ps<0.03 and 0.01, respectively). However, neither IES nor CES-D scores predicted number of perceived positive changes (p>0.60). Thus, study arm significantly predicted number of perceived positive changes (p<0.05). Among intervention arm, individuals in the intervention arm perceived more positive changes than controls.
Conclusions: Patients who experience higher levels of stress or depressive symptoms following cancer diagnosis are more likely to perceive negative life changes two years later. Screening for stress and/or depression at diagnosis might be used to identify patients most in need of services, consistent with current clinical recommendations. In addition, receipt of a biobehavioral intervention predicted higher frequency of patient-perceived positive changes. This provides further support for the benefits of psychosocial interventions for cancer patients.
actively engages with the stressor. The aim of this study was to provide a prospective test of the impact-engagement model in OM patients. Consecutive patients scheduled for diagnostic testing for OM were recruited upon referral to a specialty clinic, at which time they completed a baseline assessment, and subsequently received a diagnosis of OM or a more benign condition. Pre-specified covariates were number of comorbid diseases, age, education, and marital status, all assessed at baseline. Patients diagnosed with OM (N = 107) completed additional assessments at one week, three months, and 12 months after diagnosis. Impact was measured via objective visual acuity (VA) at baseline and one week after diagnosis computed from medical chart review. Engagement was measured via an eight-subscale approach-oriented coping composite (e.g., planning, emotional expression) with reference to learning that you have “an eye problem that requires diagnosis” (baseline) or “eye cancer” (one week later). At three and 12 months after diagnosis, PTG was measured via the Post-Traumatic Growth Inventory. Path analyses used the full information maximum likelihood estimation method, which addresses missing data.

VA was not associated with PTG at three or 12 months after diagnosis. It was entered with other pre-specified covariates in models testing approach-oriented coping as a predictor of later PTG. A significant interaction between participant sex and approach-oriented coping was examined in separate analyses for women and men.

Higher pre-diagnosis approach-oriented coping with “an eye problem” was significantly associated with PTG in men (but not women) at three (β = .70, p < .001, R2 = .49) and 12 months (β = .36, p < .05, R2 = .25) after diagnosis. Approach-oriented coping with eye cancer at one week after diagnosis was associated with PTG at three months in men (β = .69, p < .001, R2 = .47) and women (β = .36, p < .05, R2 = .38), but not at 12 months. Findings indicate that pre-diagnosis approach-oriented coping predicts PTG one year later for men, and coping one week after diagnosis predicts PTG three months later for men and women. If health professionals implement brief interventions to promote approach-oriented coping (e.g., draw on supportive network for emotional and instrumental support) immediately prior to and shortly after the time of diagnosis, this may facilitate PTG, particularly for men.

46) Abstract 1179
ROLES OF OPTIMISM AND UNCERTAINTY IN PHYSICAL HEALTH AMONG COLORECTAL CANCER PATIENTS AND THEIR CAREGIVERS
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Background. Cancer diagnosis is an unexpected stressful event not only to patients but also to their family caregivers. Studies suggest that outlooks, such as optimism and uncertainty, play a significant role in one’s psychological adjustment to a life-changing event. Unknown, is whether these outlooks would relate similarly to physical health. Moreover, unknown is the extent to which caregivers’ own outlook relates to their patients’ physical health, and vice versa.

Methods. Patients who were newly diagnosed with colorectal cancer and their family caregivers participated. A total of 54 patient-caregiver dyads’ data were subject to analysis (N=108, 3-month post-diagnosis, mean age 53 and 49, 76% and 80% Hispanic, for patients and caregivers respectively). Optimism (LOT-R), uncertainty (Mishel’s Uncertainty in Illness), and physical health (MOS SF-12) were self-reported. In addition, participants collected saliva samples 3 times per day for 2 consecutive days, from which cortisol slope was calculated. Cancer stage served as a covariate.

Results. Both patients and caregivers reported moderate levels of optimism and uncertainty about the cancer prognosis. Actor-Partner Interdependence Modeling revealed that patients’ optimism positively related to their own steeper decrease in cortisol slope from awakening to bedtime (β=.27, p<.04) and their caregivers’ better physical health (β=.23, p<.05). On the other hand, caregivers’ optimism positively related to their own better physical health only (β=.31, p<.01). Caregivers’ uncertainty related to their own poorer physical health (β=-.26, p<.03).

Conclusion. The results highlight the significant roles of optimism and uncertainty in physical health. Furthermore, findings suggest patients’ positive outlook has a spill-over effect on their caregivers’ physical health during the time of cancer diagnosis. Current findings need to be replicated with a longitudinal investigation with a larger sample and diverse biological health indicators. Identifying psychosocial and biobehavioral mechanisms of the link of optimism and uncertain to one’s own and the other family member’s physical health is warranted in future studies.

47) Abstract 1230
MODERATE STRESS EXPOSURE IS ASSOCIATED WITH PSYCHOLOGICAL RESILIENCE AMONG BREAST CANCER SURVIVORS
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Exposure to a greater number of stressful life events has been associated with increasing psychological vulnerability, which suggests that optimal psychological functioning will occur in the absence of life stress. However, recent evidence has suggested a quadratic relationship between life stressors and mental health, wherein moderate life stress exposure facilitates psychological resilience. To test this possibility in the context of breast cancer, we recruited 125 breast cancer survivors and examined the relation between the number of stressful life events participants had experienced prior to cancer and psychological functioning following cancer diagnosis and treatment. All women had been diagnosed with early-stage breast cancer within the past 6 years, had completed cancer treatment, and showed no current evidence of disease. Acute and chronic stress exposure across the lifespan was assessed using an interview-based measure (STRAIN), and questionnaires were used to assess cancer-related intrusive thoughts (Impact of Events Scale) and positive and negative affect (PANAS). We hypothesized that individuals who had experienced a moderate number of stressful life events before cancer would report fewer cancer-related intrusive thoughts, higher positive affect, and lower negative affect after cancer, relative to those with either low or high stress exposure.

Consistent with hypotheses, number of acute stressful life events was associated with cancer-related intrusive thoughts in a quadratic fashion (p<.05), such that participants who had experienced moderate acute stress exposure reported fewer cancer-related intrusive thoughts, compared to those with low or high acute stress exposure. Similarly, a quadratic relationship emerged between the number of acute stressful life events and positive affect (p<.05), such that individuals with moderate acute stress exposure reported higher levels of positive affect, compared to those with low or high acute stress exposure. In contrast to these quadratic associations, both acute and chronic stress exposure were related to negative affect in a linear fashion (p<.01), such that experiencing a greater

Figure 1. Approach-oriented coping at T1 (baseline) as a predictor of PTG at T4 (12 months after diagnosis), controlling for visual acuity, number of comorbidities, age, education, and marital status at T1. This model accounts for covariance between approach-oriented coping and the covariates (not displayed due to space constraints).

* = p < .05.
number of adverse life events was associated with higher levels of negative affect. There was no significant linear or quadratic relationship between chronic stress exposure and cancer-related intrusive thoughts or positive affect. Analyses controlled for age and time since diagnosis. In conclusion, moderate exposure to acute life events prior to cancer was associated with some, but not all, indicators of psychological resilience following cancer. Moreover, only acute stress, not chronic, was associated with positive outcomes, suggesting that stress may facilitate resilience when it is time-limited in nature.

48) Abstract 1259
YOUNG ADULT CANCER SURVIVORS’ INTEREST IN AND ENROLLMENT INTO AN ONLINE MINDFUL SELF-COMPASSION 8-WEEK INTERVENTION
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Background: Young adult (YA) cancer survivors experience substantial distress due to a lack of sufficient coping skills to manage lingering effects of cancer and the psychosocial challenges of resuming life activities and social roles after treatment completion. Mindfulness and self-compassion are coping skills that address how one responds to difficult experiences and to oneself during those experiences. Intervention trials have demonstrated these are associated with reduced distress in adult cancer survivor and healthy young adult populations, but have not been tested in YA cancer survivors. Additionally, considering YA survivors’ geographic dispersion, an internet-based modality is essential for broadening intervention outreach. As a step towards an efficacy randomized controlled trial, we are conducting a single-arm feasibility study of an online mindfulness-self-compassion (MSC) 8-week intervention. We report on recruitment outcomes and describe the YA survivor sample that enrolled into the study.
Method: Participants were nationally recruited using diverse strategies (social media, university recruitment services, clinic). Eligibility criteria included: age 18-29 years, cancer diagnosis age >15 years, treatment completed, technological requirements (computer, high speed internet), and no current consistent meditation practice. An online screening survey ascertained participation eligibility and collected medical and psychosocial data. Study interest and reasons for study interest were explored. Study interest was assessed for 25 survivors to enroll and begin the intervention. The MSC intervention, led by a certified instructor, consists of 90-minute video-chat, group-based sessions held once a week over an 8-week period, as well as, audio-supplemented home practice. Psychosocial measures were completed at baseline and post-intervention. Results: One hundred and thirty young cancer survivors accessed the online screening survey, and 66% of those who completed the survey were eligible to participate. Survey respondents’ qualitative reasons for their study interest reflected the psychosocial issues reported in AYA psycho-oncology. Thirty-four individuals were consented and 25 began the intervention. Participants were mainly from the East coast, female (97%), an average of 39 months (SD=36.8) since treatment completion, and reported distress (PROMIS-anxiety M=60.6, SD=5.5) and social isolation (PROMIS-social isolation M=54.8, SD=7.5) levels higher than population norms and low self-compassion (M=2.6, SD=6.4). Conclusions: YA cancer survivors can be recruited and are interested in an online intervention. MSC online intervention is encouraging for a future randomized controlled trial of an MSC online intervention to address quality of life in distressed young cancer survivors, and will be an important contribution to clinical care and adolescent-young-adult psycho-oncology.

49) Abstract 1367
ARE RATIO CALCULATIONS IN STRESS PHYSIOLOGY BETTER DESCRIBED BY INTERACTIONS OR THEIR RESPECTIVE COMPONENTS IN DISTRESSED CAREGIVERS?
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Physiologic systems are tightly regulated by negative feedback loops, suggesting that combining these variables may facilitate understanding. Others have treated ratios of related physiological biomarkers such as neutrophil/lymphocytes (N/L; Cort/CRP) as a single compound. Cortisol and CRP were perceived as independent predictors of psychological factors. We have previously presented similar findings (PNIRS 2015), such that depression and anxiety were significantly related to Cort/CRP and N/L, respectively, in secondary analysis of baseline data from a completed clinical trial. However, statistical literature highlights that because a ratio is a product of its respective components, restrictive assumptions govern the use of ratios without including the lower order components. In these same data, we examine individual components separately and in combination with (1) their respective ratios and (2) their product (e.g., depression regressed on Cort and CRP and anxiety regressed on N and L), controlling for age and sex. Participants were 105 caregivers (75% women) of allogeneic stem cell transplant patients (Mage=51.4;SD=11.8years). Saliva samples were collected for cortisol and summarized as area under the curve. Cortisol and CRP were assessed by ELA, N and L were determined electronically, depressive symptoms was assessed by Center for Epidemiologic Studies Depression (CESD) and anxiety was measured by the Spielberger State-Trait Anxiety Inventory (STAI trait). Visual inspection suggested that models including only the ratio (without lower order components) were contra-indicated. After the lower order terms (e.g. N, L) were included in models, only the N/L ratio remained significant in predicting STAI (β=.74; p=.004; CORT/CRP was unrelated to CESD, β=.10; p=.32). If all models including respective lower order terms, the combination of N and L predicted STAI (N/L: β=.41;p=.011) and the combination of cortisol and CRP significantly predicted CESD (CORT*CRP: β=.45; p=.022). Anxiety was related to lymphocytes when circulating neutrophils were high and depression was related to cortisol when CRP was elevated. Examining each component separately, neutrophils (β=.16;p=.06) and CRP (β=.16;p=.06) appeared to be driving each respective relationship. These data suggest for two previously published combinations of biomarkers (N/L and Cort/CRP) that examining ratios alone is inadequate. Separate components, their ratio and their product warrant evaluation. This will enhance our understanding of how biomarkers may be interrelated and what additional predictive effect is gained from combining biomarkers in their relation to psychological factors. Supported by NIH CA126971(MLL); T32AG044296(TS): DA034604(SMG) and PCORI CE1304-6208(MLL).

50) Abstract 1373
INTRAINDIVIDUAL VARIABILITY IN CANCER-RELATED AVOIDANCE COPING PREDICTS DEPRESSIVE SYMPTOMS
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Objective: According to theories of stress and coping, coping that successfully ameliorates the deleterious sequelae of stress has fulfilled its function and is likely to decline. In contrast, ineffective coping can become repetitive as the effects of the stressor and its sequelae remain unabated. Therefore, more intra-individual variability (IV) in coping may reflect effective and flexible coping. We hypothesized that coping IV would predict a decline in depressive symptoms; the relations of dispositional psychosocial factors and coping IV were explored.
Methods: Women (N = 460) diagnosed with breast cancer in the previous four months were enrolled in a one year, longitudinal study and completed questionnaires at study entry, 6, 12, 18, 24, 36, and 52 weeks. Dispositional psychosocial resources and vulnerabilities were assessed at study entry (positive emotions, acceptance of emotions, neuroticism, emotional suppression,
difficulty with emotion regulation) or 18 weeks (optimism, mastery, self-esteem). Depressive symptoms were assessed at 36 and 52 weeks. Composites of coping strategies representing approach and avoidance coping were assessed at all except 52 weeks. A location-scale Bayesian model was used to estimate mean and IV of coping as random latent variables, predict change in depressive symptoms from coping IV, and relate psychosocial resources and vulnerabilities to coping IV. All analyses adjusted for mean approach or avoidance coping.

Results: For avoidance coping, a higher mean predicted an increase in depressive symptoms (p = .004), but a higher IV predicted a decrease in depressive symptoms (p = .03) from 36 to 52 weeks. Neither the mean nor IV of approach coping predicted change in depressive symptoms. Regarding dispositional psychosocial factors, higher self-esteem (p = .01), acceptance of emotions (p = .002), and positive emotions (p < .001) and lower neuroticism (p = .03) were associated with greater approach coping IV. No significant relations were observed for mastery, optimism, difficulty with emotion regulation, or emotional suppression. Avoidance coping IV was unrelated to psychosocial factors.

Conclusions: Beyond mean-related differences, greater avoidance coping IV predicted a decline in depressive symptoms. Higher psychosocial resources and lower vulnerabilities were associated with greater approach but not avoidance coping IV. Intraindividual variability is a novel feature of coping, with unique effects on depressive symptoms and relations with dispositional psychosocial resources and vulnerabilities.

51) Abstract 1483
LIVING SITUATION AND QUALITY OF LIFE AMONG CANCER PATIENTS AT THE PHASE OF EARLIER STAGE CANCER: REVISITED
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Living without a spouse/partner versus living alone, as a single-parent, or with other relatives may provide different means of coping and support, as well as disruption and stress. However, the effects of living situation on quality of life (QOL) are not well understood. Our laboratory’s model of stress-health relationships was used as the basis for exploring both positive and negative effects of living situation on distress, physiological stress, and quality of life (QOL) among cancer patients. Data were pooled from three IRB-approved research protocols in order to examine effects across cancer types (N=162, lung, n=62; gynecologic, n=55; breast, n=55). We included demographic and medical data, and either a two-day or three-day series of saliva samples for calculation of diurnal cortisol slope, diurnal mean, and awakening response. Patients reported their current living situation (alone, spouse/partner only, spouse/partner and child/children only, child/children only, other relatives, other relatives, other, cancer-specific distress (IES), and QOL (FACT). ANCOVA analyses adjusted cancer type and stage, age at diagnosis, and income in testing associations of living situation with distress, cortisol, and QOL. Planned simple contrasts further explored significant associations of living situation categories.

Living situation was significantly related to QOL (p=0.015). Cancer patients living only with a spouse/partner had significantly higher QOL than those living with other relatives. Within this significant model, higher income (p=0.014) and earlier stage cancer (p=0.004) were related to higher QOL. No other significant relationships emerged.

Across cancer types, living situation was significantly associated with QOL, suggesting possible cancer QOL benefits from living only with a spouse/partner. As opposed to living alone, with one’s children, or other relatives, living with a spouse/partner may create an environment of increased caregiver support and decreased role strain or feelings of being a burden. Further research investigating living situation as a multi-level variable is needed to uncover important implications for health outcomes. It may be informative to include living situation assessment on demographic forms in medical settings.

52) Abstract 1504
RECOVERY FROM BRAIN VOLUME REDUCTION AND COGNITIVE DYSFUNCTIONS 6 MONTHS AFTER SURGERY IN PATIENTS WITH BREAST CANCER
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Introduction: Cancer survivors suffer from cognitive dysfunctions, which impact on their quality of life (Matsuda 2005). Several risk factors, such as general anesthesia, surgical trauma, the occurrence of complications, and adjuvant therapies, would cause cognitive dysfunctions (Møller 1998, Monk 2008, Price 2008, Collins 2009). Our recent investigation unveiled the thalamic volume reduction and attentional dysfunction due to a general anesthesia soon after the surgical operation in patients with breast cancer (Sato in press). Here, we investigated these patients 6 months after the surgery to clarify the prognosis of the thalamic volume reductions and attentional dysfunctions. We hypothesized that the thalamic volume reductions and the attentional dysfunctions would recover in patients without an adjuvant therapy, while those with an adjuvant therapy would not.

Methods: We examined 20 post-menopausal women with early stage breast cancer. All patients underwent surgical operation with a general anesthesia. Seven patients did not receive any adjuvant therapy after the surgery (age = 51 ~ 62 yrs.; Wo group), while 13 patients received a hormonal therapy after the surgery (age = 54 ~ 77 yrs.; Ho group). Written informed consent was obtained from each subject. The Ethics Committee of the Tohoku University Graduate School of Medicine approved this study. We assessed their attentional functions using a Digit Cancellation Task 1 (D-CAT1), and T1-weighted brain structural MR images before (Pre), soon after (Post), and 6 months after (Follow up) surgery. First, we tested group (Wo/Ho) x time (Post/Follow up) interaction using D-CAT1 scores. Next, differences in the thalamic volume soon after the surgery (Post) and 6 months after the surgery (Follow-up) were assessed using an analysis of covariance (ANCOVA) model on SPM8.

Results: We found a significant group x time interaction in D-CAT1 scores (p = 0.009), and a significant group x time interaction in the right thalamic volume (p < 0.001, uncorrected). The results suggest that the right thalamic volume reductions and attentional dysfunctions soon after the surgery recovered in the Wo group, while those in the Ho group did not.

Discussion: The findings support our hypothesis that the thalamic volume reductions and the attentional dysfunctions would recover in patients without an adjuvant therapy. We postulated that the general anesthesia impact on the brain and its function in cancer survivors. But, most survivors would recover after surgery in the absence of exposure to other risk factors, such as severer surgical trauma, the occurrence of complications, and adjuvant therapies including hormonal therapies. Our findings would provide an appropriate support to cognitive dysfunctions in cancer survivors.

53) Abstract 1586
SYSTEMATIC LIGHT EXPOSURE IMPROVES DEPRESSION AMONG CANCER SURVIVORS
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Depression is one of the biggest challenges faced by cancer survivors even 10 years after all treatment has ended. These survivors might benefit from systematic light exposure (sLE) using bright white light as it has been found to be effective in reducing depression among other populations suffering from depression. sLE has also been found to normalize circadian and rhythm patterns which are disrupted both among cancer patients/survivors and depressed individuals. The aim of the present study was, therefore, to examine the effectiveness of sLE in reducing depression and restoring circadian activity rhythms among cancer survivors.

Fifty-four cancer survivors were randomized to either a BWL (n=28) or a standard comparison group – dim red light (DRL) (n=26) – exposure. Participants were instructed to self-administer the light, using Lifebook®, for 30 minutes every morning throughout the four-week intervention period. Depression (Brief Symptom Inventory) and circadian activity rhythms (actigraphs) were assessed at: Baseline, 2-weeks into the intervention, at the end of the 4-week intervention, and three weeks after the completion of the intervention. A Linear Mixed Model (LMM) analysis of depression revealed that the group by time interaction was significant [F(3,44) = 3.43; p = 0.025] with depression being significantly lower in the BWL group compared to the DRL group at the end of the intervention and at the final assessment. The LMM analysis of overall rhythmicity (f-statistic) indicated that the group by time interaction was significant [F(3,43) = 5.39; p = 0.0031] with the BWL group having a
54) Abstract 1615

COPING PROCESSES PREDICT SURVIVAL IN PATIENTS WITH LUNG CANCER

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Although an increasing number of studies reveal that depression predicts worse survival in cancer patients particularly those affected by metastatic disease, it is largely unknown if other psychological concepts buffer against this association. As coping processes predict cancer adjustment, coping style may independently predict survival. Thus, we hypothesized that active coping (e.g., acceptance, planning, support seeking) is associated with longer survival and avoidant coping (e.g., denial, mental/behavioral disengagement) with shorter survival, controlling for psychological distress. We examined this association in lung cancer (LC) as the majority of LC patients present with stage IV disease at diagnosis. (Commonly) breast patients are more likely to suffer from psychological distress in comparison to patients diagnosed with other cancers. As part of a larger study, 169 LC patients (63% Male, 88% Caucasian, 68% advanced stage, mean age = 63 yrs) completed measures of psychological distress (BSI) and coping styles (COPE). Diagnosis and death dates were extracted from medical records, and survival times were calculated from the time of diagnosis to death. Regression analyses revealed that, controlling for prognostic factors of survival (e.g., stage at diagnosis, age, smoking status, performance status, etc) and psychological distress, acceptance coping (β=−.39; p=.04) was directly and denial coping (β=−.40; p=.02) was indirectly associated with survival. The more likely participants were to report the use of acceptance coping, the longer their survival time and the more denial coping they reported, the shorter their survival time. No other coping strategy was significantly associated with survival time. While premature to date, these findings may have important implications for psychosocial interventions in the cancer treatment setting. Future studies are needed to replicate our results and explore underlying mechanisms to shed further light on these important associations.

55) Abstract 1630

CHILDHOOD SEXUAL ABUSE AND CANCER PROCESSES AND OUTCOMES: A SYSTEMATIC REVIEW

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Background: Adverse Childhood Experiences (ACE), and childhood sexual abuse (CSA), specifically, are commonly reported among adults, particularly women. ACEs are associated with elevated risk for morbidity and mortality, with ACEs involving sexual abuse, specifically, associated with risk for cancer in adulthood. Biobehavioral models of (a) trauma-effects on adverse health outcomes and (b) stress-effects on tumorigenesis may inform the direct and indirect processes by which CSA impacts cancer processes and outcomes. This systematic review evaluated the relationship between CSA and cancer-associated behaviors and outcomes across the cancer care continuum with the goal of developing a theoretical model outlining the multilevel (i.e., individual, interpersonal, community, and health care systems) biobehavioral mechanisms by which CSA may impact cancer processes and outcomes.

Methods: Published studies of the relationship between childhood sexual abuse, cancer-related health behaviors, and cancer outcomes were identified through systematic review, including a comprehensive search of online databases. Studies were categorized according to outcome content domains along the cancer care continuum prior to integrating the findings into the proposed conceptual model.

Results: A total of 35 observational studies were identified. These studies described significant ways in which the experience of CSA played an important role in health behavior and outcomes, provider-patient communication about cancer care, emotional adjustment to cancer, and/or meaning-making when faced with end-stage disease. This research also suggested that CSA survivors are able to articulate well-defined connections between their CSA experience and their fears and preferences about their medical care and their ability to adjust to a cancer diagnosis. Our systemic review also revealed that minimal published research has examined (a) CSA, specifically, and cancer clinical outcomes; or (b) explored neuroendocrine/immune mediators of a CSA-cancer outcome relationship while systematically examining health behaviors as contributing mechanisms.

Conclusions: The literature reveals the psychological impact of CSA on how individuals experience barriers to preventive health care, interact with the medical system, and adjust to a cancer diagnosis. Furthermore, this review reveals a significant gap in our understanding of the neuroendocrine/immune mechanisms by which CSA history and associated psychosocial sequelae may be associated with cancer risk, progression, response to treatment, and/or survival. Further research is needed to design and test the effectiveness of biobehavioral interventions designed to optimize health and well-being among women with (risk for) cancer and histories of CSA.

56) Abstract 1697

EXPLORING BARRIERS TO PARTICIPATION IN MINDFULNESS-BASED CANCER RECOVERY: A QUALITATIVE STUDY OF CLINICIAN PERSPECTIVES

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Objectives: Mindfulness-based cancer recovery (MBCR) is beneficial in improving anxiety, depression, quality of life, and general quality of life, and general well-being in cancer patients with weaker evidence for effects on health outcomes. Cancer patients and survivors who have access to MBCR can experience better mental health. However, adherence is often low and drop out can be as high as 20%. Previous research has identified barriers to meditation and yoga including difficulty focusing, concern about meditating correctly, lack of time, and physical limitations. This study was a preliminary exploration of instructors’ perceptions of participant barriers to MBCR.

Intervention: The Mindfulness-based cancer recovery (MBCR) is an 8-week group program including weekly 1.5-hour group meetings, a 6-hour weekend retreat after week 6, and 45 minutes of home practice (15 minutes of yoga and 30 minutes of meditation) daily. Certified MBCR instructors guide the classes.

Methods: The study employed qualitative semi-structured phone interviews exploring instructors’ perceptions of participants’ barriers to MBCR. Each instructor participated in a thirty to sixty minute interview exploring his or her experience as an instructor of MBCR. Qualitative analysis involved the inductive thematic approach with constant comparison.

Results: Eight instructors from across Canada at four different outpatient clinical sites participated in the semi-structured interviews. Instructors noted barriers experienced by participants and their role in mitigating barriers to MBCR. Participants’ uptake of the practice is experienced among patients. Important quantitative themes included related psychological distress, participant training and role, group process, patient characteristics, barriers, and facilitators.

Conclusions: Qualitative processes provided in-depth personal experience as an instructor of the MBCR program for cancer patients at outpatient clinical sites across Canada. Instructors are knowledgeable of common barriers facing participants in the MBCR program. Instructors are less aware of barriers to home practice, as this is not a focal point of group discussion in the MBCR program. Increasing instructors’ awareness of barriers to home practice through regular, personalized check-ins with participants may help tailor the MBCR program to the needs of the participants.

57) Abstract 1232

PATIENTS SUFFERING FROM SKIN RESTRICTED LUPUS ARE CHARACTERIZED BY LOWER EMOTION AWARENESS

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Skin restricted lupus (SRL) is a dermatological disease characterized by chronic skin lesions that are confined to the head, neck, and upper chest. It is often associated with systemic lupus erythematosus (SLE) and can be extremely distressing for patients. In this study, we explored the characteristics of SRL patients, focusing on their emotion awareness.

Methods: Participants were recruited from dermatology clinics specializing in SRL (N=56). Emotion awareness was assessed using the Emotion Awareness Scale (EAS), which measures the ability to accurately identify and label one’s own emotions and those of others.

Results: SRL patients demonstrated significantly lower emotion awareness compared to healthy controls (p<0.05). This finding was consistent across all subscales of the EAS, indicating a generalized reduction in emotion awareness in SRL patients.

Conclusions: Our study highlights the importance of emotion awareness in the management of SRL. Patients with lower emotion awareness may benefit from interventions aimed at improving emotion recognition and regulation, potentially improving their quality of life.
Background: Psychological and psychiatric characteristics have exceptionally been explored in Skin Restricted Lupus Erythematosus (SRL), i.e. in chronic or subacute cutaneous lupus, contrarily to systemic lupus erythematosus (SLE). Tobacco consumption, but also possibly psychological stress, are supposed to play a role on the course of the disease.

Objective: To study emotion processing differences between SRL patients and controls.

Methods: Multicentre case-control study involving 70 SRL outpatients and 140 controls matched for sex, age and educational level. No SRL patient presented any sign indicating the concurrent presence of a SLE and none evolved towards a systemic form of lupus during a median follow up period of 3.6 years. Emotion processing was assessed by LEAS (emotion awareness) and TAS-20 (alexithymia). The Mini International Neuropsychiatric Interview, as well MADRS, Hamilton and PDQ4s scales, were used for the assessment of psychiatric comorbidity (axis I: depression, anxiety and axis II personality disorders).

Results: Higher TAS-20 scores (48.4 ± 11.3 vs 43.4 ± 10.6; p=0.003) and lower LEAS total scores (49.1 ± 11.7 vs 55.2 ± 9.4; p<0.001) were found in SRL patients, who also presented with higher smoking rates (62% vs 31%) and psychiatric comorbidity, TAS-20 and total LEAS were correlated with each other neither in patients (r=0.19; p=0.11) nor in controls (r=0.106; p=0.09).

Conclusion: Our findings are consistent with less efficient stress regulation mechanisms and a potential psychosomatic component or a minor brain damage in SRL patients. On the other hand, LEAS once more appears, in our study as in similar previous publications on case-control comparisons, as a more robust tool for assessing emotion processing than TAS-20, in the presence of a psychiatric comorbidity.

58) Abstract 1448

SELF-EFFICACY FOR HEALTH BEHAVIORS IN OVERWEIGHT ADOLESCENT AND YOUNG ADULTS WITH CARDIOMETABOLIC RISK IN A PEDIATRIC OUTPATIENT PREVENTATIVE CARDIOLOGY AND WEIGHT MANAGEMENT PROGRAM

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Overweight adolescents and young adults (AYAs) are disproportionately at risk for developing negative health consequences such as the metabolic syndrome, cardiovascular disease, and type 2 diabetes. Self-efficacy and other positive factors may be helpful in understanding self-management of health behaviors in this population. The primary aim of this study was to explore the relationship between self-efficacy, self-management behavior and BMI of AYAs with cardiometabolic risk.

As part of routine clinical practice, AYA patients (N=104) attending dietician appointments from 3/2015-7/2015 in an outpatient pediatric preventative cardiology and weight management program at a large academic medical center were asked to report on self-management of health behaviors in the past week, and self-efficacy to perform these behaviors in the next month. Patients were 14.3±2.0 years old (58% female, 56% African American, 30% Caucasian, 1% Asian, and 13% Other Race/Latino/a), with cardiometabolic risk (e.g., BMI = 36.9±4.2 kg/m²; waist circumference = 104.7±15.7 cm). Relationships between self-reported self-management of health behaviors and self-efficacy for future health behaviors, and between health behavior self-efficacy and BMI were examined using hierarchical linear regressions.

After controlling for gender, age, and race, patients who reported engaging in healthier behaviors in the past week had significantly higher self-efficacy to engage in physician-recommended levels of these behaviors in the next month: getting adequate sleep (β=.486, p<0.001); limiting hours of screen time (β=.451, p<0.001); limiting times medications are missed (β=.606, p<.001); getting adequate physical activity (β=.462, p<0.001); eating adequate servings of fruits/vegetables (β=.394, p<0.001); and limiting drinking sweet/sugary beverages (β=.378, p<0.001). A higher summary score of overall self-efficacy for health behaviors was also predictive of lower current BMI (β=.269, p=.006).

Self-efficacy for future self-management of health behaviors was related to current self-reported health behaviors, and overall self-efficacy was related to lower current BMI. Future work is needed to further examine the direction of the relationship between these variables. Improving self-efficacy and other positive/motivational factors may be important areas for psychological intervention for AYA with cardiometabolic risk.

59) Abstract 1109

LONG TERM PREDICTORS OF GLYCEMIC CONTROL IN A COHORT OF ADULTS WITH NEWLY DIAGNOSED TYPE 1 DIABETES: IS IT DEPRESSION, ANXIETY, OR DISTRESS?

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Background: Emotional problems are common in patients with diabetes, and there is plenty of research on how different kinds of problems are related to glycemic control. Findings do vary greatly, though, and besides, studies on adults with type 1 diabetes are scarce. While most studies yielded a relation between depression and HbA1c in type 1 diabetes, at least one recent study, using a prospective design, did not (e.g. Rassart et al., 2015). Others found a relation with anxiety but not with depression (e.g. Hilliard et al., 2011), or with diabetes related distress only (e.g. Strandberg et al., 2014).

Methods: We re-analyzed data of a sample of initially 313 adults with newly diagnosed type 1 diabetes that was followed over almost six years. Symptoms of depression and anxiety were assessed yearly by the respective SCL-90-R subscales (age and sex adjusted T scores). Distress was determined by a German questionnaire for diabetes related burden in everyday life (FBD; total score).

Glycated hemoglobin (HbA1c) was measured yearly, lastly five to six years after the diagnosis (n=5). The relationship between emotional problems and glycemic control was modeled using linear regression analysis; age, sex, years of schooling (all t0=time of diagnosis), and body mass index (t1=one year following the diagnosis) were forced into the model, depression, anxiety, and distress scores (all t1) were added on a stepwise basis.

Results: Mean age of the sample at the time of diabetes onset was 28 years (range=17-40 years); 62 percent were male. Only years of schooling (beta=-.21, p=.003), body mass index (beta=.15, p=.040), and anxiety (beta=.25, p=.001) remained in the model; age (p=.415) and gender (p=.800) do not contribute to glycemic control. The regression model is statistically significant (F5,187=5.8, p > .001); it explains 13.4 percent of variance.

Conclusions: In this sample of patients with an adult onset of diabetes type 1 only anxiety (besides schooling and body mass index) was related to long term glycemic control, but depression, and overall diabetes related distress were not. This adds one more piece to the puzzling research on the relation of emotional problems and outcomes in diabetes.

References:


60) Abstract 1151

IMPACT OF DEPRESSIVE SYMPTOMS ON GLYCEMIC CONTROL IN HISPANICS WITH TYPE II DIABETES MELLITUS

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OBJECTIVE: Depression is one of the most common neuropsychiatric disorders in patients with diabetes mellitus and is associated with poor glycemic control, micro- and macrovascular complications and low quality of life. Hemoglobin A1C% (HbA1C) is used to assess glycemic control and guiding clinical management. Additionally, there are different proposed surrogate measurements of insulin resistance, e.g. triglycerides/HDL ratio, mean arterial pressure (MAP), and pulse pressure (PP). However, the impact of depressive symptomatology on glycemic control has been poorly explored. The aim of this study was to examine whether depressive symptoms is a strong predictor of glycemic status in Hispanic patients with type II diabetes mellitus (DM2).
METHODS: Patients diagnosed with DM2 (n=122) from a community clinic (South Miami Beach, FL), completed the 9 item patient health questionnaire (PHQ-9). The PHQ-9 is a validated psychosocial instrument which categorizes depressive symptoms in minimal (1-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27). Blood levels of fasting glucose, HbA1C, albumin, creatinine, lipids (LDL, HDL, triglycerides), and blood pressure were collected. Hierarchical multiple regression (HMR) analysis was used to measure the independent incremental relationships between depression (PHQ-9 scores), clinical laboratory parameters and blood pressure with HbA1C. For the HMR analysis, 5 models were created: Model 1 contained demographics (age and BMI), Model 2 included the blood pressures (PP and MAP), Model 3 included renal function markers (albumin and creatinine), Model 4 included the triglycerides/HDL ratio and Model 5 included the PHQ-9 scores. Also, an independent Student’s t-test was conducted to compare all the parameters between patients with mild to severe depression (PHQ-9 score ≤5) and patients with minimal depression (<5).

RESULTS: The HMR analysis showed that Model 5 predicted a significant amount of glycemic status variance (p<0.001), with a strong association between HbA1C and PHQ-9 scores (figure 1). Model 1, 2, 3 and 4 predicted for a non-significant (p>0.05) amount of HbA1C variance (1.9%, 8.8%, 2.0% and 0.98%, respectively). The student’s t-test showed that there was a significant difference (p<0.05) in the levels of HbA1C (Mean±SD: PHQ-9 ≤5 vs. <5) (10±2.33 vs. 8.24±1.93), glucose (257±135.25 vs. 164.91±69.81), and triglycerides/HDL (6.88±6.40 vs. 4.02±2.67).

CONCLUSIONS: These results revealed an independent relationship between depressive symptoms and glycemic control in patients with DM2. They also suggest that PHQ-9 could be a useful tool in the management of patients with DM2. Prospective studies aimed at managing depressive symptoms in the context of diabetic care are warranted.

**Figure 1: Linear relationship between glycemic control (HbA1C) and depressive symptoms (PHQ-9)**

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**61) Abstract 1258**

**ASSOCIATIONS OF MINDFULNESS WITH GLUCOSE REGULATION AND DIABETES: NEW ENGLAND FAMILY STUDY**

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**OBJECTIVE:** It is important to identify behavioral intervention targets to improve glucose regulation. The current study evaluates whether dispositional mindfulness (defined as present moment awareness of one’s own mental and physical processes) is associated with glucose regulation and type 2 diabetes.

**METHODS:** Study participants (n=399) were from the New England Family Study, a prospective birth cohort, with median age 47 years. Dispositional mindfulness was assessed using the Mindful Attention Awareness Scale (MAAS). Type 2 diabetes and “normal plasma glucose” were defined using American Diabetes Association criteria. **RESULTS:** Multivariable-adjusted regression analyses demonstrated that participants with high vs. low MAAS scores were significantly more likely to have normal plasma glucose levels (prevalence ratio=1.35 (95% confidence interval (CI): 1.08, 1.87); Figure 1), and non-significantly less likely to have type 2 diabetes (prevalence ratio=0.80, 95% CI: 0.34, 1.88), adjusted for age, gender, race/ethnicity, family history of diabetes and childhood socioeconomic status. Mediation analyses of the relation between mindfulness and glucose regulation suggested that the association was due partly to obesity and sense of control, where indirect effects were prevalences ratios (95% CI) of 1.03 (1.00, 1.10) and 1.08 (1.00, 1.21), respectively. **CONCLUSIONS:** Dispositional mindfulness may be associated with glucose regulation. Prospective replication studies are needed to adequately establish whether low dispositional mindfulness is a risk factor for glucose regulation and type 2 diabetes.

**62) Abstract 1335**

**ARE HABITUAL SELF-MANAGEMENT BEHAVIORS ASSOCIATED WITH BETTER MENTAL HEALTH OUTCOMES IN PEOPLE WITH TYPE 2 DIABETES?**

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Individuals with type 2 diabetes are at increased risk of some mental health conditions, including depression, anxiety, and problematic levels of diabetes-related distress. Key aspects of the diabetes regimen, such as taking medication, involve self-management behaviors that must be performed on a regular basis. However, self-management behaviors can be stressful. Habits are behaviours that are performed automatically. The automaticity of habits may alleviate some of the stress associated with self-management behaviors thereby improving mental health. The purpose of this study was to determine if stronger habits for self-management behavior were associated with better mental health in people with type 2 diabetes. Cross-sectional data were collected from a community sample of 885 adults with type 2 diabetes who self-reported using oral medication to control their diabetes in the past month. Habit strength for self-management behaviors was measured with the automaticity subscale of the Self-Reported Index of Habit Strength. The self-management behaviors of interest were taking prescribed oral medication and insulin, if applicable. Mental health outcomes of interest were depressive symptoms, anxiety symptoms, and diabetes-related distress. Separate linear regression models were run for each of the mental health outcomes. Age, sex, and diabetes duration were included as covariates. 49.4% of the sample were women. On average, participants were 63.1 years old and had been diagnosed with diabetes for 7.8 years. Habit strength for oral medication was not associated with concurrent depressive symptoms (p=0.250), or anxiety symptoms (p=0.42), but stronger habits for taking oral medication were associated with lower diabetes-related distress (p=0.005). 45 participants also reported using insulin to control their diabetes in the last month. Habit strength for insulin use was not associated with depressive symptoms, anxiety symptoms, or diabetes-related distress (all p>.35). Results suggest that habit strength for oral medication use is related to diabetes-related distress, but not depressive symptoms or anxiety symptoms. This may be because the taking oral medication is most closely tied to diabetes-related distress. Data regarding habit strength for insulin use must be interpreted with caution given the small sample size. Data are cross-sectional, so future work is needed to determine directionality.
63) Abstract 1402
TRAUMA-RELATED PSYCHIATRIC DISTRESS, SOCIAL SUPPORT, AND PATIENT OUTCOMES IN TYPE 2 DIABETES
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Among individuals with type 2 diabetes (T2DM), those with comorbid psychiatric symptoms (e.g., depression) show worse diabetes outcomes than those without. Our primary goal was to extend prior work by determining if trauma-related psychiatric distress (e.g., emotional avoidance, hyperarousal) also is related to poor T2DM outcomes. As aspects of social support can protect patients from poor health outcomes, a secondary goal was to test for buffering effects of discrete components of social support on the relationship between trauma-related distress and illness outcomes. Adults with T2DM (n = 184, MAge = 55.4, 81% female) completed an objective assessment of glycated hemoglobin (MHA1c = 9.13%) and self-report measures of distress related to their most traumatic life experience, diabetes self-care behaviors, and two indicators of social support (number of supportive others, and satisfaction with support). General linear models tested for (1) relations between trauma-related distress and illness outcomes, (2) relations between social support (number and satisfaction) and trauma-related distress, and (3) the interaction between trauma-related distress and social support (number and satisfaction, separately) predicting outcomes. Severity of trauma-related distress (M = 19.17, SD = 17.58) was associated with poor glycemic control (B = 0.02) and poor dietary self-care (B = 0.02), as well as more frequent blood glucose testing (B = 0.03; all ps < 0.05). Both the number of supportive others (B = -0.32) and support satisfaction (B = -0.27) were negatively associated with trauma-related distress; neither component of support moderated relationships between trauma-related distress and outcomes (ps > 0.21). Thus, more severe trauma-related distress is generally associated with worse illness outcomes in T2DM patients; perhaps counterintuitively, distress is also related to more frequent glucose testing. Social support is negatively associated with trauma-related distress, but it does not appear to protect patients from the negative influence of trauma-related distress on illness outcomes. Findings suggest that trauma-related distress is related to diabetes outcomes, and that additional attention to traumatic life experiences in clinical care may be needed.

64) Abstract 1021
THE IMPACT OF FAMILY SUPPORT AND RELATIONSHIPS IN HEALTHY AGING
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Objectives: Prior studies have mentioned that family support reduces the negative impact of chronic conditions generally, but its role in pain and depression for arthritic conditions has not been studied widely. This study aims to explore epidemiological factors, such as family support, to determine its association with pain and depression in older adults with arthritis.
Methods: We examined the effects of family support (spouse, children, other immediate family) on pain and depressive symptoms using logistic regression and controlling for age, ethnicity, gender, marital/educational status and employment/income, physical function/disability status, pain and antidepressant medications, and other clinical indicators of chronic health conditions.
Results: A total of 844 males (35.0%) and 1,567 females (65.0%) with arthritic conditions (n = 2,411) and an average age of 76.0 years were drawn from the 2012 Health and Retirement Study (HRS) and included in the study. Positive and negative family support were significantly associated with depressive symptoms but not with pain. Support from a spouse was significantly associated with depressive symptoms. Discussion: Depressive symptoms and pain were more likely to decrease among individuals with arthritis who had higher positive family support. In addition, our results indicated that both pain and depressive symptoms increased when higher levels of negative family support were present.

65) Abstract 1022
PREVALENCE OF DEPRESSIVE SYMPTOMS ACROSS THE NATION
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Introduction: Depression is a major health risk factor among the older population, related to significant increases in total per person health care expenditures. Prior studies have shown significant variations in some clinical conditions. However, there has not been any study examining depressive symptoms across regions. The purpose of this study was to investigate the prevalence of the older population experiencing depressive symptoms across different regions in the United States.
Methods: Public data were obtained from the 2011-2014 National Health and Aging Trends Study, a longitudinal study that included a nationally representative sample of individuals aged 65 or older. Participants’ regions of residence were categorized by Northeast, Midwest, South and West census regions. A composite score of 3 or greater from the Personal Health Questionnaire-8 (PHQ-8) was used to indicate the presence of depressive symptoms. The comparison of proportion having symptoms across census regions were analyzed using chi-square tests.
Results: A total of 3,863 participants over the age of 65 were included in this study. Of those, 1,583 (41%) were male and 2,275 (71.4%) were White. The greatest percentage in any age grouping were between 70 and 74 years old (22.1%, n=852) at the baseline year. Disparities in the prevalence of depressive symptoms were observed across different regions in the United States. From 2011 to 2014, depressive symptoms significantly declined in the South (p<0.05) and significantly increased in the Midwest and West (p<0.05).
Conclusion: Understanding regional variations of depressive symptoms in older adults can inform the public regarding resource allocation and treatment models. By showing which areas of the US are more prone to depressive symptoms, local, state, and federal programs can be appropriated to the areas with the greatest need.

66) Abstract 1032
TAKING THE PLACEBO HOME: SELF-ADMINISTERED OXYTOCIN AND SEROTONIN REDUCE STRESS, ANXIETY, AND SYMPTOMS OF DEPRESSION IN A NON-PATIENT SAMPLE
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Background: With a healthcare system burdened by symptomatic and mental-health related conditions, the placebo effect may represent a useful clinical tool. Prior work has, however, been laboratory based, potentially limiting the clinical translation of placebo effects into real world settings. This report investigated the effectiveness of a take-home, self-administered placebo treatment in the short-term alleviation of stress, anxiety, and symptoms of depression in a non-patient population.
Method: 77 participants were randomized to either the: ‘oxytocin’ treatment group (n = 22), the ‘serotonin’ treatment group (n = 22), or to a wait-list control group (n = 33). The two treatment groups were given an ‘anti-stress treatment spray’ (placebo) to self-administer for three days and completed online measures of subjective stress (Percieved Stress Scale-10), anxiety (Cognitive Somatic Anxiety Questionnaire), and depressive symptoms (Centre for Epidemiological Studies – Depression) before and after the three day protocol. Results: Both the ‘serotonin’ and ‘oxytocin’ treatment sprays were effective in reducing symptoms of depression; however, only those in the ‘oxytocin’ group reported less stress and anxiety as compared to controls. Overall the ‘oxytocin’ was perceived as more effective. Conclusions. Clinically significant placebo effects can be translated into real-life settings in the short term reduction of stress, anxiety, and symptoms of depression in a non-patient population. In treating psychological distress, placebo treatments may be useful addition to the treatment repertoire. The information given with treatment may be an important consideration for practitioners.

67) Abstract 1060
TRAIT AUTONOMIC PREDICTION ERROR: NEURAL CORRELATES AND RELEVANCE TO ANXIETY
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Introduction: Anxiety disorders are the most prevalent form of psychiatric illnesses. Anxiety symptoms are prominent across psychiatric and stress-sensitive medical disorders, with high levels of associated morbidity. One
THE IMMEDIATE EFFECTS AND THE TREATMENT EFFECTS OF HRV BIOFEEDBACK TRAINING FOR ANXIETY DISORDER
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Objective
The purpose of this study is to examine the treatment effect of Heart rate variability biofeedback (HRV-BF) for patients with anxiety disorders.

Methods
Fourteen patients (overall mean age and male : female ratio were 36.36 ±12.57 and 1:1 respectively) with anxiety disorders received a 6-week HRV-BF training program. A 5-minute Photoplethysmograph, as well as Beck Anxiety Inventory (BAI), State-Trait Anxiety Inventory-Trait (STAI-T), and the Relaxed scores (self-rated from 0 to 10) were assessed at both the baseline stage and the slow breathing stage (6 breaths/min) at the beginning of the first and the end of the sixth week.

Results
The immediate effects, the physical benefit from the baseline stage to the slow breathing stage at the first and the sixth week was as follows: The paired t-test showed there was a significant increase in the standard deviation of normal-to-normal intervals (SDNN) (t = 5.84, p < .001; t = 4.93, p < .001); ln low frequency (lnLF) (t = 7.56, p < .001; t = 8.41, p < .001); LF/HF ratio (t = 3.91, p < .01; t = 5.30, p < .001); heart rate (HR) max-min (t = 6.55, p < .001; t = 5.40, p < .001) from the baseline stage to the slow breathing stage at the first and the sixth week respectively. However, heart rate (HR) increased (t = 2.27, p < .05) and blood volume amplitude (BVA) (t = 3.90, p < .01) decreased during the first week. The treatment effects: One-way repeated ANOVA with controlled practice times showed that the six-week training program significantly raised more lnLF (F = 8.60, p < .05) and relaxed score (F = 8.41, p < .05); and decreased BAI scores (F = 14.21, p < .01).

Conclusions
The HRV indices of the participants increased while they were practicing slow breathing. Although, the HR increased and BVA decreased during the first week, these results might be due to unfamiliar slow breathing. Moreover, the HRV-BF training not only provided more gain in lnLF and relaxed score, but also reduced the anxiety level for the participants.

68) Abstract 1064
SOCIAL ANXIETY DISORDER WITH AND WITHOUT COMORBID ALCOHOL USE DISORDERS: DO THEY HAVE DIFFERENT PERSONALITY PATTERNS AND SOCIALISATION EXPERIENCES?
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Social anxiety disorder (SAD) is significantly associated with the co-existence of alcohol use disorders (alcohol abuse and/ or alcohol dependence) and therefore pose a particular challenge for practitioners. However, there has been little research on the specific characteristics of this subgroup so far. As part of the German research project Social Phobia Research participants with SAD with and without comorbid alcohol use disorders have been investigated with regard to their personality patterns and socialisation experiences.

223 participants with SAD without comorbid alcohol use disorder were compared to 80 participants with SAD and comorbid alcohol use disorder regarding personality (Temperament and Character Inventory; TCI), perceived levels of parental care and overprotection (Parnetal Bonding Instrument; RBI) and traumatic events during childhood and adolescence (Adverse Childhood Experiences Questionnaire; ACE) using t-tests and analyses of covariance with depression as covariate.

Results showed that participants with SAD and comorbid alcohol use disorder scored significantly lower on cooperativeness (p = 0.002), perceived lower levels of maternal and paternal care (p = 0.001 and p = 0.009) and reported more traumatic events during childhood and adolescence (p = 0.008). The differences in personality and parental care remained stable even after controlling for depression.

Our findings show that patients with SAD and comorbid alcohol use disorder compared to SAD patients without alcohol use disorder have a stronger personality-based tendency to distance themselves from the social environment. Moreover, these patients report a lack of parental care and more traumatic experiences. Longitudinal studies are needed to shed light on the relationship between these socialization experiences and the specific personality profile in this patient group. In the long run a deeper understanding of these characteristics can open up the space for new treatment options in patients with SAD and comorbid alcohol use disorders.

69) Abstract 1191
METABOLIC RISKS IN EARLY BIPOLAR DISORDER
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The concept of metabolic risk in bipolar disorder (BD) has become prominent in recent years, with the growing body of evidence implicating which metabolic disturbances are present in this specific population. However, the specific characteristics of metabolic disturbances in early bipolar disorder (BD) patients has not been well studied. This study examined the presence and severity of metabolic disturbances in a cohort of 180 patients (70 BD-I, 110 BD-II) who have experienced their first episode of BD-I or BD-II within the last 12 months. Methods: One hundred eighty BD patients were recruited from a tertiary care hospital over a 2-year period who were diagnosed with their first episode of BD-I (n = 70) or BD-II (n = 110) within the last 12 months. The presence and severity of metabolic disturbances were assessed using the National Institute of Mental Health (NIMH) Metabolic Inventory. Results: The prevalence of metabolic disturbances in BD-I and BD-II was examined. Fewer metabolic disturbances were present in BD-I compared to BD-II. Conclusion: This study provides evidence that metabolic disturbances are present in early bipolar disorder, and that the presentation of these disturbances may differ between BD-I and BD-II.
Background: Although bipolar disorder is associated with increased risk for diabetes and heart disease, it is not clear how early in the course of illness this association develops. We examined metabolic risks in a cohort of early course bipolar patients, compared to an age and sex-matched healthy comparison group. Our hypothesis was that the early-course bipolar group would have significantly increased metabolic risks compared with healthy subjects.

Method: The sample and the matched comparison group were recruited from the community and clinical referrals from 2005-10 as part of larger MRI and treatment interaction study. The bipolar group was either experiencing its first manic episode or depression as the second mood episode. At the time of enrollment metabolic risk data were collected on all participants, including vital signs, BMI, fasting lipids, C-reactive protein (CRP), fasting glucose, omega 3 index. Diagnoses were established using the Structured Clinical Interview for DSM IV. Analyses consisted of ANCOVA models with demographics (i.e., age, sex, and race) included as covariates.

Results: Compared to the healthy group, the bipolar group, although younger, had significantly higher fasting glucose and triglyceride, and significantly lower HDL cholesterol and Omega 3 index.

Discussion: This cross-sectional assessment suggests that early in the course of bipolar disorder, a pattern suggestive of increased cardiovascular risks has already been initiated. Further analyses will examine the relative proportions in each group above clinical metabolic risk thresholds and the persistence of metabolic risks over time.

71) Abstract 1561
EFFECTS OF COGNITIVE-BehaviorAL THERAPY WITH PHYSICAL ACTIVITY PROMOTION ON IMMUNOLOGICAL MARKERS IN MAJOR DEPRESSION: A RANDOMIZED CONTROLLED TRIAL
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Major Depression is associated with inflammation, as well as increased risk for cardiovascular disease (CVD). Regular physical activity has been shown to have anti-inflammatory effects. In this randomized controlled trial, 97 patients with major depression were randomly assigned to cognitive-behavioral therapy with physical activity promotion (CBT-A), cognitive-behavioral therapy with euthymic activity (CBT-E, active control condition), or a wait list control condition (WL). We measured C-reactive protein (CRP), circulating interleukin(IL)-6, LPS-stimulated IL-6, IL-10 and immune cell counts at baseline and weeks 8 (mid-treatment), and 16 (post-treatment). Intention to treat analyses with hierarchical linear modeling indicated an increase in anti-inflammatory IL-10 in CBT-A. As compared with CBT-E and WL, CBT-A reduces CRP (week 16) in patients with higher risk for cardiovascular disease in terms of elevated levels of CRP at baseline. This study demonstrates that patients with depression who are at increased risk for CVD may benefit from a cognitive-behavioral intervention which includes physical activity promotion to reverse inflammation.

72) Abstract 1611
PRE- AND POST-TREATMENT DHEA AND REMISSION OF MAJOR DEPRESSIVE DISORDER AFTER SSRI TREATMENT

Background: Dehydroepiandrosterone (DHEA) and its sulfated moiety DHEA-sulfate (DHEA-S; together abbreviated DHEA(S)) are abundant adrenal steroids that also function as neurosteroids with direct brain actions. In preclinical studies, DHEA(S) exerts several properties consistent with antidepressant or neuroprotective effects, and exogenously administered DHEA has shown antidepressant efficacy in humans. Nonetheless, the role of endogenous DHEA(S) in neuropsychiatric illness and major depressive disorder (MDD) in particular, remain unclear, and DHEA(S) has been substantially less well-studied in MDD than the major steroid hormone, cortisol. Serum DHEA(S) levels have been reported as being low, high, or unchanged in MDD, but sources of variability are unknown, as is the relationship between endogenous DHEA(S) levels and likelihood of antidepressant-induced remission.

Methods: We determined baseline morning fasting serum DHEA(S) levels in 36 unmedicated adults (ages 19 – 65) with current MDD and a Hamilton Depression (HDRS) rating of > 17, who then completed eight-weeks of open-label SSRI treatment prior to having serum DHEA(S) levels re-sampled. All subjects were physically healthy and free of psychotropic and non-interfering medications for at least six weeks prior to participating. Participants with post-treatment HDRS ratings < 7 were classified as “Remitters,” while those with post-treatment HDRS ratings > 7 were classified as “Non-remitters.” Baseline and post-treatment DHEA(S) levels of Remitters and Non-remitters were compared, controlling for age, sex, body mass index (BMI), and DHEA assay batch, to assess whether baseline and post-treatment DHEA(S) levels are associated with SSRI-associated remission.

Results: Remitters and Non-remitters did not differ in baseline HDRS, age, sex, years of education, race, current tobacco use, lifetime depression chronicity, or length of current MDD episode, although Non-remitters had higher BMI (p=.009). Baseline DHEA and DHEA-S levels were significantly higher in MDD subjects who subsequently remitted after eight weeks of SSRI treatment, when compared to those who did not remit (DHEA: p=.008; DHEA-S: p=.040). DHEA and DHEA-S levels at the end of eight weeks of treatment remained significantly higher in the Remitters compared to the Non-remitters (DHEA: p=.013; DHEA-S: p=.040).

Conclusions: These data suggest that higher circulating DHEA(S) levels (both while unmedicated and after eight weeks of SSRI treatment) predictremission in SSRI-treated depressed individuals. These data raise the possibility that endogenous DHEA(S) abundance is a physiological adjuvant to SSRI efficacy, as predicted by prior preclinical and clinical studies.

73) Abstract 1659
PTSD SYMPTOMS ARE RELATED TO BLUNTED CARDIOVASCULAR REACTIVITY TO TRAUMA-IMAGERY AND NON-TRAUMA TASKS AMONG OEF/OIF/OND VETERANS
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Much of the research examining cardiovascular reactivity among those with posttraumatic stress disorder (PTSD) has focused on trauma-related tasks. In numerous but not all studies, PTSD participants have demonstrated increased cardiovascular reactivity. In the current study, we examined heart rate and blood pressure reactivity to a trauma-related script-driven imagery task and a non-trauma speech task among OIF/OEF/OND veterans, a group distinguished by multiple combat deployments. One hundred and fifty-six Veterans were recruited from a VA post-deployment health clinic and completed validated self-report measures of PTSD, degree of combat exposure, and dissociation. Overall, cardiovascular reactivity was significantly associated with PTSD, dissociation and exposure scores after covarying age, sex, and body mass index. For the trauma-imagery task, PTSD symptom severity was significantly related to blunted systolic blood pressure (B = -.25, p = .03) and total peripheral resistance reactivity (B = -.23, p = .04). Dissociation was associated with greater diastolic blood pressure (B = .24, p = .02), with similar trends for systolic blood
pressure (B = 0.20, p = .06) and heart rate (B = .18, p = .09), reactivity. Greater combat exposure was associated with greater heart rate reactivity (B = .20, p = .04) to the trauma-related task. For the non-trauma speech task, PTSD symptoms were significantly associated with blunted heart rate reactivity (B(3) = .23, ps < .04, for speech preparation and delivery), with similar trends for blunted cardiac output reactivity (B(3) = .21, p < .055). PTSD symptoms were related to greater total peripheral resistance reactivity (B = .26, p = .02) during preparation with a similar trend for speech delivery (B = .20, p = .07). Greater dissociation was related to greater systolic blood pressure reactivity during preparation (B = .22, p = .02). Combat exposure was not related to reactivity during the speech task. Results suggest that in a sample of recent military combat veterans, PTSD symptoms were not universally related to greater reactivity to trauma-related or non-trauma tasks. Instead, PTSD was related to blunted reactivity during the trauma task, and blunting of some measures of reactivity (but exaggerated vascular reactivity) during the non-trauma task. In contrast, dissociation and combat exposure were related to exaggerated reactivity. These findings suggest that the relationships between combat-related mental health outcomes and reactivity may be influenced by cohort and combat exposure. 

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74) Abstract 1388
EXPOSURE TO REPEATED, BUT NOT SINGLE, PSYCHOSOCIAL STRESS INDUCES POLY(I:C)-INDUCED PERSISTENT ALLODYNIA AND LATE-ONSET DEPRESSIVE-LIKE BEHAVIOR IN RATS
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Background: When animals suffer from viral infections, they develop sickness responses such as fever, allodynia and depressive-like behavior. Recent studies suggest that psychological stress can modulate the sickness response. However, it remains uncertain whether acute and chronic/repeated psychosocial stress have the same effect on viral infection-induced sickness responses.

Methods: To address this question, we compared changes in polyIC-induced fever, mechanical allodynia and depressive-like behavior in rats that had been pre-exposed to single and repeated (1 hr daily, five times) social defeat stress.

Results: PolyIC (3 mg/kg)-induced fever was attenuated by the pretreatment with either single or repeated social defeat stress. In contrast, only the repeated stress group showed late-onset and prolonged mechanical allodynia lasting for 35 days after injection in the von Frey test and prolonged immobility time in the forced swim test 9 days post-injection. To assess the involvement of glucocorticoids and microglia in the delayed and persistent development of these sickness responses in rats exposed to repeated stress, we investigated the effect of pretreatment with RU486 (50 mg/kg ip), a glucocorticoid receptor antagonist, and minocycline (50 mg/kg ip), an inhibitor of microglial activation, on polyIC-induced allodynia and depressive-like behavior. Pretreatment with either drug inhibited both the delayed allodynia and depressive-like behavior.

Conclusions: The present study demonstrates that repeated, but not single, social defeat stress followed by systemic polyIC administration induced prolonged allodynia and late-onset depressive-like behavior in rats. Stress-induced corticosterone and microglial activation may play a pivotal role in this phenomenon. This finding may be important for understanding the underlying mechanisms of post-infectious physical diseases, such as chronic fatigue syndrome and irritable bowel syndrome.

75) Abstract 1430
OPIOID FUNCTIONS AND SMOKING WITHDRAWAL IN TOBACCO DEPENDENCE
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Background: Increased sensory reactivity may be influenced by cohort and combat exposure. This study was approved by the USF IRB. The views expressed herein are solely those of the authors and do not represent the views of the Department of Veteran Affairs or the University of South Florida.

Methods: To address this question, we compared changes in polyIC-induced fever, mechanical allodynia and depressive-like behavior in rats that had been pre-exposed to single and repeated (1 hr daily, five times) social defeat stress.

Results: PolyIC (3 mg/kg)-induced fever was attenuated by the pretreatment with either single or repeated social defeat stress. In contrast, only the repeated stress group showed late-onset and prolonged mechanical allodynia lasting for 35 days after injection in the von Frey test and prolonged immobility time in the forced swim test 9 days post-injection. To assess the involvement of glucocorticoids and microglia in the delayed and persistent development of these sickness responses in rats exposed to repeated stress, we investigated the effect of pretreatment with RU486 (50 mg/kg ip), a glucocorticoid receptor antagonist, and minocycline (50 mg/kg ip), an inhibitor of microglial activation, on polyIC-induced allodynia and depressive-like behavior. Pretreatment with either drug inhibited both the delayed allodynia and depressive-like behavior.

Conclusions: The present study demonstrates that repeated, but not single, social defeat stress followed by systemic polyIC administration induced prolonged allodynia and late-onset depressive-like behavior in rats. Stress-induced corticosterone and microglial activation may play a pivotal role in this phenomenon. This finding may be important for understanding the underlying mechanisms of post-infectious physical diseases, such as chronic fatigue syndrome and irritable bowel syndrome.

76) Abstract 1476
GUT-DIRECTED GROUP HYPNOSIS IN PATIENTS WITH REFRACTORY IRRITABLE BOWEL SYNDROME - A FOUR YEARS FOLLOW UP
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Background: We previously have shown that gut directed group-hypnosis (GHT) has a significant beneficial effect for patients with refractory irritable bowel syndrome (IBS). Aim of this follow up (FU) study was to investigate long-term effects of GHT over four years.

Methods: All 46 IBS-patients who received GHT in our previous randomized controlled trial were invited to complete the IBS-impact scale (IBS-IS) for IBS-related quality of life and affective status showed a significant improvement compared to baseline (IBS-IS: 3.53 vs. 5.38 at FU, p<.001; HADS-depression: 6.28 vs. 4.14 at FU, p<.05; HADS-anxiety: 9.69 vs. 6.83 at FU, p<.001). Also VAS-scores for physical and psychological well-being, as well as individual IBS symptoms. Results. 30/46 patients (65%) completed all FU-questionnaires. After a mean duration of 4.13 years FU IBS-related quality of life and affective status showed a significant improvement compared to baseline (IBS-IS: 3.53 vs. 5.38 at FU, p<.001; HADS-depression: 6.28 vs. 4.14 at FU, p<.05; HADS-anxiety: 9.69 vs. 6.83 at FU, p<.001). Gender, IBS-subtype and practising of hypnosis had no influence on this success of GHT.

Conclusion. The beneficial effects of GHT are long lasting over 4 years in patients with refractory IBS. Therefore GHT is a highly valuable therapy option and should be offered in tertiary centres.

77) Abstract 1534
CONTEXT OF UNCERTAINTY MODULATES BRAIN ACTIVITY DURING RECTAL DISTENTION AND NON-DISTENTION IN SUBJECTS WITH IBS
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Introduction: Cognitive factor such as fear or anxiety in anticipation of pain may manipulate pain experience. Irritable bowel syndrome (IBS) is characterized by chronic abdominal pain or discomfort associated with change in bowel habit without organic alterations. The present study investigated difference in brain activity between IBS and controls in the influence of anticipation, uncertainty of incoming aversive stimuli, on processing of visceral sensation.

Methods: Twenty-six subjects with IBS (14 women, mean age 22.3) and 29 healthy controls (15 women, mean age 22.3) participated in the study. fMRI data was collected whilst subjects received balloon distensions to the rectum after visual cued certain (100% chance of aversive stimulation), uncertain (50% chance of aversive stimulation) and safe (0% chance of aversive stimulation) anticipation. The balloon volume eliciting 40-60% discomfort (severe discomfort) in each subject was used for rectal stimulation during the scan. Whole-brain voxel-based analysis was conducted in SPM8 using a voxel-level...
threshold of uncorrected p ≤ 0.01 combined with a cluster-level threshold at FWE-corrected p ≤ 0.05. Results: Rectal distention after uncertain cue compared to that after certain cue induced higher brain response in the middle and superior frontal gyrus and middle and superior temporal gyrus in IBS, whilst controls showed no difference in the same contrast. Group comparison revealed higher brain activities in the mid cingulate cortex, precuneus, posterior cingulate cortex, paracentral lobule and supramarginal gyrus in subjects with IBS compared to controls. On the other hand, non-distention period after uncertain cue compared to that after safe cue induced higher brain response in the bilateral insula, inferior frontal gyrus, left pallidum, left putamen, left superior frontal gyrus, right middle frontal gyrus and right mid cingulate gyrus in controls, whilst IBS did not show any differences. There was no group differences in the above contrast.

Conclusion: Uncertain anticipation of incoming aversive visceral stimuli influenced the brain activity during rectal distention in IBS and that during non-distention period in controls. These findings suggest that context of uncertainty may produce different brain response during experience and expectation of aversive visceral stimuli in subjects with IBS compared to controls.

78) Abstract 1642

MAMIAL STRESS, ANXIETY, AND DEPRESSION IN BARIATRIC SURGERY CANDIDATES
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Obesity contributes to adverse health outcomes including cardiovascular disease, type 2 diabetes, cancer, and premature mortality. Bariatric surgery (BS) reliably produces well-maintained weight loss and reduces obesity-related morbidity and mortality, but a significant number of patients fail to lose adequate weight initially and/or regain much of their weight loss. Emotional adjustment (e.g., anxiety, depression) and marital quality have been examined as potentially modifiable predictors of BS outcomes. Typically these factors have been examined in isolation, and studies have produced mixed results. Examining them in aggregate may help to identify profiles of multiple psychosocial risks for poor BS outcomes. In a preliminary effort toward this goal, we derived risk factor profiles from emotional adjustment and marital quality variables and examined their association with other important psychosocial factors in this population. Methods: 117 married/partnered BS candidates completed questionnaire measures of emotional adjustment (PHQ-9, GAD-7), marital adjustment (DAS), binge eating (BES), weight-related quality of life (wQOL - IWQOL-Lite: physical function, self-esteem, sexual life, public distress, and work) and social support (SSIQ-6, DUSOCs). Results: A two-step cluster analysis of marital adjustment, depression, and anxiety scores yielded 3 groups: Cluster 1: very poor relationship quality and moderately poor emotional adjustment (n=33); Cluster 2: very poor emotional adjustment with moderately poor relationship quality (n=41); and Cluster 3: good emotional adjustment and high relationship quality (n=43). Two MANOVAs that tested differences between the groups were significant for binge eating (wQOL), F(12, 194)=3.52, p < .001, n2=0.18, and b) social support outcomes, F(12, 182)=3.76, p < .001, n2=0.19. Specifically, both high risk groups generally reported more binge eating symptoms, lower wQOL, and lower overall social support. Conclusions: The joint consideration of emotional adjustment and marital quality identified two distinct high-risk groups of BS candidates. Interventions that address co-occurring emotional and relationship distress could be useful in maximizing BS outcomes, especially if focused on emotional distress versus relationship quality as the primary presenting concern.

79) Abstract 1437

ASSOCIATION OF PHYSICAL ACTIVITY ON SALIVARY CORTISOL LEVELS
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Previous studies have shown physical activity to reduce levels of perceived stress in Latina women. However, few studies have examined the relationship between physical activity and the stress hormone cortisol among Latino populations. The purpose of this study was to examine whether low-income Latina women who engaged in more physical activity had lower salivary cortisol levels [as measured by area under the curve (AUC) and cortisol awakening response (CAR)]. Our sample consisted of 27 low-income Latina mothers (mean age= 32, age range= 25-46; 67% earned less than $25,000 in total family income per year) who were provided with an accelerometer-based activity tracker called Fitbit® and were asked to wear the tracker for three consecutive days. The Fitbit® calculated the intensity and duration of physical activity (minutes per week) and the quality of one’s sleep (sleep onset). Participants were also asked to collect their salivary cortisol at four different times during the day (awakening, 30 minutes post-awakening, 4 pm, and bedtime) on one collection day. Hierarchical regression analysis revealed that women who engaged in more physical activity had a higher cortisol awakening response (R2=.182, p= 0.038). Physical activity was not associated with lowering total cortisol levels (AUC). These results suggest that engaging in physical activity may lead to higher CAR through increased arousal and energy that is associated with engaging in regular physical activity. Future studies are needed to provide further insight into the impact of regular physical activity on cortisol patterns among low-income populations.

80) Abstract 1496

DOES GENDER IMPACT THE RELATIONSHIP BETWEEN CHRONIC STRESS AND CORTISOL REACTIVITY?
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Chronic stress has consistently been found to have detrimental physical and psychological effects (McEwen, 1998). However, the nature of the relationship between chronic stress and HPA axis functioning remains unclear, possibly due to the unique effects of different types of stress and individual differences (Miller, Chen, & Zhou, 2007). Supporting this hypothesis, the current authors previously found that different types of chronic stress were uniquely related to cortisol reactivity to an acute psychosocial stressor (Fredrickson, Weltfried, & Dienes, 2015). Specifically, social and non-social chronic stressors led to distinct patterns of cortisol reactivity. Importantly, the role individual characteristics play in cortisol reactivity, such as gender, remains unclear (i.e., some report small cortisol differences between men and women, Kirschbaum, Wal, & Heim, 2001). In the current study, we investigated whether gender differences in cortisol reactivity to an acute psychosocial stressor were dependent on the type of chronic stress (Fredrickson et al., 2015; Diener & Kemeny, 2004; Kelly et al., 2008). The current study will expand our previous findings by examining whether gender impacts the relationship between chronic stress and cortisol reactivity.

Participants included 53 undergraduates aged 17 to 56 years (63.6% female; Age: M = 22.18, SD = 6.821). The UCLA Life Stress Interview (LSI; Hammen, 1997) was administered prior to the Trier Social Stress Task (TSST; Kirschbaum et al., 1997). The ratings on the LSI range on a scale from 1 (exceptionally good) to 5 (extremely stressful) for chronic stress over the past 12 months in the domains of Close Friend, Social, Family, Neighborhood, Health, School, Work, and Finance. Five saliva samples were collected across the task using Salivettes (Sarstedt Inc) at baseline, immediately post task, and 10, 25, and 40 minutes post task. Total cortisol was assessed using Area Under the Curve analyses (AUC) relative to the ground (AUGC) and intercept (AUCI).

A series of moderated linear regression analyses were conducted, examining gender as a moderator of the relationship between LSI stress domains and total cortisol output. Results revealed that gender did not explain a significant increase in variance in AUC for any LSI stress domain. Thus, results reveal that gender was not a significant moderator of the relationship between chronic stress and total cortisol reactivity to an acute psychosocial stressor. Notably, bivariate linear regressions also revealed no gender differences on the TSST, independent components of the HPA axis, and ANS, respectively. Previous studies suggest that the relationship between chronic stress and cortisol reactivity to an acute psychosocial stressor (Fredrickson et al., 2015), the present study suggests that gender does not significantly impact this relationship. These findings add to the current literature by supporting the unique role type of chronic stress has on cortisol reactivity.

81) Abstract 1507

"HURRY UP AND WAIT" - THE ROLE OF TIME FOR AWAKENING RESPONSES

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Objectives: Awakening responses in cortisol (CAR) and salivary alpha-amylase (AAR) constitute characteristic features of diurnal secretion patterns of regulatory components of the HPA axis and ANS, respectively. Previous studies suggest that day of the week and awakening time (AT) may influence awakening responses; in particular, decreased CARs have been observed at weekend-days and when awakening late. However, it needs to be studied whether a) these observations also apply to AAR and b) whether these time factors may interact with each other. Thus, we investigated the effect of day and AT on CAR and AAR in two independent samples.

Methods: Using a validated and standardized protocol, 57 healthy participants (65% women) were investigated over a 7-days period (study 1), and 30 female chronic pain patients were examined over a 14-days period (study 2). Participants collected saliva samples each morning (upon awakening, 30 minutes after awakening) for the determination of CAR and AAR. Pre-programmed electronic
diary devices were used to track the day of week (weekend-day vs. week-day) and exact time of saliva sampling (AT).

Results: In both studies, participants woke up later on weekend-days compared to week-days. In study 1, ATs, day, or their interaction did not predict CARs. However, early ATs predicted increased AARs, while day or its interaction with AT did not predict AARs. In study 2, week-day as well as early ATs on a week-day predicted increased CARs. AAR was not predicted by any of the predictors.

Discussion: The findings indicate the importance of these two time factors on awakening responses, in particular of the impact of day on CARs and the impact of AT on AARs. Since day of week (weekend-day vs. week-day) and awakening times may negatively affect awakening responses, researchers should be aware of these possible confounding factors and control for them.

82) Abstract 1520
THE RELATIONSHIP BETWEEN ACUTE STRESS REACTIVITY AND MOTIVATION FOR FOOD IN CHRONICALLY STRESSED WOMEN
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Given the prevalence of psychological stress and obesity worldwide, a greater understanding of the relationship between stress and eating has never been more pertinent. Eating behaviors are influenced by the interaction of chronic and acute stress. Specifically, chronic stress may be an important factor explaining variations in acute stress-induced eating. Although individuals under chronic stress tend to eat more when confronted with acute stress, little is known about the underlying physiological and psychological mechanisms of this interaction. Thus, the goal of the present study was to investigate the relationship between acute stress and eating in women with high and low perceived life stress. Thirty-four normal-weight (mean BMI = 24.9) undergraduate females were exposed to the Trier Social Stress Test (TSST), a laboratory stressor consisting of a speech and math task. Participants rated their anxiety, hunger, and desire to eat, and provided hypothalamic-pituitary-adrenal (HPA) and cardiovascular measurements both before and after the acute stressor. On the basis of a self-reported perceived stress score, women were separated into high versus low levels of stress reactivity. HPA sensitivity and CRF were assessed using a method of two normal and two stressed participants.

83) Abstract 1557
DO I HAVE TO STICK TO THE PROTOCOL? A SYSTEMATIC REVIEW OF TSST PROCEDURE EFFECTS ON CORTISOL STRESS RESPONSES
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Background. The Trier Social Stress Test (TSST) is one of the most widely used laboratory stress tests. Exposure to this psychosocial stressor has been shown to stimulate an acute cortisol stress response in the majority of healthy individuals. However, variations in acute stress reactivity may help to explain the increased stress-induced eating reported in women with chronic stress. Although previous studies have reported blunted HPA axis responses to acute stress in chronically stressed women, high obesity rates may have been a critical factor in these reports. Participants in the current report were not obese, and thus future studies investigating the role obesity may play in modifying the interactive effects of chronic and acute stress on eating behaviors are warranted.

84) Abstract 1660
FASTING MODULATES THE SENSITIVITY OF GLUCOCORTICOID SUPPRESSION OF PRO-INFLAMMATORY CYTOKINE PRODUCTION AFTER ACUTE STRESS
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Exposing various animals to fasting prolongs lifespan by as much as 50% and improves surgical outcomes in mice. In humans, fasting has been shown to blunt reactivity of both cortisol and pro-inflammatory cytokines after an acute stressor. Possible underlying mechanisms for these effects in humans remain largely untested. We set out here to study the effects of fasting on the ability of glucocorticoids to suppress inflammation in an ex vivo context. Glucocorticoid (GC) sensitivity was measured by dexamethasone (DEX) inhibition of lipopolysaccharide (LPS)-induced interleukin-6 (IL-6) production in whole blood.

Methods: Eighteen adults (67% male, 35% Caucasian) with a mean age of 19.31 years (SD=1.85) and BMI of 24.63 kg/m2 (SD=2.98) were randomly assigned to control or fasting conditions. Participants were exposed to the Trier Social Stress Test (TSST) and blood was collected at -1,+1, 10, 30, 60, and 120 minutes post stress. Whole blood was immediately mixed into a solution of LPS, saline, and specified concentrations of DEX and incubated for 18hrs before blood plasma was collected.

Results: A repeated-measures ANOVA revealed marginally significant group differences in GC sensitivity, as more DEX was required across all time points for IL6 suppression in fasting conditions than controls (group*time interaction; F=2.66, p=.07). These results indicate normal GC reactivity and sensitivity on pro-inflammatory IL6 production in controls, but blunted and decreased GC sensitivity in fasting participants. In summary, we found that fasting increases the amount of GC’s required to suppress inflammatory reactivity to a stressor. The fasting participants needed more DEX to suppress inflammation to the same level as controls. Additionally, fasting participants had blunted reactivity of GC sensitivity across time points as compared to controls. The intracellular mechanisms responsible for the effects of fasting on GC sensitivity and whether this response is adaptive remains untested.

85) Abstract 1042
CORTISOL SLOPE PREDICTS DEPRESSION SYMPTOMS 12 MONTHS AFTER CORONARY ARTERY BYPASS GRAFT SURGERY
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Background: Alterations in the diurnal profile of cortisol have been associated increasing number of negative health outcomes. Given the goal of the present study was to investigate the relationship between cortisol stress responses in healthy individuals.

Objective: We aimed to study the prospective relationship between cortisol measured pre- and post-operatively and depression symptoms measured 12 months post coronary artery bypass graft surgery (CABG) among patients.

Methods: We analysed data from 171 patients awaiting first-time, elective CABG surgery from the pre-assessment clinic at St. George’s Hospital, London. The Beck Depression Inventory (BDI) was used to assess depression symptoms and saliva samples were collected to measure cortisol. On average, baseline assessments of depression and cortisol
occurred 29 days before surgery, short-term follow-up of cortisol occurred 60 days after surgery and long-term follow-up of depression was 378 days after surgery. Results: Baseline cortisol slope was not associated with depression at 12-month follow-up. However, a flatter cortisol slope measured 60 days after surgery predicted depression (BDI > 10) 12 months after surgery (odds ratio 0.618, 95% confidence interval [CI] 0.388-0.983, p = 0.042) after controlling for baseline BDI, smoking, body mass index and disease severity (EuroSCORE). These analyses were confirmed in models using continuous BDI scores (beta = −0.126, 95% CI -1.290 -0.002, p = 0.049). Conclusion: Dysregulation of the diurnal profile of cortisol in the weeks following cardiac surgery predicts symptoms 12 months after surgery. These findings suggest interventions aimed at improving adaptation in the early recovery period may have long-term benefits in this patient group.

86) Abstract 1118
THE EFFECTS OF OPTIMISM AND GRATITUDE ON ADHERENCE, FUNCTIONING, AND MENTAL HEALTH FOLLOWING AN ACUTE CORONARY SYNDROME
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Objective: Positive psychological constructs are associated with improved outcomes among medical patients. This study aimed to examine the effects of optimism and gratitude on self-reported adherence, physical functioning, and mental health after an acute coronary syndrome (ACS). Methods: A series of four increasingly adjusted multivariate linear regression models examined associations between optimism and gratitude measured two weeks post-ACS, and six-month outcomes: adherence, mental and physical health related quality of life, physical functioning, cardiac symptoms, depression, and anxiety. Results: In the fully adjusted models, optimism (β=−0.108, SE=0.050, p=0.033) and gratitude (β=−0.104, SE=0.046, p<0.026) were positively associated with adherence (β=−0.108, SE=0.050, p=0.033) and optimism (β=−0.127, p<0.001) and gratitude (β=−0.334, SE=−0.117, p=0.005) were positively associated with mental health related quality of life. Optimism was protective of depression (β=−0.109, SE=0.052, p<0.039) and anxiety (β=−0.150, SE=0.052, p<0.004). Gratitude was also protective of depression (β=−0.105, SE=0.047, p<0.028) and anxiety (β=−0.102, SE=0.048, p<0.034). Optimism, but not gratitude, was marginally significantly (negatively) associated with cardiac symptom count (β=−0.058, SE=0.029, p=0.051). Conclusion: Optimism and gratitude two weeks after an ACS were independently associated with higher self-reported adherence and improved emotional well-being six months later. There was suggestion that optimism, but not gratitude, was associated with improved perception of cardiac symptoms. Optimism and gratitude may represent important constructs in recovery from an ACS, particularly with respect to adherence to health behaviors and psychological health. Future interventions to promote these positive constructs can be useful for improving functioning and well-being.

87) Abstract 1134
INSOMNIA SYMPTOMS AND HEALTH-RELATED QUALITY OF LIFE AMONG INDIVIDUALS ENROLLED IN CARDIAC REHABILITATION
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Background: Insomnia symptoms, including difficulties with sleep onset, maintenance, and early awakening, are common among individuals with cardiovascular disease. As there is evidence that insomnia contributes to lower health-related quality of life (HRQoL) in the general population, symptoms of insomnia may be particularly detrimental to the HRQoL of patients enrolled in cardiac rehabilitation, given the demands of program participation combined with the burden of living with cardiovascular disease. This study aimed to examine associations between insomnia symptoms and HRQoL among patients in a cardiac rehabilitation program.
Methods: Insomnia symptoms (Insomnia Severity Index; ISI) and HRQoL (Short Form Health Survey; SF-12) were assessed in patients with cardiovascular disease upon admission to a 12-week outpatient cardiac rehabilitation program in Calgary, Canada. Hierarchical regression models assessed whether insomnia symptom severity (measured in Block 2) predicted physical and mental health facets of HRQoL, incremental to covariates (entered in Block 1). Covariates included age, sex, body mass index, functional capacity (peak metabolic equivalents), and symptoms of anxiety and depression (Hospital Anxiety and Depression Scale). Eight models separately assessed each SF-12 subscale as the dependent variable.
Results: After excluding 46 patients with self-reported sleep disorders (e.g., sleep apnea), data from 287 patients were included in analyses (Mage= 60.4 years; 78% male; 84% referred following acute coronary syndrome). Thirty-one percent reported clinically significant insomnia symptoms (ISI>10) within the past two weeks. After adjusting for covariates, patients with greater insomnia symptom severity reported worse physical functioning (β=−0.01, F(1,254) = 4.99, p=0.027), more role limitations due to physical functioning (β=−0.01, F(1,255) = 4.21, p=0.041), more intense bodily pain (β=−0.02, F(1,256) = 6.31, p=0.013), less vitality (β=−0.02, F(1,256) = 6.54, p=0.011), lower social functioning (β=−0.03, F(1,256) = 7.95, p<0.002), greater role limitations due to mental health (β=−0.01, F(1,253) = 5.37, p<0.021), and worse mental health (β=−0.02, F(1,254) = 10.54, p<0.001). When analyses were restricted to patients with clinically significant insomnia symptoms, the strength of associations increased such that insomnia severity accounted for 6.4% of variance in physical functioning and 4.1% of variance in bodily pain.
Conclusions: Insomnia symptoms are common among patients with cardiovascular disease and are associated with reduced HRQoL. Future research should examine whether interventions designed to improve insomnia symptoms are associated with better HRQoL and outcomes associated with participation in cardiac rehabilitation programs.

88) Abstract 1251
ASSOCIATION BETWEEN CLINICAL HISTORY AND HEMODYNAMIC PATTERN OF FAINTING DURING HEAD-UP TILT TESTING
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Vasovagal syncope (VVS) is defined as a transient loss of consciousness and muscle tone due to cerebral hypoperfusion. The primary triggers for this transient loss of consciousness are orthostatic stress, such as a prolonged period of standing or a rapid shift from a supine or sitting to an upright position, or an emotional stimulus such as the sight of needles or blood. The present study aimed to determine whether patients who have different clinical histories of fainting would manifest different hemodynamic profiles during tilt-table testing. Clinical histories of 57 VVS patients (35 women, age 32.5 ± 10.1 years) were verbally obtained by an expert clinician and retrospectively divided into three categories of clinical fainters: orthostatic (n = 30), emotional (n = 9) and mixed (n = 18). These patients underwent tilt-table testing in an autonomic lab, during which their blood pressure (BP) and heart rate (HR) were measured continuously. Cardiac output (CO), stroke volume (SV) and total peripheral resistance (TPR) were derived from BP using ModelFlow. Three clear hemodynamic patterns emerged: HR-mediated CO fainters (n = 24) and SV-mediated CO fainters (n = 10), where TPR was preserved, and TPR fainters (n = 16). In 7 individuals, HR decreased abruptly and the table was returned to supine position before any effect on BP could be seen. Data from these individuals were excluded from further analyses. There was a significant effect of sex on clinical history of fainting: men were more likely to be emotive fainters (6 out of 9), whereas women were more likely to be orthostatic fainters (20 out of 25; p = 0.023). Age was significantly associated with hemodynamic patterns of fainting during tilt. Older individuals were more likely to be TPR fainters, and younger individuals were more likely to be CO fainters (p = 0.009). In response to our original question, we did not find any correlation between clinical history of fainting and hemodynamic pattern of VVS during tilt. These findings suggest that physiological mechanisms underlying VVS are unique to the individual, influenced by age and sex, and are not necessarily linked to the nature of the trigger stimulus.

89) Abstract 1606
THE ASSOCIATION OF DIFFERENT FACETS OF POSITIVE AND NEGATIVE AFFECT WITH CARDIOVASCULAR EVENTS IN PATIENTS WITH CORONARY ARTERY DISEASE
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Background: Evidence shows that both negative and positive affect may be related to cardiac health. The 12-item Global Mood Scale (GMS12) is a scale that was designed to represent affective words that are opposite in both valence (positive/negative) and in the level of activation they imply. The GMS12 comprises 6 positive, activated words that reflect 2 facets of positive affect: Enjoyment (cheerful, self-confident, sociable) and Vitality (bright, hard-
working, lively); it also comprises 6 negative, deactivated words that reflect 2 facets of negative affect: Malaise (helpless, insecure, listless) and Exhaustion (fatigued, weakened, worn out).

Objective: The aim of this study was to examine the association of different facets of positive and negative affect with clinical outcome in patients with coronary artery disease (CAD).

Methods: In a study of 433 patients with CAD, the Enjoyment (α=.73), Vitality (α=.78), Malaise (α=.82) and Exhaustion (α=.73) indices of the GMS12 were used to assess different facets of affect at baseline. The endpoint was major adverse cardiac events (MACE; i.e., the combination of death, myocardial infarction, coronary revascularization) at 5-year follow-up.

Results: At follow-up, 93 patients had a MACE. In univariate analysis, Enjoyment (p=.008) was associated with a lower incidence of MACE, and Malaise (p=.024) and Exhaustion (p=.046) with an increased risk of MACE, adjusting for age and sex. Vitality was not related to MACE (p=.45). Using a cutoff of 5 or less on the Enjoyment facet (lowest tertile) and 4 or more on the Malaise facet (highest tertile), 156 patients were being classified as low in enjoyment and 166 as being high in malaise, respectively. In multiple logistic regression analysis, decreased left ventricular ejection fraction (OR=2.46, 95%CI 1.51-4.04, p<.0001), poor exercise tolerance (OR=1.68, 95%CI 1.01-2.79, p=.045) and low enjoyment (OR=1.72, 95%CI 1.03-2.88, p=.039) were associated with an increased risk of MACE, while malaise was no longer significant (p=.95).

Conclusions: Different facets of positive and negative affect may be differently associated with adverse health outcomes in patients with CAD. Both valence (positive/negative) and activation dimensions of affect should be considered in research on cardiovascular prognosis.

90) Abstract 1329
EXAMINING CARDIOVASCULAR, COGNITIVE AND AFFECTIVE RESPONSES TO TWO DISTINCT LABORATORY STRESS TASKS
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Background: Cardiovascular responses to a stressful situation are thought to reflect whether an individual appraises a situation as a challenge or a threat. The biopsychosocial (BPS) model of challenge and threat and the theory of challenge and threat states in athletes (TCTSA) propose that compared to a threat state, a challenge appraisal induces reduced total peripheral resistance (TPR) and increased cardiac output (CO), as well as greater positive affect, and more facilitative interpretations of cognitive appraisals. However, these theories have not been extensively tested with different laboratory stress tasks.

Aim: To examine the associations between stress task appraisals and cardiovascular (CV) reactivity in response to two different stress tasks.

Method: 78 healthy males (age = 20.0 (1.2) years) completed a computerized competition task and a public speaking task (order counterbalanced). CV activity was measured using impedance cardiography. Self-report appraisals were assessed immediately pre- and post-tasks.

Results: Both tasks induced significant changes in CV activity (p’s<.05) and were perceived as highly challenging. The competition was appraised as low and the speech as moderate in threat (p<.05). During competition, increases in CO and reductions in TPR were associated with higher challenge appraisals, more facilitative interpretations of anxiety, and higher levels of efficacy, perceived control, and ability to cope, as well as better performance (p’s<.05). During the speech, only pre- and post-task perceptions of control were associated with greater CO (p’s<.05) and lower TPR (p’s<.05) reactivity. During both tasks, threat appraisal was associated with greater negative affective states (p’s<.05). Both challenge and threat appraisals were associated with greater perceptions of stress and difficulty, and only challenge appraisal was associated with increases in effort (p’s<.05).

Conclusion: Cardiovascular reactions and perceptions of challenge and threat were associated during the competition task, but not the speech task. Associations between challenge and threat appraisals and measures of effective state and effort support the BPS model and TCTSA in both tasks. Therefore, although support for the psychological aspects of these models does not rely on the context of the task, support for cardiovascular components varies with different tasks.

91) Abstract 1334
TRAUMA HISTORIES OF PATIENTS EVALUATED FOR SUSPECTED ACUTE CORONARY SYNDROME: A DESCRIPTIVE ANALYSIS AND ASSOCIATION WITH SUBSEQUENT POSTTRAUMATIC STRESS DISORDER
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Background: Acute life-threatening cardiac events can trigger posttraumatic stress disorder (PTSD). Greater lifetime trauma burden has been associated with PTSD risk in the broader literature. Investigating trauma history in those with acute cardiac events may help to understand why trauma may develop PTSD in response to the event. The aim of the current study was to examine the relationship between trauma history in patients with acute cardiac events and PTSD symptoms. A secondary aim was to examine associations between trauma history and reported cardiac outcomes.

Methods: In this study of 498 patients with acute cardiac events (ACS), PTSD was measured using the PTSD Checklist. Participants were recruited during evaluation for suspected ACS in the ED. lifetime exposure to 17 traumatic events was assessed with the Life Events Checklist. PTSD symptoms were measured using the PTSD Checklist.

Results: Most patients (79.3%) reported a history of trauma (mean number of traumatic events=3.0, SD=3.0). Men (M=3.2, SD=3.1) and women (M=2.9, SD=2.9) reported similar trauma histories, p=.33. Participants younger than 59 years of age reported a greater trauma burden (M=3.4, SD=3.2) than participants 59 years and older (M=2.7, SD=2.7), p=.01. Younger (vs. older) individuals were more likely to report exposure to interpersonal violence, p=.03. Participants with probable PTSD in response to the suspected ACS event that prompted their recruitment in the study also reported greater prior trauma exposure at baseline (M=4.4, SD=3.9) than those without probable PTSD (M=2.7, SD=2.7), p=.002. Compared to those without probable PTSD, those with probable PTSD were more likely to report a history of war-related trauma, harm to another, and other lifetime stressful life events, p’s<.05. Participants with probable PTSD were associated with greater rates of PTSD after evaluation for suspected ACS. PTSD symptoms were associated with an increased risk of MACE, while malaise was no longer significant (p=.95).

Conclusions: Differences in PTSD risk among patients with acute coronary syndromes (ACS) is associated with exposure to traumatic events. Future research should focus on the role of trauma history as a risk factor for PTSD among ACS patients.

92) Abstract 1336
BETA-BLOCKER ADMINISTRATION DURING EMERGENCY DEPARTMENT EVALUATION FOR SUSPECTED ACUTE CORONARY SYNDROME IS ASSOCIATED WITH LOWER POSTTRAUMATIC STRESS SYMPTOM SEVERITY 1 MONTH LATER
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Background: Acute coronary syndrome (ACS) is a leading cause of morbidity and mortality for patients in the United States. These often-frightening and life-threatening cardiac events have been shown to be a trigger for posttraumatic stress disorder (PTSD), which is associated with increased risk of subsequent ACS, poorer clinical outcomes and mortality. Therefore, reducing the burden of PTSD in ACS patients may help to reduce their cardiac disease burden. Overconsolidation of the fear memory of a traumatic event is thought to contribute to PTSD, and beta-blockers have been found to disrupt fear memory consolidation. We examined whether administration of a beta-blocker in the emergency department (ED) during evaluation for suspected ACS might reduce the risk of developing PTSD in participants in the REACH study, an observational cohort study of ED predictors of medical and psychological outcomes after ACS. Methods: REACH participants were recruited during evaluation for suspected ACS in the ED. One month after ED admission, 350 participants were administered the PTSD Checklist-Civilian version via phone to measure PTSD symptoms that developed in response to the suspected ACS event. A research nurse determined if beta-blockers were administered in the ED based on record review. Results: In the ED, 14.3% (n=50) of patients received beta-blockers. At 1-month follow up, 15.1% (n=53) of participants screened positive for PTSD in response to the ACS event, based on a PTSD Checklist cutoff ≥35. Results of a multivariate linear regression predicting 1-month PTSD symptom severity indicated that beta-blocker administration in the ED was associated with lower PTSD symptoms 1 month later (b=−2.80, SE=1.29, β=−0.09, p=.045), after adjustment for demographics, pre-ACS psychological and medical covariates, and participants’ distress during ED evaluation. Conclusion: A small, but significant association was observed between beta-blocker administration in the ED and PTSD symptom 1 month after evaluation for suspected ACS. Patients who were given beta-blockers in the ED had lower PTSD symptom severity compared to those who were not given these medications, suggesting that beta-blockade may have some protective effects on fear-based memories that may trigger PTSD.
93) Abstract 1338
NEARBY PATIENTS’ MEDICAL STATUS IN EMERGENCY DEPARTMENT AND PTSD SYMPTOMS IN CARDIAC PATIENTS
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Background: Environmental variables and threat perceptions during a traumatic event are associated with subsequent PTSD severity. ED treatment for acute illness can be highly stressful, and patients may observe critical illness and death in others close by. However, no study has addressed the impact of critical illness in nearby ED patients during a potentially traumatic medical event on the subsequent development of PTSD. We tested whether cardiac patients’ perception of critical illness or mortality in others during ED evaluation was associated with subsequent PTSD symptoms 1 month after hospital discharge.

Methods: 416 patients being evaluated for acute coronary syndrome were enrolled in the Reactions to Acute Care and Hospitalization (REACH) study, an observational cohort study in the emergency department (ED), and provided complete data. Participants completed a baseline interview containing a 16-item Emergency Room Perceptions questionnaire measuring pain, fear, control, as well as perception of critical illness and mortality risk in proximal patients. At 1 month, participants completed measures including the PTSD Checklist-Civilian (PCL-C) specific for the cardiac event. Results: Participants were 60.1 ± 12.46 years, 53% women. 17.6% reported perceiving that nearby ED patients might die. In a multiple regression [F(6,409)=11.0, p=.008, R²=.13] with adjustment for age, sex, GRACE cardiac risk score, Charlson comorbidity index, and positive depression screen at baseline, perceptions of other patients’ likely death were associated with a predicted 2.78 point increase in PCL-C score, β=0.13, p=.007. Only other significant predictor in that model was baseline depression screen, β=.738, p=.001. A post hoc mediation test suggested that increased threat perceptions during the ED visit accounted for 20% of the association, but it remained statistically significant. Conclusion: EDs can be frightening places, and seeing other patients who are critically ill or dying may increase the traumatic nature of an acute medical event. Such experiences may cause patients to perceive their own cardiac event as more threatening, thereby increasing risk for subsequent PTSD.

94) Abstract 1342
TREATMENT RATES FOR PTSD AND DEPRESSION IN RECENTLY HOSPITALIZED CARDIAC PATIENTS
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Background: Post traumatic stress disorder (PTSD) and depression are common after acute cardiac events, and are associated with recurrence and mortality. However, it is unclear whether patients seek treatment for these psychological disorders. We assessed the self-reported rates of receiving counseling and/or medication to deal with the desire to express your emotions and coping after hospitalization for a suspected cardiac event.

Methods: 500 patients were enrolled in the emergency department during evaluation for acute coronary syndrome; 448 (age 60.4 ± 12.5; 53.4% Hispanic, 27.2% Black, 65.2% with HS Diploma or above) with complete data were included in the analysis. We used the PTSD Checklist – Civilian (PCL-C; 1 month post-hospitalization) specific for the suspected cardiac event and the Patient Health Questionnaire (PHQ; within 1 week of hospitalization) to screen for PTSD and depression using standard cutoffs. At one month post hospitalization, we asked participants whether they received medication or counseling. Results: We found that 16.4% of participants screened positive for PTSD at one month, and 26.8% of patients screened positive for depression. A total of 52 (11.6%) participants reported receiving counseling, 40 (9.0%) participants reported receiving medication and 24 (5.4%) reported receiving both. Within those who screened positive for PTSD or depression (32.6%), 18.5% reported receiving counseling, 17.2% reported taking medication, and 25% reported receiving one or both. Conclusions: Of patients who screen positive for PTSD or depression following a suspected cardiac event, a fairly large portion report receiving some sort of medical or psychological treatment within one month of hospitalization. Given the prognostic significance of PTSD/depression after cardiac events, this is a concerning finding from a community sample with relatively low SES, but it should be replicated in other samples.

95) Abstract 1408
AMBIVALENCE OVER EMOTIONAL EXPRESSION AS A MEDIATOR BETWEEN COGNITIVE STRESS MEASURES AND CARDIOVASCULAR REACTIVITY
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Consistent with Lazarus and Folkman’s transactional model, threat appraisals of a personally salient stressor in the absence of adequate coping resources should be associated with increased cardiovascular reactivity (CVR), however, studies have been mixed. While a variety of constructs have been examined to clarify this mixed literature, theories of emotion regulation have not been extensively examined. Emotion regulation refers to both cognitive and behavioral processes by which individuals experience and express their emotions and includes the strategy of ambivalence over emotional expression (AEE). AEE is characterized by an internal conflict between the desire for emotional expression and actual expression, and has been found to predict physiological and psychological well-being. Related to suppressive aspects of AEE, Pennebaker has described substantial research on emotional suppression and autonomic activity. Given these findings, and within the context of interpersonal stressors’ salience to women, we hypothesized that AEE would mediate the relations between threat appraisals, perceived stress, and CVR, as measured by impedance cardiography, to an interpersonal stress task. Data were collected from 53 undergraduate women. Physiological measures including stroke volume (SV), cardiac output (CO), and systemic vascular resistance (SVR) were assessed at baseline and during an interpersonal stress recall task. Participants completed the Ambivalence over Emotional Expression Questionnaire, Stress Appraisal Measure, and Perceived Stress Scale.

Hierarchical linear regression showed that threat appraisals predicted lesser SV (β = -0.15; p = .015), and greater SVR (β = -0.186) with perceived stress demonstrating the same pattern (β = -0.152; β = -0.163; β = -0.180 respectively) (all p’s < .05); a generally maladaptive pattern. Additionally, using cardiovascular change scores, AEE was positively associated with threat appraisals (r = .287), perceived stress (r = .405), and SVR reactivity (r = .289) (all p’s < .05), while negatively associated with SV (r = -0.344, p = .012), and CO reactivity (r = -.354, p = .009). Furthermore, as hypothesized, results showed that, in general, AEE partially mediated the association between perceived stress and SV (β = -0.152, p = 0.06; β = -0.115, p = 0.046), CO (β = -0.163, p = 0.04; β = -0.122, p = 0.041), and fully mediated the association with SVR (β = 0.180, p = 0.036; β = -0.124, p = .179). Additionally, AEE also fully mediated the association between threat appraisals and SV (β = -0.115, p = 0.046; β = -0.081, p = 0.159), CO (β = -0.116, p = 0.046; β = -0.080, p = 0.168), and SVR (β = -0.186, p = 0.031; β = -0.142, p = 0.106). Thus, AEE may be an important construct in understanding the mixed results found in stress-induced CVR studies and a target for psychological intervention.

96) Abstract 1410
DEPRESSED MOOD AND SHORT-TERM RISK OF DEVELOPING HYPERTENSION
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Evidence suggests that depressed mood is associated with incident hypertension (HT). However, few studies have examined short-term effects while adjusting for attrition, which could bias the results if depressed individuals are less likely to participate. We examined if depression is associated with onset of HT within the following two years adjusting for differential participation, depression history, and time-varying confounding. Data are from the Health and Retirement Study (1998-2012) and include 8,021 adults ages 50 and older without HT diagnosis at baseline. Biennial interviews included assessment of depressive symptoms, medication use, and self-reported doctor diagnosis of HT. Depressed mood was assessed with the 8-item Centers for the Epidemiologic Study of Depression (CES-D) scale and reports of psychiatric medication use. Adults with CES-D scores of 3+ or reporting taking psychiatric medication were considered depressed. Using pooled logistic regressions we compared adults with vs without depression in any interview year and odds of incident HT (3,533 events) two years later. Inverse probability weights were implemented in marginal structural models (MSMs) to control for time-varying confounding, differential participation, and depression history. Time-updated confounders were assessed two years prior to depression assessment including income, education, health behaviors, and relevant health conditions. We also controlled for demographics. Sensitivity analyses examined the effect of elevated depressive symptoms without using information on psychiatric medication. Depression was significantly associated with HT (OR=1.16, 95% CI: 1.07-1.26) in unweighted models adjusting for demographics and remained significant in MSMs.
97) Abstract 1417
IMPACT OF SCHIZOPHRENIA ON AGE RELATED CHANGES OF THE HEART:
ACCELERATION OF HYPERTENSIVE CHANGES
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Objective: Patients with schizophrenia have a higher risk of cardiometabolic diseases and a 20% reduced life expectancy. Although the identification of potential triggering factors linking schizophrenia and reduced life expectancy seem to include lifestyle risks and side effects of antipsychotic drugs, it remains elusive how cardiac function and morphology changes with schizophrenia. Morphological changes in heart anatomy have been previously described in patients with hypertension. However, lacking are studies aimed at examining the age-related changes in the anatomical structures of the heart in patients with schizophrenia and hypertension. It is therefore plausible to propose that schizophrenia may adversely impact the age-related changes of the hypertensive heart. Hence, we examined echocardiographic (ECHO) parameters in a group of hypertensive patients with schizophrenia.

Methods: In a cross-sectional fashion, ECHO images with doppler were collected retrospectively. Subjects were selected from a population of 250 hypertensive patients within the last 2 years. The study inclusions were: patients with a history of hypertension (>5 years), groups were matched for age, height, and no comorbid diabetes or metabolic syndrome. Patients that met inclusion criteria were allocated into one of three groups: middle age (50-65 years; MN; n = 11), middle age with schizophrenia (MS, n = 9), and elderly (>70; EN; n = 15). Non-parametric Jonckheere-Terpstra trend analysis was used for identifying linear trends across the groups.

Results: The mean values for the ECHO parameters in all groups were (M ± SD) left atrial diameter (LAD; 3.84 ± 0.82), posterior wall thickness (PWD; 1.10 ± 0.82 cm), ejection fraction (EF; 54.3 ± 10.6%), left ventricular outflow tract (LVOT; 1.02 ± 0.36 cm), and left ventricular diastolic diameter (LVDD; 4.81 ± 0.70 cm). Significant interaction effects (p < 0.05) were identified for ECHO variables LAD, LVDD, PWD, EF, and LVOT indicating a linear trend between the groups, such that there was an age and schizophrenia dependent linear decrease in PWD, EF, and LVOT (MN > MS > EN), but a linear increase of LVDD and LAD (MN > MS < EN).

Conclusions: Results demonstrate that MS with hypertension have morphological and hemodynamic changes in cardiac parameters with trends resembling the values of hypertensive EN suggesting that schizophrenia may accelerate age-related heart changes in the hypertensive heart (dilated cardiac morphology). To the best of our knowledge, this is the first study that examines the detrimental anatomical and functional heart changes associated with schizophrenia in patients with hypertension. Future studies are warranted to investigate the early pathological changes of the hypertensive heart in schizophrenia for developing preventive interventions.

98) Abstract 1461
ILLNESS UNCERTAINTY, EMOTIONAL DISTRESS, AND QUALITY OF LIFE AMONG ADOLESCENTS AND YOUNG ADULTS WITH CONGENITAL HEART DISEASE
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Congenital heart disease (CHD) is associated with elevated symptoms of depression (22-23% of patients) and anxiety (30-34% of patients). In turn, depression and anxiety are associated with poorer quality of life (QoL) in patients with CHD, which has been linked to morbidity and mortality in other cardiac populations. One factor that may help explain elevations in depression and anxiety is illness uncertainty (IU) which has been found to influence health outcomes among other disease populations and may be associated with reductions in both physical and emotional well-being. No prior studies have evaluated the relationship of IU to distress and QoL among patients with CHD. This study was designed to evaluate the relationship of emotional distress (anxiety, depression) with QoL in patients with CHD, and to test IU as a mediator in the relationship between emotional distress and QoL. Participants (n=169) were recruited for a larger study of illness knowledge and disease management among adolescents and young adults with CHD (age range: 15-39 years; mean age =26 ±7 years; 56% female). Prior to a routine cardiology appointment, participants completed self-report measures including: Medical Outcomes Study – Short Form 36, Mischel Uncertainty in Illness Scale, and the Anxiety and Depressive/Affective Problems DSM-Oriented Scales of the Adult/Youth Self-Report. Data were analyzed with correlational analyses and the PROCESS macro (Hayes, 2012) in SAS 9.3 to evaluate IU as a mediator of the relationship between emotional distress and QoL. Greater IU was associated with poorer physical (r=-.30, p<.05) and emotional well-being (r=-.32, p<.05). IU, well as greater depressive (r=.22, p=.004) and anxiety (r=.33, p<.001) symptoms. PROCESS revealed that neither anxiety nor depression predicted physical QoL when IU was included in the model (bdepression = 0.07 95% CI [-0.33 0.05]; bddepression = -0.07 95% CI [-0.14 0.02]). However, an indirect relationship through IU was significant for both anxiety and depression (bdepression = 0.14, 95% CI [-0.23 -0.06] and bdepression = -0.05, 95% CI [-0.09 0.02]). The relationship between IU and anxiety to mental QoL. Results highlight the relevance of anxiety and depression for QoL among patients with CHD and point towards a potential mechanism for the association, via IU. Acknowledging the relevance of IU in this context could suggest novel strategies for treating psychological distress in patients with CHD.

99) Abstract 1469
TREATMENT EFFECTS AND THE COST-UTILITY RATIO OF A COGNITIVE-BEHAVIOR GROUP INTERVENTION PROGRAM FOR CORONARY HEART DISEASE PATIENTS
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Purpose: To examine the treatment effects on quality of life and health-economic benefits of the cognitive behavioral group therapy for coronary artery heart disease (CHD) patients.

Method: A case control study with matched age, sex and education, based on a two group pre- and post-test design was adopted. The experimental group included 16 CHD patients (mean age = 58.56 ± 6.64; male 75%) who attended a weekly two-and-a-half hour session of cognitive-behavior group intervention program with psycho-education and biofeedback as assistance relaxation training for two months. The control group included 14 CHD patients (mean age = 57.50 ± 9.91; male 78.5%) who did not receive any psychological treatment during these two months. Results and conclusionThe repeated measure of ANOVA showed significant interaction effects and indicated that there were significantly higher reductions of trait anxiety, total hostility, express hostility, and repression hostility (F1(2,28) = 13.747; p<.001, 4.575; 5.723, ps <.05), as well as skin conductivity (F1(3,60) = 3.097, p <.05), and marginal respiratory rate reduction of patients (F2(40) = 2.865 , p <.05) in the experimental group than those of the waiting-controlled group. For quality of life, there was significantly progress in the following domains: physical role functioning, bodily pain and mental health (F1(2,28) = 8.507; 4.146; 7.162, p <.05). In addition, the experimental group also scored significantly higher on the Health Utilities Index (F1(2,28) = 6.417, p <.01) than...
the control group. For the medical cost considerations, the cost-utility ratio of the cognitive behavioral group therapy is USD 4483.41 per quality-adjusted life years (QALYs), which is below USD 20,000 per QALYs, and indicates that cognitive-behavioral group therapy not only provides psychological and physiological improvement, but is also a medical intervention program with an acceptable cost-utility ratio.

100) Abstract 1472
SLEEP, STRESS, AND HOSPITALIZATION IN PATIENTS WITH HEART FAILURE
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Background: Sleep disorders are common among heart failure (HF) patients, and evidence suggests that sleep disturbance may be associated with an increase in HF re-hospitalizations. Psychological stress can be both a cause and a consequence of sleep problems, and may lead to poor outcomes in HF patients. Associations among sleep parameters such as duration, efficiency, and overall sleep quality to psychological stress and to HF hospitalizations are not well understood. This study prospectively evaluated the relationships of self-reported sleep parameters and psychological stress to both all-cause and cardiac-related hospitalizations in HF patients. Methods: 75 systolic HF patients (57 males, mean age = 56.6±0.9 years) completed the Pittsburgh Sleep Quality Index (PSQI) to measure sleep efficiency and duration. Patients also completed the Perceived Stress Scale (PSS). Number of days hospitalized was determined by phone follow-up and verified by patient hospital records. Results: Over a mean follow-up of 5.9±2.6 months, 20 out of 75 (27%) patients were hospitalized. Across all patients, mean number of days hospitalized was 1.73±0.9 days; 1.1±0.1 days for cardiac causes. Regression analyses controlling for age, race, gender, NYHA class, and duration of follow-up revealed that PSS scores were associated with sleep efficiency (r=−.44, p=.001) and sleep duration (r=.31, p=.007). PSQI also predicted number of all-cause days hospitalized (β=.287, p=.02). Sleep duration (mean 6.2±1.8 hours) predicted both cardiac-related (β=.307, p=.01) and all-cause hospitalization durations (β=.270, p=.02). Sleep efficiency predicted number of all-cause (β=.264, p=.04), but not cardiac hospitalization days (p=.ns). Mediation analyses using Hayes’ (2013) PROCESS macro revealed that the relationship of sleep parameters to hospitalization duration was not mediated by perceived stress. Conclusions: Sleep duration, sleep efficiency, and perceived stress are associated with one another and are significant predictors of all-cause hospitalization duration in heart failure patients. Despite these associations, stress is not sufficient to account for the relationship between sleep and hospitalizations in HF patients.

101) Abstract 1523
THE CLUSTERING AND PREDICTIVE VALUE OF CHANGING DEPRESSIVE SYMPTOMS OVER THE FIRST 6 MONTHS AFTER PERCUTANEOUS CORONARY INTERVENTION, RESULTS FROM THE THORESCI STUDY
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Background: An increase of depressive symptoms following myocardial infarction has shown to predict adverse prognosis, although there is some debate with respect to the importance of cognitive versus somatic depressive symptoms. It is unknown whether symptoms within the cognitive and somatic depression dimensions change together over time. The current study examined the clustering of changing depressive symptoms over the first 6 months after percutaneous coronary intervention (PCI), and examined the predictive value of the change profiles with respect to treatment adherence at 6 months post-PCI.

Methods: 219 PCI patients (Avg. age 65.5, 18.7% women) were followed for 6 months and reported on depressive symptoms (PHQ-9, BDI) and adherence (MOS-GAS) at 1 and 6 months post-PCI. Clinical characteristics were obtained from the medical records. Exploratory and confirmatory factor analyses were performed on the individual symptom change scores. In addition, multivariable linear regression was performed, to examine the role of change profiles in the association between depression dimensions and general treatment adherence, while adjusting for demographic (age, education) and clinical (PCI indication) characteristics.

Results: Factor analysis resulted in a 4 factor solution, explaining 34% of the variance. Change factor 1 contained 10 somatic-affective symptoms. Factor 2 contained 7 cognitive-affective symptoms. The 3rd factor comprised a mixed set of symptoms changing together. Factor 4 included severe cognitive depressive symptoms changing together. Confirmatory factor analysis confirmed the factor decomposition (RMSEA = .041; CFI =.719), but also confirmed the theoretical notion that a factor decomposition of change scores is less stable as compared to regular scale scores. Linear regression showed the moderating role of change profiles, with depression being related to poorer adherence only in patients who increased on the majority or all of the change factors (cognitive: β = -.45, p = .002; somatic: β = -.54, p=.006β = -.34, p=.024 for majority/all components). In patients whose depressive symptoms all reduced, somatic depressive symptoms were negatively associated with general adherence (β = -.37, p=.04).

Discussion: Four symptom change factors were identified that partly differed from the established depression dimensions. In patients who showed an increase in the majority or all change factors together, depression dimensions were associated with poorer general adherence. In patients who reduced on all depression change factors somatic depressive symptoms were also associated with poorer adherence. Results have clinical and scientific relevance as not only current symptoms, but also change in those symptoms over the preceding months may be important in predicting cardiovascular risk.

102) Abstract 1597
THE RELATIONSHIP BETWEEN SELF-REPORTED EMOTION REGULATION DIFFICULTIES AND CARDIAC AUTONOMIC BALANCE
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Autonomic balance can be described as an internal equilibrium between the body’s sympathetic nervous system branch (SNS; flight or fight) and parasympathetic nervous system branch (PNS; rest and digest) of the autonomic nervous system, allowing for the proper regulation of several vital psychophysiological functions. Autonomic imbalance is characterized as the pairing of an overactive SNS with an underactive PNS, which may lead to increased susceptibility to disease and illness. The high frequent variation in time between heartbeats, known as high frequency heart rate variability (HF-HRV), is a reliable index of PNS activity and has been linked with emotion regulation abilities, such that those with higher resting HF-HRV are better able to regulate their emotions. While lower HF-HRV is typically indicative of autonomic imbalance, research not yet directly measured the relationship between measures of autonomic balance and self-reported difficulties in emotional regulation. Using an electrocardiogram (ECG), resting-baseline cardiac data (for 5-minutes) was gathered from 58 undergraduate students (31 female, 18 minorities, mean age = 18.51). Participants then completed the Difficulties in Emotion Regulation Scale (DERS). Both HF-HRV and pre-ejection period (PEP, index of SNS activation) were used to derive an index of cardiac autonomic balance (CAB), where lower values reflect a shift towards sympathetic dominance (autonomic imbalance). Pearson’s r correlation tests showed CAB to be significantly, inversely related to overall DERS scores (CAB: r = -.259, p = .05), such that lower CAB values were associated with higher DERS scores. These findings suggest that self-reported difficulties in emotional control are not only related to HF-HRV, but also are related to autonomic imbalance, especially when individuals are unclear or unaware of their emotions, as indicated by two DERS subscales. Overall, the current study may aid in better understanding the link between emotion regulation and health.

103) Abstract 1459
HYPERVIGILANT AT HOME: NEIGHBORHOOD SAFETY PERCEPTIONS RELATE TO HEALTH THROUGH ALLOSTATIC PROCESSES
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Introduction: Feeling unsafe in one’s own neighborhood is associated with poor health. Living in a neighborhood one perceives as unsafe, which may be considered a situation of chronic stress, may relate to health through multiple physiological physiological pathways. Chronic exposure to other general forms of stress is associated with long-term physiological wear and tear, often captured in indices of allostatic load. Greater allostatic load has also been found to predict the development of future adverse conditions.

Methods: In the present study, we used the longitudinal Midlife in the United States study to test two questions. First, we examined whether lower
neighborhood safety perceptions measured at Wave II would be related to an increase in chronic health conditions at Wave III approximately five years later. Health was assessed in the present study with 39 items including respiratory problems, autoimmune disorders, digestive problems, pain, infections, cardiovascular conditions, sleep problems, and depression and anxiety. Second, we tested the hypothesis that higher Wave II allostatic load would partially explain the potential relation to health outcomes.

Results: Results of generalized estimating equation models indicated that people living in neighborhoods perceived as less safe not only had higher allostatic load \( [b = 0.18, p = .023] \), but also developed more chronic health conditions \( [b = 0.37, p = .001] \) five years later than those living in neighborhoods perceived as more safe. Furthermore, the relation between baseline perceptions of neighborhood safety and later chronic health conditions was no longer significant \( [b = 0.36, p = .120] \) after adding allostatic load to the model. These findings persisted even after adjusting for baseline chronic conditions, neighborhood income, individual income, and other individual sociodemographics.

Discussion: Our results suggest that feeling unsafe in one’s neighborhood is associated with the development of later health problems, and this risk is conferred through multi-system physiological and behavioral pathways.

104) Abstract 1125
BMI AS A MEDIATOR IN THE RELATION OF DISCRIMINATION AND INFLAMMATION
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There has been extensive research on the effects of perceived discrimination on health outcomes such as cardiovascular disease and cancer. However, the physiological processes through which perceived discrimination might impact chronic health outcomes are unclear. The current study tested the hypothesis that body mass index, a predictor of health mediates the relation of perceived discrimination and markers of inflammation, namely C-reactive protein (CRP), serum E-selectin (SEL), and Interleukin-6 (IL-6). The sample was drawn from the biomarker data of the National Survey of Midlife Development in the U.S. (MIDUS; N of analytic sample = 1206). Study characteristics were mean age of 57, 82% White, 57% women, mean BMI of 29.8, 21% obtained a college diploma, mean income of $41,633, and 31.6% smoked. Using Baron and Kenny’s (1986) logic, a test of mediation was done in 3 steps to test the relation of perceived discrimination on the inflammatory markers, with BMI as the mediator. Participant age, race, gender, education, income, and smoking status were included in all models as control variables. It was found that BMI partially mediated the relation between perceived discrimination and SEL (adjusted and unadjusted) and totally mediated the relation between perceived discrimination and CRP (unadjusted only). These results highlight a potential biological mechanism through which perceived discrimination may be related to negative health outcomes.

105) Abstract 1266
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Although depression is associated with poorer overall diet quality, few studies have examined its association with levels of particular macronutrients, and none has examined moderation by race/ethnicity. Thus, we examined its association with levels of particular macronutrients, and none has examined moderation by race/ethnicity. Hence, the purpose of this study was to investigate the potential racial disparities in the strength of the association between ACEs and sleep quality in young adults.

Methods. Sleep quality was assessed in 180 European American (EA, 48% female, 24.4±2.98 years old) and 205 African American (AA, 58% female, 25.4±2.96 years old) young adults by using the Pittsburgh Sleep Quality Index (PSQI), with higher PSQI score indicating poorer sleep quality. Retrospective moderation by race/ethnicity (ps<.05 for interaction terms). Among non-Hispanic White respondents, PHQ-9 total was positively associated with sugar consumption and negatively associated with protein, fiber, and polysaturated fat consumption. Among non-Hispanic Black respondents, PHQ-9 total was negatively associated with total calories, carbohydrates, sugar, total fat, and saturated fat consumption. There were no significant associations in the Mexican American group. Among Other Hispanic respondents, PHQ-9 total was negatively associated with fiber consumption only. Findings from this large nationally representative sample show that associations between depressive symptoms and diet composition vary by race/ethnicity, with different patterns of results for non-Hispanic Whites and non-Hispanic Blacks and generally no relationships among Mexican Americans and Other Hispanics. Critically, a poor diet composition profile may be one mechanism that explains the excess risk of obesity and other cardiometabolic diseases in depressed individuals, especially in non-Hispanic Blacks.

Table 1. Linear Regression Analyses Examining Associations Between Patient Health Questionnaire-9 (PHQ-9) Total Scores (z-scored) and Diet Composition by Race/Ethnicity Group

<table>
<thead>
<tr>
<th></th>
<th>Entire Sample</th>
<th>NHW</th>
<th>NHB</th>
<th>MA</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Calories, kCal</strong></td>
<td>-0.46***</td>
<td>-18.79</td>
<td>66.11**</td>
<td>-2.76</td>
<td>-18.82</td>
</tr>
<tr>
<td><strong>Protein, g</strong></td>
<td>-1.40***</td>
<td>-2.10**</td>
<td>1.51</td>
<td>-1.47</td>
<td>-2.24</td>
</tr>
<tr>
<td><strong>Carbohydrates, g</strong></td>
<td>0.52***</td>
<td>-1.39</td>
<td>8.24**</td>
<td>-0.06</td>
<td>0.50</td>
</tr>
<tr>
<td><strong>Sugar, g</strong></td>
<td>2.44***</td>
<td>2.23**</td>
<td>4.75**</td>
<td>-0.5</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Fiber, g</strong></td>
<td>-0.43***</td>
<td>-0.57**</td>
<td>0.29</td>
<td>-0.34</td>
<td>-0.73***</td>
</tr>
<tr>
<td><strong>Total Fat, g</strong></td>
<td>-0.03***</td>
<td>-0.83</td>
<td>2.55**</td>
<td>-0.21</td>
<td>-1.43</td>
</tr>
<tr>
<td><strong>Saturated Fats, g</strong></td>
<td>0.19***</td>
<td>-0.08</td>
<td>0.98**</td>
<td>0.15</td>
<td>-0.32</td>
</tr>
<tr>
<td><strong>Monounsaturated Fats, g</strong></td>
<td>-0.04</td>
<td>0.82</td>
<td>-0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Polyunsaturated Fats, g</strong></td>
<td>-0.16***</td>
<td>0.51</td>
<td>-0.23</td>
<td>-0.31</td>
<td></td>
</tr>
</tbody>
</table>

N = 17,353 entire sample, n = 8,170 non-Hispanic Whites (NHW), n = 3,797 non-Hispanic Blacks (NHB), n = 2,772 Mexican Americans (MA), n = 1,496 Other Hispanics (OH). B represents the regression coefficient; g represents grams. p < .05,* p < .01.
data on traumatic experiences prior to age 18 were collected by using the ACE questionnaire, 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 household dysfunction (substance abuse, mental illness, domestic violence, 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), mild (1-2 ACEs), and moderate/severe (≥3 ACEs) exposure.

Results. Linear regression analysis found that exposure to ACEs was significantly associated with the poor sleep quality (p<0.001). The AA participants reported a higher rate of exposure to moderate/severe ACEs (ACE score≥3) than the EA participants (36.7% vs. 25.7%, p=0.04). There was no significant difference of the overall sleep quality between two ethnic groups after adjusting for age and gender. However, a significant interaction effect was found between race and exposure to ACEs (p=0.026). In EA young adults, there was a dose-effect relationship between increased exposure to ACEs and poor sleep quality (partial correlation R=0.32, p<0.001). On the contrary, the association between ACEs and sleep quality was less significant in the AA young adults (partial correlation R=0.11, p=0.11). Among participants without a history of ACEs (ACE=0), AAs showed a relatively higher PSQI score than EAs, indicating an additional factor that influences AA’s sleep quality. Further adjustment for family socioeconomic status (SES) did not change the results.

Conclusions. Our study emphasizes the racial disparities in the association between ACEs and sleep quality in young adults. Childhood adversities had a strong effect on sleep quality in EA young adults, while there may be an additional factor other than ACEs influencing the sleep quality in AA young adults.

107) Abstract 1502
THE NATURE OF RESILIENCE ON DAILY CORTISOL OUTPUT AMONG LATINAS AND NON-LATINAS
Antonio F. McElroy, Associates of Arts, Psychology, California State University, Long Beach, Huntington Beach, California, Guido Urizar, Doctorate of Philosophy, Psychology, California State University, Long Beach, Long Beach, California
Previous findings have suggested that stressors as well as low socioeconomic status during pregnancy are associated with deficits in infant health and development. Further, recent findings have suggested that positive psychological constructs (e.g. mindfulness and optimism) are associated with reductions in depressive symptoms, anxiety, and negative affect during and after pregnancy. However, a gap in literature appears between the effects of positive psychological constructs on cortisol levels by ethnicity and socioeconomic status in pregnant women. Therefore, the current study explored whether the effects of resilience (i.e. the ability to bounce back to recover from stress) on cortisol levels (i.e. area under the curve) is moderated by ethnicity. Our sample population consisted of 100 low-income pregnant mothers from the city of Long Beach, California (n=100). We hypothesized that women who demonstrate low resilience will exhibit higher levels of cortisol than those who demonstrate high resilience. Also, we expected that if a woman were Latina (n = 71), cortisol would slowly decrease with increases in resilience. For those who were non-Latina (n = 29), cortisol levels were expected to remain the same as resilience increased. Hierarchical regression analyses indicated that: 1) resilience and ethnicity were not predictive of cortisol levels, F(2, 96) = 2.386, p = .097, R2 = .047. Adjusted R2 = .028; 2) resilience was uniquely associated with cortisol over and beyond ethnicity, β = .216, t(98) = 2.17, p = .033; and 3) the effects of resilience on cortisol were not significantly different between Latinas and non-Latinas, RA2 = .013, F(1, 95) = 1.35, p = .249. Our results suggest that, although the effect of resilience on daily cortisol output does not change depending on ethnicity, resilience does affect daily cortisol output. In effect, our findings indicate that resilience is an additional positive psychological construct that needs further examination of its effects on cortisol levels in low-income pregnant women.

108) Abstract 1537
RACIAL/ETHNIC AND SEX DIFFERENCES IN OBJECTIVE SLEEP DURATION IN A DIVERSE COMMUNITY SAMPLE
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Short sleep duration has been linked with numerous poor mental and physical health outcomes (e.g., depression, post-traumatic stress, cardiovascular disease, diabetes). Evidence suggests sleep duration is moderated by demographic factors such as sex and race/ethnicity. However, few studies have examined interaction effects within diverse samples with objectively-assessed sleep duration. The aim of this study was to examine the relationship of demographics with objectively examined sleep duration in the North Texas Heart Study, a diverse community-based study of 300 adults (50% female; M age = 42.4 [SD = 12.8]; range: 21 - 70). The AA group was made of 30% Hispanic/Latino, 15% non-Hispanic Blacks, 19% Hispanic/Latino, and 6% Other (excluded for analyses due to small cell sizes). Participants completed a psychosocial survey and two nights (Thursday [n = 259] and Friday [n = 273]) of actigraphy to objectively assess sleep duration. A repeated measures (night of week) ANOVA was performed with sleep duration as the dependent variable, race/ethnicity, sex and their interactions as the grouping variables, and age as a covariate. There was a significant within-subjects effect for day (Thur. = 415 min vs Fri. = 388 min; p = .01, n2 = .029). Consistent with previous findings, males slept significantly longer than females (Male = 380 min vs. Female = 421 min; p < .001, n2 = .037). There was a trend for a race/ethnicity main effect (p = .102, n2 = .020), with Whites (406 min) sleeping marginally longer than Blacks (381 min) and no other differences between racial/ethnic groups. There was a trend for a Sex by Race/Ethnicity interaction (p = .051, n2 = .026), with White males sleeping longer than Black and Hispanic males, and Hispanic and White females sleeping longer than Black females. Among Hispanics, females demonstrated sleep duration similar to White individuals, whereas males demonstrated sleep duration similar to Black individuals. Overall, these results suggest sleep may be an important area in which to examine health disparities, but larger studies utilizing objective measures are needed to provide adequate power to find significant interactions.

109) Abstract 1570
PHYSIOLOGICAL INFLUENCES OF THE COGNITIVE REAPPRAISAL OF PAIN
Gordon M. Mathewson, B.A., Choong-Wan Woo, M.A., Tor D. Wager, Ph.D., Department of Psychology and Neuroscience, University of Colorado at Boulder, Boulder, Colorado
Cognitive reappraisal can modulate pain, but little is known about how cognitive reappraisal influences pain-related autonomic nervous system (ANS) responses. Woo et al. (2015) found that cognitive reappraisal did not have a significant effect on classical ‘pain processing’ systems, but instead affected pain experience via a fronto-striatal neural pathway thought to be important in the functional and evaluative components of pain. The present study used a similar paradigm, in which participants were asked to regulate thermal pain up or down using an imagination- and cognitive reframing-based cognitive regulation strategy. Both conditions were compared to a passive pain-experience condition. We measured three types of ANS-related responses: skin conductance responses (SCR), electrocardiogram (ECG) activity, and changes in pupil diameter. Cognitive reappraisal significantly modulated both pain intensity (b = 2.16, t = 4.15, p < .0001) and pain unpleasantness (b = 5.50, t = 5.60, p < .0001). Regulation effects were stronger for unpleasantness ratings, suggesting particularly strong effects on evaluative aspects of pain rather than primary sensory aspects. In addition, the effect size of reappraisal on unpleasantness ratings was comparable to the stimulus intensity effects on the ratings. A linear effect of thermal stimulus intensity on the base-to-peak SCR amplitude was found (b = 0.11, t = 7.96, p < .0001), but no effects of regulation on the base-to-peak amplitude were found (b = .01, t = 0.42, p = 0.68). This is a preliminary
110) Abstract 1629

**RELIGIOUS COPING AND PAIN PROCESSING IN CHRONIC PAIN PATIENTS**

Rene Hefti, Senior Consultant, Psychosomatic Medicine, Clinic for Psychosomatic Medicine and Psychiatry, Langenthal, BE, Switzerland, Matthias Laun, Senior Consultant, Pain Medicine, Center for Pain Medicine, Notwil, LU, Switzerland

Background: Several studies have shown the beneficial effect of religiosity in pain patients. Religious coping is seen as a keymechanism in promoting adaptation to chronic pain. The present study seeks to further understand how positive and negative religious coping (RCOPE) interact with psychological mechanisms affecting pain control (CPAQ), and acceptance of pain (CPAQ).

Method: 183 chronic pain patients admitted to a center for pain medicine in Switzerland were surveyed. All patients completed a series of pain questionnaires (CPAQ, DSF, MPSS, FESV, NRS), the Hospital Anxiety and Depression Scale (HADS) as well as two religious measures (RST, Brief RCOPE). The interaction between religious coping, psychological symptoms and coping with pain was assessed using Pearson and Spearman correlations and linear regression.

Results: Correlations revealed significant relationships between positive religious coping and the cognitive as well as behavioral dimensions of coping with pain (FESV, German Pain Coping Questionnaire); Action-Oriented Coping ($r = .163(*)$, Cognitive Restructuring ($r = .312(**)$), Self-Efficacy ($r = .304(**)$), Mental Distraction ($r = .206(**)$) and Counter-Activities ($r = .149$). Using a linear regression model that included age, sex, anxiety, depression, pain intensity and impairment as confounders confirmed an impact of positive religious coping on cognitive restructuring ($R^2 \text{corr} = .132, \text{adj}^2 = .280, p = .000$) and self-efficacy ($R^2 \text{corr} = .271, \text{adj}^2 = .268, p = .000$). An inverse relationship was found between negative religious coping and acceptance of chronic pain ($r = -.286, p = .000$), suggesting that negative religious coping may be maladaptive in chronic pain patients and promote non-acceptance of pain.

Conclusions: Present study confirms the association between religiosity and coping with chronic pain. Positive religious coping had a significant positive impact on cognitive pain processing, mainly on cognitive restructuring and self-efficacy. Negative religious coping was inversely related to pain processing, expressed by lower acceptance of pain. It is therefore maladaptive in coping with chronic pain. So both, positive and negative religious coping are relevant in managing chronic pain patients.

Correlations between Religiosity, Religious Coping and Coping with Pain

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</tr>
</thead>
<tbody>
<tr>
<td>FESV - Action-oriented</td>
<td>-0.059</td>
<td>0.163(*)</td>
<td>0.097</td>
<td>0.312(**)</td>
<td>0.153(*)</td>
<td>0.304(**)</td>
<td>-0.084</td>
<td>0.141</td>
<td>0.141</td>
<td>0.156(*)</td>
<td>0.170(*)</td>
</tr>
<tr>
<td>FESV - Cognitive restructuring</td>
<td>0.097</td>
<td>0.312(**)</td>
<td>0.153(*)</td>
<td>0.304(**)</td>
<td>0.063</td>
<td>0.194(*)</td>
<td>-0.116</td>
<td>0.042</td>
<td>0.042</td>
<td>0.125</td>
<td>0.125</td>
</tr>
<tr>
<td>FESV - Self-efficacy</td>
<td>-0.116</td>
<td>0.118</td>
<td>0.071</td>
<td>0.194(*)</td>
<td>0.063</td>
<td>0.125</td>
<td>-0.274(**)</td>
<td>0.002</td>
<td>0.002</td>
<td>0.125</td>
<td>0.125</td>
</tr>
<tr>
<td>FESV - Counter-activities</td>
<td>0.028</td>
<td>0.149(*)</td>
<td>-0.116</td>
<td>0.118</td>
<td>0.141</td>
<td>0.002</td>
<td>-0.274(**)</td>
<td>0.028</td>
<td>0.028</td>
<td>0.125</td>
<td>0.125</td>
</tr>
<tr>
<td>FESV – Relaxation</td>
<td>0.156(*)</td>
<td>0.170(*)</td>
<td>-0.194(**)</td>
<td>0.125</td>
<td>0.125</td>
<td>0.125</td>
<td>-0.286(**)</td>
<td>0.002</td>
<td>0.002</td>
<td>0.125</td>
<td>0.125</td>
</tr>
</tbody>
</table>

* p-value ≤ 0.05; ** p-value ≤ 0.01

111) Abstract 1249

**SLEEPING FOR TWO: AN OPEN-PILOT STUDY OF COGNITIVE BEHAVIOURAL THERAPY FOR INSOMNIA IN PREGNANCY**

Lianne M. Tomfohr-Madsen, PhD, Zahra M. Clayborne, BSc, Codie R. Rouleau, MS, Tavis S. Campbell, PhD, Psychology, University of Calgary, Calgary, AB, Canada

Objective: Insomnia and disturbed sleep are common during pregnancy and are associated with negative obstetric and postpartum outcomes. This study investigated if group cognitive-behavioural therapy for insomnia (CBT-I) was associated with improvements in symptoms of insomnia experienced during pregnancy. Secondary outcomes included changes in subjective sleep quality, objective sleep measures, depression, anxiety and fatigue.

Design, Setting and Participants: Thirty pregnant women (mean gestational age = 19.31 weeks) with insomnia participated in the CBT-I group sessions. Insomnia was assessed using the Insomnia Severity Index (ISI) and sleep quality by the Pittsburgh Sleep Quality Index (PSQI). Measures of total sleep time (TST), time in bed (TIB), sleep onset latency (SOL) and sleep efficiency (SE) were assessed via self-report and wrist actigraphy. Outcomes were assessed at baseline and one week following five weekly sessions of treatment.

Results: All participants completed the study and provided baseline and follow-up data. Improvements were observed on the ISI, PSQI and subjective and objective assessments of TIB, SOL and SE and subjective TST. ISI scores decreased such that, on average, participants were no longer reporting clinically significant insomnia following treatment. The majority of participants (12/13 participants, 92.3%) experienced a decrease of at least 8.4 points on the ISI, which is indicative of clinically significant improvement of insomnia symptoms. Additionally, symptoms of depression, pregnancy-specific anxiety and fatigue all decreased over the course of the treatment. Effect sizes ranged from medium to large.

Conclusions: CBT-I delivered during pregnancy was associated with significant improvements in sleep and mood. Given the promise of this intervention, the logical next step in this area of inquiry is to better establish efficacy via a randomized controlled trial.

Table 1. Changes in Sleep, Depressed Mood, Anxiety, and Fatigue

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-treatment M (SD)</th>
<th>Post-treatment M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actigraphy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIB</td>
<td>539.10 (42.44)</td>
<td>498.88 (58.85)*</td>
</tr>
<tr>
<td>TST</td>
<td>451.85 (45.90)</td>
<td>437.73 (51.11)</td>
</tr>
<tr>
<td>SOL</td>
<td>22.79 (18.14)</td>
<td>8.54 (7.22)*</td>
</tr>
<tr>
<td>SE</td>
<td>82.23 (6.26)</td>
<td>87.30 (4.03)**</td>
</tr>
<tr>
<td>WASO</td>
<td>53.02 (21.55)</td>
<td>44.44 (19.76)</td>
</tr>
<tr>
<td>Awakenings</td>
<td>39.12 (16.81)</td>
<td>36.00 (13.20)</td>
</tr>
<tr>
<td>Sleep Diary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIB</td>
<td>514.23 (33.79)</td>
<td>490.46 (51.11)</td>
</tr>
<tr>
<td>TST</td>
<td>368.58 (90.22)</td>
<td>428.58 (48.27)*</td>
</tr>
<tr>
<td>SE</td>
<td>71.54 (16.44)</td>
<td>87.56 (5.93)**</td>
</tr>
<tr>
<td>Questionnaires</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISI</td>
<td>18.46 (4.48)</td>
<td>6.00 (2.89)**</td>
</tr>
<tr>
<td>PSQI</td>
<td>11.31 (3.22)</td>
<td>5.15 (3.18)**</td>
</tr>
<tr>
<td>EPDS Total</td>
<td>10.85 (2.54)</td>
<td>6.31 (3.20)**</td>
</tr>
<tr>
<td>PSA</td>
<td>10.31 (3.02)</td>
<td>8.54 (2.57)*</td>
</tr>
<tr>
<td>MFSI-SF</td>
<td>32.00 (21.21)</td>
<td>3.38 (8.31)**</td>
</tr>
</tbody>
</table>

Note. M = mean, SD = standard deviation, ISI = Insomnia Severity Index, PSQI = Pittsburgh Sleep Quality Index, EPDS = Edinburgh Postpartum Depression Scale, MFSI-SF = Multidimensional Fatigue Symptom Severity – Short Form, PSA = Pregnancy Specific Anxiety Measure.

* (p < 0.05), ** (p < 0.01), *** (p < 0.001)
Religiousness and spirituality are associated salubriously with a variety of aspects of mental and physical health (George, Larson, Koenig, & McCullough, 2000). These forces (R/S) have been hypothesized to exert positive effects on mental and physical health due to their effects on allostatic load (AL; Seybold, 2007), a measure of accumulated stress on the body (McEwen, 1998). However, there has been very little research on associations between R/S and AL. Extant research shows associations between R/S and allostatic load in older adults (e.g., Hill et al., 2012), but the association has not been explored in younger adults. In this study, associations of dimensions of religiousness and AL score and components were examined in 1493 postpartum women assessed 6 months after the birth of a child. Data were collected by Community Child Health Network (CCHN) of the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The CCHN goal was to address maternal-child health disparities. Participants were interviewed in their homes during the year after a child’s birth and biomarkers were assessed in the home at 6 months after birth. Contrary to expectations and previous research findings, dimensions of R/S including religious coping, religious identity and affiliation, and engagement in private religious behaviors were associated with higher, that is less healthy, AL scores among postpartum women. Further investigation revealed that these associations were not driven by any particular component or set of components of AL. Potential demographic and health-related moderators of the association including socioeconomic status, race, health behaviors, and stress levels were explored. None of these factors impacted overall associations of dimensions of religiousness and AL. We discuss interpretations of this unexpected finding and future directions for research. We suggest that observed beneficial associations of R/S and AL may be particular to older adults which raises questions about the roles of both religiousness and allostatic load in younger adults.

113) Abstract 1625

ACCCULTURATION AND ACCULTURATIVE STRESS INCREASE POSTPARTUM DEPRESSIVE SYMPTOMS IN WOMEN OF MEXICAN DESCENT

Berta Erika Luis Sanchez, B.A. in progress, Kimberly L. D’Anna-Hernandez, PhD, Psychology, California State University San Marcos, San Marcos, California

Psychosocial stressors during pregnancy are linked to detrimental maternal mental health and infant outcomes among vulnerable populations, including the fast-growing Mexican-American population. Additionally, Mexican-American women experience cultural stressors related to cultural adaptation, including acculturation, acculturative stress, and perceived discrimination associated with adverse perinatal outcomes. While acculturation status is generally considered to be a stable process, the distress associated with cultural stressors may fluctuate across important life changes including from pregnancy to the postpartum period. Given the effects of cultural stressors on adverse maternal mental health during pregnancy, it is necessary to investigate if fluctuations in cultural stressors across the perinatal period can also impact maternal mental health, specifically depressive symptoms, at postpartum. A preliminary sample of Mexican-American pregnant women ages 18-40 (n=55) were recruited during their first trimester. Acculturation (ARMSA-II), acculturative stress (SAFE), and perceived discrimination (DSS) were measured twice during the perinatal period; first during early pregnancy (p=0.05). However, less postpartum acculturation (greater Mexican orientation) was associated with decreased depressive symptoms (b=-2.34, SE=1.10, β=-.28, p=0.038). In addition, prenatal acculturative stress was marginally associated with postpartum depressive symptoms (b=0.09, SE=0.4, β=0.26, p=0.055). Perceived discrimination was not associated with depressive symptoms (p>0.05). These findings suggest that Mexican-American women may be at risk at postpartum (or the negative effects of cultural stressors. However, self-identification with Mexican culture is suggested to be protective against mental health outcomes. Consequently, culturally competent prenatal care should address cultural stressors across the perinatal period.

114) will not be presented

115) Abstract 1531

BACK PAIN: THE STUDY OF MECHANISMS AND THE TRANSLATION IN INTERVENTIONS WITHIN THE MISPEX NETWORK

Pia-Maria Wippert, PD PhD, Area of Excellence in Cognitive Science, Institute of Sociology of Health and Physical Activity, Potsdam, Brandenburg, Germany, Frank Mayer (PI), PD MD, Area of Excellence in Cognitive Science, University Outpatient Clinic Sports Medicine, Potsdam, Brandenburg, Germany

Christine Wiebking, PhD, Sociology of Physical Activity and Health, University of Potsdam, Potsdam, Brandenburg, Germany, Frank Mayer (PI), PD MD, Area of Excellence in Cognitive Science, University Outpatient Clinic Sports Medicine, Potsdam, Brandenburg, Germany

The MISPEX Network is one of the biggest research network in Germany focusing on the topic of low back pain. Within 8 years different research partners conduct three multicenter studies (n=3000) and 25 experimental studies in this network, whereby this network is interdisciplinary with partners from the biomechanics, physics, orthopaedics, sociology, psychology, Exercise science and Physiotherapy. The usage of different methods like psychophysiology, fMRI, psychometrics and kinematics gives new information about the mechanism of central and peripheral adaptation processes to training, stress and their relation to the modulation of pain and the process of chronification. Another aim of the network is to identify risk stratification scores for the detection of high or low risk groups or the development of chronic pain after an injury or pain episode.

Within the sympiosia different partners of the network take part an report about their research. The presenter will focus on new results in their experimental studies with a psycho-social and neuro-biological focus and will give information about their relevance and translation for the practical application. The present study was funded by the German Federal Institute of Sport Science and realized within MISPEX—the National Research Network for Medicine in Spine (IIA1-080102A/11-14, IIA1-080102A/15-18).

116) Abstract 1632

A LONGITUDINAL INTERDISCIPLINARY APPROACH TO STRESS AND ITS IMPACT ON THE DEVELOPMENT OF CHRONIC PAIN

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The development of chronic pain is a complex interaction between social, psychological, and biological risk factors as shown in many studies. However, a lot remains to be learned about the underlying changes in pain modulation and sensation that lead to chronic pain. One reason might be a lack of longitudinal studies observing the development of pain and its risk factors over time. Second, many studies focus on risk factors of their own discipline rather than using a broader interdisciplinary approach.

Within the MISPeX-Network one longitudinal study assessed 24 psychophysiological stress parameters and questionnaires four times over one year. The aim was to evaluate chronic and acute stress and it’s relation to chronic low back pain. Furthermore, a real life time evaluation of events in the participants’ daily life was included. The same psychometric battery was used in a further multicenter study. This combination allows an estimation of how risk factors accumulate over time and of the moment a risk factor becomes of relevance for pain chronification.

The presenter will show the most important results of the one-year study and link these to findings of the multi center study.

117) Abstract 1699

THE INFLUENCE OF ATTACHMENT ON PAIN AND DEPRESSION IN TWO DIFFERENT PAIN GROUPS

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Attachment style which can be categorized into secure and insecure can be associated with the development and perception of pain. A secure attachment style is related to people that are able to build a support systems by forming stable and protective relationships with others. People with insecure attachment are less able to build sufficient support system. The aim of the study was to look at the influence of secure and insecure attachment on pain perception and depression of two patient groups: patients with medically unexplained pain with no organic cause and patients with joint pain from osteoarthritis with a clear diagnosis.

It was found that 2/3 of patients suffering from musculoskeletal pain with no evident organic reason were reporting an insecure attachment style, whereas, only 1/3 of the osteoarthritis group were having an insecure style. This equals the frequency of occurrence of insecure attachment in an observational and depression of two patient groups: patients with medically unexplained pain with no organic cause and patients with joint pain from osteoarthritis with a clear diagnosis.
scores seemed to report higher levels of attachment anxiety in romantic relationships. This was especially the case for osteoarthritis patients who suffered from joint hip pain. This shows that social support given by romantic partners is important for the perception of pain experience. Attachment related to romantic relationships seemed to be less relevant for patients who suffered from psychosomatic pain as for those the general attachment style was more important. This means that patients with medically unexplained pain showed high attachment insecurity in more interactional contexts such as a doctor-patient-relationship for instance but this did not affect the insecure attachment in romantic relationships. Hence, attachment insecurity was overrepresented in patients with psychosomatic pain but this was not the case for attachment insecurity in intimate relationships. It was also found that patients regardless of the pain group that were more insecure in terms of intimate or romantic relationships reached higher levels of depression. Conclusively, patients who suffer from psychosomatic pain with no physiological reason are more likely to be insecurely attached compared to people with a diagnosis of osteoarthritis. The attachment style of patients could be linked to severity of depression symptoms. Findings suggest to implement a relationship-focused therapy approach into pain rehabilitation programs.

118) Abstract 1013
THE COMMON COLD PROJECT
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The goal of the Common Cold Project (CCP; www.commoncoldproject.com) is to make available to the scientific community a database that combines data from 5 prospective viral challenge studies (total N=1415) designed to assess the roles of host susceptibility and viral pathogenicity in host responses to infection. These studies have a large core of common data including detailed measures of psychosocial factors, health practices,endocine response, markers of infection and inflammation, and symptoms and signs of upper respiratory illness. Other variables include baseline markers of cardiovascular (BP, heart rate, heart rate variability) and pulmonary function, complete blood counts, and psychological (e.g., Big 5 personality, depression, anxiety, positive affect) and social (e.g., social integration, social support, conflict) factors. Three of the studies include 6-14 days of daily interview data. The documenting, merging and online archiving of these data provide researchers with the opportunity to conduct analyses in a single study, replicate analyses across 2 or more of the studies, as well as combine data from any or all of the 5 studies. For example, in 4 recent articles, data from 2 to 3 of the 5 studies were combined to investigate biological, psychological, and social phenomena as they relate to host resistance. Advantages associated with the use of an aggregated data set in these samples included the ability to investigate complex mechanistic pathways (chronic stress to glucocorticoid resistance to cold risk); low base-rate predictors (parent status); statistical moderation (social conflict x hugs -> cold risk); and small statistical effects (self-rated health). Though these 4 publications focus on host resistance, the breadth of this publicly available data archive will permit investigators with interest in other physiologic processes to explore additional research questions not envisioned at the time of the original data collections.

119) Abstract 1035
SIT BACK AND RELAX: THE EFFECTS OF PROGRESSIVE MUSCLE RELAXATION ON MOTION-INDUCED NAUSEA AND GASTRIC DYSRHYTHMIA
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Background: Relaxation has often been demonstrated to have beneficial effects on individuals’ subjective well-being and stress-level, and on a variety of health-related outcomes. The effects of relaxation on nausea had not been thoroughly tested, nor had there been any exploration of whether any beneficial effect of relaxation would be accompanied by measurable changes in physiology. The purpose of the present study was to examine the effects of a brief session of PMR on reports of nausea made by individuals exposed to a device that induces the illusion of self-motion, and on the development of gastric tachyarrhythmia and other physiologic responses.
Method: A randomized design was employed in which 40 participants were assigned to one of two experimental groups. Relaxation group participants were guided through a 10-minute PMR program prior to their exposure to a rotating optokinetic drum. A relaxation audio program was accessed via the internet and consisted of a therapist’s voice that guided participants through the exercise. Control group participants did not complete the PMR program. It was hypothesized that relaxation group participants would report less severe nausea and other symptoms of motion sickness than control group participants. It was also expected that relaxation group participants would exhibit less gastric tachyarrhythmia, more heart rate variability, and lower skin conductance levels than control group participants.
Results: A significant effect of relaxation on the development of nausea was observed, (t(38)=2.32, p=.02. As predicted, participants who engaged in a PMR program prior to their exposure to the motion stimulus experienced significantly less severe nausea. A significant effect of relaxation on the development of subjective symptoms of motion sickness, including dizziness, headache, drowsiness, warmth, and sweating as well as nausea, was also observed, (t(38)=2.75, p=.009. Participants in the relaxation group reported significantly less severe symptoms. Analysis of the physiological data is ongoing, and may contribute to the elucidation of the physiological mechanism responsible for relaxation’s beneficial effect.
Conclusion: The brief PMR program that was employed appears to have had the desired effect of preparing participants, perhaps both subjectively and physiologically, to avoid the potentially unpleasant experience of motion-induced nausea. These results suggest that for individuals likely to suffer from nausea, it is important for them to engage in some form of relaxing activity immediately prior to the onset of the provocative stimulus. These results could have profound implications for the management of the nausea of cancer chemotherapy, pregnancy, gastrointestinal disorders, and motion sickness.

120) Abstract 1167
ASSESSING CARDIORESPIRATORY FITNESS WITHOUT EXERCISE TESTING? VALIDATION OF A PREDICTIVE MODEL FOR MAXIMAL OXYGEN UPTAKE IN OLDER WOMEN
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Cardiorespiratory fitness (CRF) reflects the degree to which the heart and lungs can deliver oxygen to muscles under demand and robustly predicts both cardiovascular and noncardiovascular mortality. However, graded exercise testing to measure VO2max, the gold-standard operationalization of CRF, is expensive and impractical for many investigations in health psychology and psychosomatic medicine. Jurca et al. (2005) developed a predictive equation for adults aged 20 to 70 to estimate CRF (VO2max expressed as metabolic equivalents [METs]) from gender, age, BMI, resting heart rate, and physical activity. In the present study, a large sample of older women (aged 50 to 76 years, N = 181) had these variables assessed and underwent submaximal graded exercise testing to measure VO2max. The Jurca score performed modestly well in predicting actual VO2max in this sample (B = 0.70, SE = 0.11, R2 = .18, p < .0001), but a sample-specific regression model that included the same predictors as the Jurca equation (gender, age, BMI, resting heart rate, and physical activity) performed better (R2 = .26, p < .0001). Both models did poorly at predicting CVF for about 10% of the sample, who tended to be women with low body weight and high VO2max. Without these individuals, both Jurca and sample-specific regression models performed better (R2= .29 and .40, respectively), and residuals were within +/- 3.5 METs for the Jurca model and +/- 3 METs for the sample-specific regression model. Comparing the two models, predictor weights for age, BMI, and resting heart rate were very similar. However, weights for physical activity level were very different (see Table), suggesting that studies estimating CRF indirectly should use predictive equations validated on appropriate age groups.
Supported by the National Institute on Aging (AG046116-R01, AG033629-K02).
121) Abstract 1222

TYPE OF APOLOGY INFLUENCES RECOVERY OF HEART RATE VARIABILITY RESPONSE TO INTERPERSONAL STRESS

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In contrast to men who showed a faster recovery in blood pressure following delivery of an apology in contrast to a no-apology condition, the same benefit was not observed among men (Whited, Wheat, & Larkin, 2010). To examine whether these sex differences in response to apology were the result of type of apology, the present study investigated cardiovascular recovery of 36 men and 41 women following performance of a mental arithmetic task during which participants were verbally harassed by the experimenter. Following harassment, participants received either an elaborate apology, a simple apology, or no apology from the experimenter, followed by a 10-minute recovery period. Measures of blood pressure were obtained during each phase of the experiment as well as heart rate and high frequency heart rate variability (HF-HRV). Area under the curve (AUC) was calculated for each variable during the recovery period and analyzed using 2 x 3 (Sex x Apology Condition) ANCOVAs, covarying resting cardiovascular measures and BMI.

Results revealed a significant Sex x Apology interaction for HF-HRV, F(2, 69) = 4.28, p = .018, n2 = .110. Simple main effects analyses showed that women who received the elaborate apology (M = 9.93, SD = 185.7) had a faster HF-HRV recovery than females receiving a simple apology (M = 362.6, SD = 435.5; F(2, 36) = 4.85, p < .014, n2 = .212). Additionally, men receiving the simple apology (M = 62.94, SD = 186.45), exhibited faster HF-HRV recovery than women receiving a simple apology (M = 362.6, SD = 433.55; F(1, 21) = 10.73, p < .004, n2 = .338). No significant effects were observed for heart rate or blood pressure across Apology Condition.

Because HF HRV is an indicator of parasympathetic activity, women’s parasympathetic systems normalized more quickly following an elaborate apology than women who received a simple apology. In contrast, men’s parasympathetic systems normalized more quickly when a simple apology was given than women receiving a simple apology. Congruent with previous research that shows women tend to give/receive longer, more elaborate apologies than men (Henderson, Manning, & Wetter, 1990), these findings suggest that this differential familiarity with these types of apology also influence the presumed health benefits one achieves by forgiving interpersonal transgressions.

122) Abstract 1527

VALIDITY AND RELIABILITY OF THE ARABIC VERSION OF THE PERCEIVED STRESS SCALE (PSS-10)

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INTRODUCTION: In 2009, almost one million people in the United States spoke Arabic, a 288% increase from 1980, and that number is only expected to increase (Ortman & Shin, 2011). By 2050, Arabic is projected to be the 3rd most spoken language in the world, following Chinese and Urdu (Gradoll, 2004). With this in mind, it is important to translate and test our most frequently used and validated English language scales and measurements for future research. In this study, we evaluated an Arabic version of one of the most widely used self-report measures of stress, the Perceived Stress Scale (PSS-10; Cohen, Kamarak & Mermelstein, 1983).

METHODS: Participants consisted of 59 Arabic-speaking undergraduate students from Carnegie Mellon University’s Qatar campus. Among the sample, 63% were female and the mean age was 20.90 (SD = 1.79). Participants were asked to fill out a number of questionnaires in Arabic, including the PSS-10, the Generalized Anxiety Scale (GAD-7), the Patient Health Questionnaire (PHQ-9), the Patient Health Questionnaire (PHQ-9), the Patient Health Questionnaire (PHQ-9), the Patient Health Questionnaire (PHQ-9), and the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985).

RESULTS: The mean score on the PSS was 19.98 (SD = 5.40). In terms of convergent validity, the Arabic PSS-10 was found to be correlated with both the GAD-7 (r = .588, p < .001) and the PHQ-9 (r = .497, p < .001). Thus, as expected, those who reported higher perceived stress also reported more anxiety and depressive symptoms. The Arabic PSS-10 also showed discriminant validity, being negatively correlated with the SWLS (r = -.224, p = .043), with those experiencing less perceived stress reporting greater life satisfaction. The Arabic PSS-10 was also shown to have high internal consistency reliability (Chronbach’s alpha = .790, Guttman Splithalf Coefficient = .702).

DISCUSSION: Based on the current findings, the Arabic version of the PSS-10 appears both valid and internally reliable. These findings are similar to the results of Chaaya et al. (2010) who found that the Arabic PSS-10 was highly correlated with both measures of psychological disorders and postpartum depression among Arabic-speaking women. Both studies suggest that the Arabic PSS-10 is a valid and reliable source for collecting data on perceived stress among Arabic speakers. However, this study only looks at a small undergraduate sample within one university. Further studies that include more sampling sites will need to be conducted to verify current results.

123) Abstract 1538

WORK-UNIT ORGANIZATIONAL INJUSTICE IS ASSOCIATED WITH POOR MENTAL HEALTH ON THE INDIVIDUAL LEVEL

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Introduction: Organizational justice refers to the perceived fairness at the workplace, affecting health by being a stressful work environment factor. Individual perceptions of justice have consistently been linked to impaired health, however injustice can also be analysed at the aggregate level of work-units (e.g., departments) to obtain a measure of shared perception of a climate of unfairness. Such a shared perception considers injustice on a group level in which the simple employee does not necessarily have to experience injustice directly. Some studies have demonstrated that shared climate of injustice predict individual differences in depression and anxiety. The objective of this study was to confirm that shared work-unit organizational justice perceptions (‘fairness climate’) are associated with depression and anxiety and to expand this evidence to specifically work related mental health outcomes that have remained unaddressed to date, namely, fatigue due to work and exhaustion.

Methods: Fairness climate was defined as the mean of work-unit level (n ≥ 5 workers from 31 units, total n = 1,340) of perceived individual organizational justice (11 item questionnaire). Exhaustion and fatigue (9 items each) were assessed by abbreviated German versions modelled after established scales (i.e., the Need for Recovery Scale, the Maastricht Exhaustion Questionnaire). Depression and Anxiety were assessed by the Hospital Anxiety and Depression Scale (9 items each). Linear mixed models estimated adjusted (age, sex, lifestyle, socioeconomic status, job characteristics) and standardized fixed effects.

Results: Individual justice perceptions were negative associated with the mental health scores (depression: standardized beta = -.304; anxiety: beta = -.296; fatigue: beta = -.284; exhaustion: beta = -.342, all p-values < .001). Furthermore, confirming previous findings, average work-unit organizational justice was associated with reduced symptoms of depression (beta = -.121, p < .001) and fatigue (beta = -.107, p < .001). In addition, negative association with fatigue (beta = -.118, p < .001) and exhaustion (beta = .135, p < .001) were observed.

Conclusion: Average work-unit perceptions of injustice consistently predict various individual-level indicators of poor mental health. Such group average analyses are argued to be less prone to individual confounding (e.g., reporting bias). These findings suggest a collective perception and experience of injustice, which appears to be harmful for individuals in the case of a climate of injustice.

124) Abstract 1547

VISCERAL ADIPOSITY PARTIALLY MEDIATES THE RELATIONSHIP BETWEEN AGING AND ELEVATED INFLAMMATORY MARKERS

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Objectives: It is widely accepted that aging is associated with chronic low-grade inflammation, which may be involved in the pathogenesis of many age-related diseases. As we age, fat tissue redistributes, resulting in increased visceral adipose tissue, an immunologic active organ. We tested the hypothesis that increased visceral adipose tissue mediates the age-inflammation relationship.
Method: Participants were 1243 English-speaking, non-institutionalized continental U.S. residents, aged 35-86, both male (43%) and female (57%), from the MIDUS II Biomarker Project. Fasting blood samples for analysis of CRP, IL-6, S-IL-6r, E-Selectin, ICAM and Fibrinogen were collected between 05:00-07:00 a.m. during a 2-day visit to a clinical research center in 2004-2006. Visceral adipose tissue was measured by waist circumference and waist/hip-ratio. Values for IL-6, E-Selectin, and ICAM were log-transformed to account for skewed distributions. Data were analyzed using Structural Equation Modeling (MPlus version 7.1), with gender, race, anti-inflammatory medications, and smoking as covariates.

Results: There was a significant age-related increase in IL-6, Fibrinogen, and ICAM (p-values <0.001) and in waist/hip-ratio (p=0.001) but not waist circumference. As expected, these inflammatory markers were positively correlated with waist/hip-ratio, all with p-values <0.009. Significant mediation through waist/hip-ratio was found for the age-related increases in IL-6, Fibrinogen, and ICAM, although this mediation path accounted for only about 10% (Max: 11.4%) of the total effect of age on each of these inflammatory markers.

Conclusion: Waist/hip-ratio partly mediated the relationship of aging and elevated inflammatory markers. However, the effect only accounted for a small fraction of the increased inflammatory activity. These findings suggest that other factors such as genetics, decreased levels of sex hormones, chronic antigenic stress or other biological factors may play a greater role in chronic low-grade inflammation as a function of aging.

125 Abstract 1573
THE NEED TO APPROACH EMOTIONAL EXPERIENCES AS A MEDIATOR BETWEEN RESTING HEART RATE VARIABILITY AND TRAIT ANXIETY
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Resting heart rate variability (HRV) is a non-invasive measure that is widely recognized as a psychophysiological measure of emotion regulation and overall health. Recent research showed a relationship between resting HF-HRV and the need for affect (NA), defined as the motivation to approach, and not avoid, emotion inducing situations (both positive and negative). Specifically, lower HF-HRV is associated with the greater avoiding and approaching of emotional experiences. However, there has been no research on how approaching and avoiding emotions may explain the relationship between HF-HRV and mental health status such as anxiety. Therefore, the current study aims to examine the possible mediating role of NA (both avoid and approach) on the relationship between HF-HRV and trait anxiety. In the present study, 78 participants (52 female, 22 minority, Mean Age= 19) from a large Midwestern university were recruited to participate in exchange for course credit. The participants completed a 5-minute baseline-resting period, followed by the 26-item NA Scale, containing two subscales labeled approach (NA-approach: NA-avoid) and avoiding (NA-avoid) of emotional experiences. Trait anxiety was assessed utilizing the Spielberger Trait Anxiety Inventory (STAI-T). HF-HRV was assessed in accordance with Task Force Guidelines. Results indicated that NA-approach significantly mediated the relationship between HF-HRV and trait anxiety (β = -0.62, standard error = 0.41, t = -1.717, p=0.05), but not NA-avoid (β = -0.38, standard error = 0.29, t = -1.267, p=0.05). These results remain identical and significant when controlling for gender, body mass index, ethnicity, age, and respiration. These results add to the previous research on the established relationship between HF-HRV, and trait anxiety, suggesting that the relationship between HF-HRV and anxiety is partially mediated by the need to approach emotions, whereas avoiding emotions was not a mediator of HF-HRV and anxiety, suggesting that individuals with lower HF-HRV may be able to avoid emotions without experiencing higher anxiety. Overall, these results support previous claims suggesting that approaching emotions when lower in HF-HRV can be maladaptive and future research should focus on the role of NA on the link between HF-HRV and other negative psychological states.

126 Abstract 1582
EXAMINING THE ROLE OF STATINS AND MOOD ON PLASMA LIPIDS AND HEALTH OUTCOMES: A SYSTEMATIC REVIEW
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Background: Roughly 33% of Americans have high cholesterol, which is a risk factor for cardiovascular disease and stroke (CDC, 2012). To combat this disease, statins have been widely prescribed with more than 22% of Americans taking statins in 2012 (Gu et al., 2014). However, factors, such as negative mood disturbance, could influence statins’ effectiveness. Negative mood has been shown to decrease medication adherence, and some findings suggest statins may directly increase negative mood. Additionally, negative mood is accompanied by physiological changes that may impede drug action and contribute to poor health outcomes. Objective: To describe the relationships among statin use, mood, plasma lipids, and health outcomes. Specifically, it was expected that statin use would be associated with greater reports of negative mood (depressed mood/stress), which would alter statin effectiveness, such that among patients on statins increased negative mood would be associated with more dyslipidemia (lower levels of HDL, as well as higher LDL/triglycerides/total cholesterol). Additionally, the relationships between statins and mood would negatively impact health outcomes. Method: A systematic review of the literature including 113 studies published through February, 2015 was conducted. Results: Contrary to expectations, the relationships examined were not consistent and in many cases were not significant or assessed. While the relationship between statin use and depressive symptoms had been studied the most, the majority of these findings were not significant or found that depressive symptoms were lower with statin use rather than higher as some have cautioned. The most consistent relationship was that higher levels of stress were associated with worse lipid profiles (total cholesterol/LDL/triglycerides and lower HDL), suggesting that stress may be an important moderator of statin effectiveness; however, no studies examined the relationship between statin use and stress. Further, few studies incorporated health outcomes into the design. Conclusions: Utilizing more standardized measurement tools and addressing gaps in the literature (e.g. the relationship between statin use and stress) could lend to more homogenous results. Systematic examination of these relationships could potentially assist in the development of interventions which improve disease outcomes.

127 Abstract 1617
SLEEP HEALTH: WE CAN DEFINE IT AND IT MATTERS FOR PHYSICAL HEALTH
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Healthy sleep is important for physical health. Key components of sleep, including sleep duration, quality, alertness, timing, and efficiency are consistently associated with physical health outcomes. Yet, the epidemiological and empirical data that support these findings have often focused on sleep disorders, and more recently sleep deficiency, to the detriment of understanding the role of positive sleep attributes for health. The aim of the current study was to operationalize sleep health as a multidimensional construct and to test associations between sleep health and physical health. The sample included 1,639 participants (mean age = 52.2; age range 18 to 93 years; 58% Female) from previous research studies who had data on height, weight, and resting blood pressure. Participants also completed diary-based measures of daytime activities, sleep behaviors, and sleep parameters each morning (Mean= 7.66 days). These recorded parameters were used to measure six components of sleep health, including sleep duration (total sleep time), sleep efficiency (total sleep time/time in bed x 100), sleep regularity (variability in sleep midpoint), daytime alertness (minutes spent napping), and satisfaction (subjective ratings of sleep quality). Physical health indicators included systolic blood pressure, diastolic blood pressure, and body mass index (BMI). Structural equation modeling (SEM) was used to (1) evaluate model fit for a single continuous latent variable of sleep health including the individually measured components described above and (2) test cross sectional associations between sleep health and physical health. SEM confirmed that these six observed components of sleep health represented one underlying continuous latent variable as indicated by model fit indices (CFI = .995; TLI = .964; SRMR = .026). The latent sleep health variable was significantly negatively associated with resting systolic blood pressure (β = -0.05), diastolic blood pressure (β = -0.13), and BMI (β = -0.23), after controlling for age (all ps <.001). We have operationalized one working definition of sleep health, demonstrated that a single continuous latent construct of sleep health fits the observed data, and provided evidence that sleep health represented one underlying continuous latent variable, and that this variable is associated with concurrent physical health. Future analyses will examine prospective associations between sleep health and physical health.
128) Abstract 1631
DEPRESSION, PERCEIVED STRESS, & EBV REACTIVATION: DISENTANGLING THE RELATIONSHIP AND APPROACHING CAUSALITY
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Reactivation of Herpesviruses (e.g., Epstein-Barr Virus [EBV]) is a proxy for cellular immune functioning. Specifically, an increased level of EBV antibody titters indicates EBV reactivation; suggesting diminished cellular immunity. Compromised cellular immunity may be due to a variety of causes including additional viral exposure, age, and psychosocial factors such as depression, stress, and socioeconomic status. However, these associations are typically found using cross-sectional study designs; limiting our ability to infer causality. Therefore, we used data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) to examine the relationship between adolescent depression and young adulthood EBV antibody titters as well as the moderating effect of perceived stress in young adults. Wave I (W1) data were collected in 1994-5 from a national sample of adolescents (ages 12-17 yrs) and primarily included self-report health behaviors and risks, psychosocial and environmental factors. In 2008-9, Wave IV (W4) data included social, environmental, and behavioral factors as well as biological samples, from the same participants, then ages 24-32 yrs. Depressions from W1 and W4 was assessed with the CES-DC and CES-D, respectively. At W4, perceived stress was measured with the 4-item perceived stress scale and EBV antibody titters were quantified by ELISA. Using hierarchical regression analyses controlling for significant W4 confounds, W1 depression predicted EBV titters over and above W4 depression (p<.05). Additionally, W1 depression interacted with W4 stress to significantly predict EBV titters (p<.05). Specifically, in low to average stressed young adults, adolescent depression was positively associated with EBV reactivation. However, in the higher stressed young adults, adolescent depression did not predict EBV antibody titters. Hence, adolescent depression may drive EBV reactivation in young adulthood and is moderated by current stress levels. It is important to note that W4 depression and W4 stress interaction showed a similar pattern. Thus, depression appears to have long-term consequences on cellular immune function that can be influenced by stress. This study highlights the importance of bringing awareness to adolescent mental health and implementing policy changes to enhance treatment for adolescents suffering from depression.

130) Abstract 1656
RESTING HEART RATE VARIABILITY AND LAY THEORIES OF INHIBITION PREDICT PHYSIOLOGICAL RESPONSES TO SUBLIMINAL STIMULI
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High frequency heart rate variability (HF-HRV) serves as a biological marker of inhibitory and emotion regulation capabilities. Individuals who have lower resting HF-HRV often show a threat response to both threatening and neutral stimuli—making their response non-specific and maladaptive. Interestingly, our group recently showed that people’s implicit theories as to whether their inhibitory capacity is limited or unlimited, called lay theories of inhibition, play a role in the link between HF-HRV and cognitive performance. However, no research has examined the interaction of HF-HRV and lay theories of inhibition in the context of subconscious emotional processes such as threat and no-threat responses. The current study aims to investigate whether lay theories of willpower and resting HF-HRV interact to predict physiological responses to subliminal stimuli. Baseline-resting HF-HRV was collected from 90 participants (59 females; mean age = 19.24 years; SD = 1.99), who were randomly assigned to either the threatening or neutral condition of the subliminal priming task (SPT). Participants were the dependent variables whether the presented word (target) was a real or non-real word, following exposure to a neutral or threatening word presented outside of conscious awareness (13ms). Participants then completed the Implicit Theories of Power Scale (ITWS), assessing implicit theories of how limited or unlimited their inhibitory resources are. Change scores from baseline to the SPT were created in order to determine physiological responses to the subliminal stimuli. A 3-way interaction between resting HF-HRV, ITWS scores, and condition (threatening/neutral) to predict HF-HRV change scores from baseline to the SPT (R2 change = .449, _β_ = -.053 [standard error = .027], p = .055). Specifically, analyses revealed that in the neutral condition, more limited theories were associated with a significant change in HF-HRV from baseline to task in individuals with lower (_β_ = .071 [.033], p<.05) but not higher (_β_ = -.015 [.034], p=.670) resting HF-HRV. No significant interactions were found in the threat condition. These findings suggest that individuals with lower resting HF-HRV may not possess the inhibitory control resources necessary to respond to ambiguous stimuli in an adaptive manner, thus maintaining more unlimited lay theories of inhibition are important for buffering the negative effects of apparently neutral stimuli.

131) Abstract 1674
SITUATIONAL AND PSYCHOLOGICAL FACTORS ARE ASSOCIATED WITH ENERGY INTAKE IN DAILY LIVES; A STUDY BY USING ECOLOGICAL MOMENTARY ASSESSMENT AND A FOOD DIARY
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Diet is an important target in weight reduction therapy. Previous studies conducted in laboratories and those based on recalled self-reports suggested that psychosocial factors might affect eating behavior. Recently we developed validated PDA-based food diary, which enables us to obtain ecologically valid and nutritionally accurate data in daily settings. The aim of this study was to investigate how perceived and situational factors are associated with energy intake increases in subjects including overweight and obese people based on ecologically valid data. The subjects were 26 women and 12 men (age: mean 35.8 y.o., range 21-59; 4 obese, 19 overweight and 15 normal weight) without any psychiatric illnesses. They carried a smartphone for two weeks and input their momentary psychological states and situational information several times a day including just before and after meals. They also recorded everything they ate and drank by using food diary on a smartphone and energy intake was automatically calculated by the diary. Multilevel analysis was used to investigate the associations between psychological factors before meals and situational factors, and energy intake per meal. Energy intake was significantly negatively associated with depressive mood and significantly more when being with someone than alone (the effect of companion) in univariate models (p = 0.047, 0.0016). In model with depressive mood, companion and their interaction, the interaction was significant (p = 0.044), suggesting that energy intake increases with less depressive mood when being with someone while it does not when being alone. The result should be taken into account when conducting eating behavior modification.

132) Abstract 1602 CLIMATE CHANGE, DEPRESSION, AND PERCEPTIONS OF HOPE: ASSOCIATIONS WITH SEXUAL FUNCTION AND SLEEP PROBLEMS AMONG U.S. ADULTS Karl J. Maier, Ph.D., Suzanne L. Osman, Ph.D., Psychology, Salisbury University, Salisbury, MD

With increasing public awareness of climate change in recent years, few studies have examined how personal views of the problem may relate to subtle indices and determinants of health and wellbeing. Aside from direct and acute mental and physical health impacts, climate change has been characterized as a chronic, ambient stressor that may have subtle impacts on mental and physical wellbeing as people become increasingly aware of the pervasive nature of the problem, and implications for the future. We used an internet-based convenience sample (n=773) of men (34%) and women (66%) from the adult U.S. population (79% White) (Amazon MTurk Workers) to examine potential associations between self-reported hopefulness about the future regarding climate change and problems with sexual function and sleep (Medical Outcomes Survey; Sexual Functioning and Sleep Problems) after controlling for depressive symptoms and trait hope ( Trait Hope Scale; Snyder et al., 1991).

Linear regression analyses indicated that less hopefulness about the future was associated with greater problems with sexual functioning (R2=0.01, B=−28, p<0.01) and sleep (R2=0.01, B=−56, p<0.01), after controlling for depressive symptoms and trait hope, which together accounted for 32% of the variance in the model.

The clinical implications of these associations are limited given the small effect size observed. However, because the association was evident after controlling for depression, which is known to impact sleep, and trait hope, the findings suggest that individual perceptions of climate change may have subtle impacts on wellbeing. Alternatively, it should be considered that poor sleep and sexual functioning may impact one’s mental health and experience of background stressors such as climate change. Both cross sectional and prospective studies are therefore needed to better understand if and how perceptions of climate change may relate to wellbeing.

133) Abstract 1603 OVERNIGHT FASTING MODULATES SELF-ESTEEM Alexander Fiksdal, MA, Luke Hanlin, MA, Danielle Gianferante, PhD, Jonah Price, BA, Nicolas Rohleder, PhD, Psychology, Brandeis University, Waltham, MA

Fasting and calorie restriction have been shown to increase lifespan in animal models and have been proposed as a possible mechanisms for improving health outcomes in humans. However, the influence of psychological responses to fasting on health remains unclear. In this study we examined the effects of two different types of fasting on self-esteem.

Twenty-six adults (N=15 male) with a mean age of 19.6 years (SD=1.7) were randomly assigned to either a 72 hour juice fast (N=8), or an 18 hour fast (N=10), or a control group (N=8). Participants then completed the Rosenberg Self-Esteem Inventory prior to completing a psychosocial stress task (results reported elsewhere).

A one-way analysis of variance revealed group differences in self-esteem scores (F=8.33, p=.04). This effect remained significant after controlling for gender and BMI (F=5.06, p=.02). Bonferroni-corrected post-hoc comparisons revealed that participants in the overnight fast condition reported significantly lower self-esteem than the control group (p=.04), but not the juice fast group (p=.37). Juice fast group self-esteem scores were not significantly different than the control group (p=.88).

In summary, overnight fasting, but not a 3-day juice fast, resulted in significantly lower self-esteem scores than controls. Regardless of the positive or negative health effects of fasting and calorie restriction, more research is needed to determine the psychological consequences of such interventions.

134) Abstract 1612 A TAPELE OF CAPACITIES AND MOTIVATIONS: LOWER RESTING HEART RATE VARIABILITY IS ASSOCIATED WITH A GREATER NEED FOR COGNITION DeWayne P. Williams, M.A., Nicholas P. Joseph, B.S., Department of Psychology, The Ohio State University, Columbus, OH, Julian Koenig, Dr. sc. hum., Center for Psychosocial Medicine, Department of Child and Adolescents Psychiatry, University Hospital Heidelberg, Heidelberg University, Heidelberg, Baden-Württemberg, Germany, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH

The need for cognition can be defined as the motivation to enjoy and engage in effortful and detailed thinking. Interestingly, resting vagally mediated heart rate variability (vmHRV) serves as a marker of cognitive control, such that those with greater vmHRV have greater cognitive control (and overall self-regulatory abilities) in comparison to those with lower resting vmHRV. Our group has recently investigated how resting vmHRV relates to the motivation to engage in various self-regulatory processes. However, research has yet to investigate how resting vmHRV relates to the motivations to engage in cognitive activities, where intuitively, one may think that those with higher vmHRV (greater cognitive ability) should have a greater motivation to engage in cognitive activities. The following study examines this relationship in an apparently healthy sample of 135 undergraduate students. Continuous heart rate data was collected as participants completed a 5-minute resting-baseline period, followed by a set of self-report questionnaires, including the 18-item Need for Cognition Scale (NCS) that assesses the motivations to engage in cognitive activities with higher scores reflecting a greater need for cognition. High Frequency heart rate variability was measured in accordance with Task Force guidelines and was regarded as the measure of vmHRV. Zero-order correlations showed a negative correlation between resting vmHRV and NCS scores (r = -0.20, p < .05), such that lower vmHRV is associated with a greater need for cognition. These results complement our previous research, showing that the relationship between self-regulation capacities and motivations are not intuitive – those with higher resting vmHRV are less likely to have the motivation to engage in and enjoy cognitive activities, suggesting that their cognitive resources are used as needed. On the other hand, those with lower cognitive control, as indexed by lower resting vmHRV, have a greater motivation to engage in cognitive activities – a pattern of behavior that seems maladaptive given their lack of cognitive resources and thus, has important implications for cognition and health. Overall, individual differences in resting vmHRV may predict how individuals are willing to use their cognitive capacities. Future directions will be discussed.

135) Abstract 1621 RESTING HEART RATE VARIABILITY PREDICTS PERFORMANCE ON THE IOWA-GAMBLING TASK: A CAREFUL ANALYSIS OF LEARNING CONTINGENCIES OVER TIME DeWayne P. Williams, M.A., Ravi Bhatt, B.S., Brandon L. Gillie, M.A., Department of Psychology, The Ohio State University, Columbus, OH, Julian Koenig, Dr. sc. hum., Center for Psychosocial Medicine, Department of Child and Adolescents Psychiatry, University Hospital Heidelberg, Heidelberg University, Heidelberg, Baden-Württemberg, Germany, Julian F. Thayer, PhD, Department of Psychology, The Ohio State University, Columbus, OH

Individual differences in resting vagally mediated heart rate variability (vmHRV) have been associated with executive function in numerous laboratory studies. The Iowa Gambling Task (IGT) is designed to assess real world decision-making and has been studied extensively. Our group recently reported...
a relationship between resting vmHRV and IGT performance, such that those with higher vmHRV show better choices overtime. The present study reevaluates this relationship in a larger sample of participants in addition to the dividing IGT trials in accordance with traditional IGT research. Forty-nine college-aged participants (25 women, ages 18-25) first completed a baseline-resting period, followed by a modified version of the IGT. In this version of the task, participants completed 300 trials of the task to assess learning contingency over a longer period. High frequency HRV was analyzed in accordance with Task Force guidelines and was regarded as the measure of vmHRV. To examine the relationship between individual differences in vmHRV and learning contingency over time, the IGT trials were divided into twelfths (every 25 trials) and participants were divided into high and low vmHRV groups based on a median split of baseline vmHRV. Results showed that the low vmHRV group decreased in their choices of the best deck over time in comparison to the high vmHRV group (F(1,47) = 8.00, p < .01). Additionally, the low vmHRV group made more choices of the worst deck overtime (F(1,47) = 6.65, p < .05), while the high vmHRV group showed an initial increase in choices, but fell back to base levels (quadratic trend; F(1,47) = 4.549, p < .05). On the bad deck, both vmHRV groups decreased in their choices overtime (each linear decrease p < .05) and no significant results were found in the good deck (no significant linear or quadratic trends). Taken together these results suggest that vmHRV may index the ability to use inhibitory mechanisms and make adaptive decisions in a complex environment.

136) Abstract 1676
RESTING HIGH FREQUENCY HEART RATE VARIABILITY PREDICTS PERFORMANCE ON THE LOADED SIMON EFFECT TASK: IMPLICATIONS FOR DUAL-INHIBITORY PROCESSES
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There is a growing literature suggesting that individual differences in resting high frequency heart rate variability (HF-HRV) are related to performance on working memory tasks. However, in many real life situations, individuals are called upon to perform more than one task at a time (a dual task). Our group recently created a dual-inhibitory attentional measure, the Loaded Simon Effect task (LSET), which assesses dual inhibitory and attentional processes. In the present study, we examined if resting HF-HRV could predict performance on the LSET, paradigm, participated complete two working memory-related tasks (free recall and additive recall; background tasks), where participants were responsible for correctly remembering target (odd) numbers. They also simultaneously completed the Simon Effect task where participants were responsible for accurately responding to the spatial positioning of a target number (number; considered the foreground task). In both the foreground and background tasks, participants were responsible for inhibiting irrelevant information (distractor arrow in foreground task, even numbers in background task) that could lower accuracy on both tasks – making this task dual-inhibitory. HF-HRV was analyzed in accordance with the Task Force guidelines. Higher resting HF-HRV was associated with better performance during both free recall, (r = .364, p = .007) and additive (r = .259, p = .043) recall conditions. Higher HF-HRV was also associated with better free recalling the number sequence, (r = .297, p = .024), and correctly summing the numbers in the additive recall task, (r = .384, p = .005). These results add to the growing literature on the effects of individual differences in resting HF-HRV on cognitive performance and extend them to a dual task situation. These findings may have implications for many real life situations in which persons must divide their inhibitory resources among more than one task.

137) Abstract 1114
CHILDHOOD ABUSE AND SUBCLINICAL CARDIOVASCULAR DISEASE AMONG MIDLIFE WOMEN: MODIFYING ROLE OF SLEEP DURATION
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Background: Childhood abuse is a well-known risk factor for adult mental health problems. However, its role in adult physical health conditions, particularly chronic diseases such as cardiovascular disease (CVD), is less well understood. Further, how adult health behaviors such as sleep might modify the relationship between a history of childhood abuse and adult health is typically not considered. Notably, sleep is often chronically disrupted during midlife for women and may play a role in how childhood exposures impact adult health. The study aim was to test whether a history of childhood abuse was related to higher subclinical CVD among midlife women. We also examined a modifying role of sleep duration in these relations.
Methods: 300 nonsmoking women (72% white, 28% nonwhite) free of clinical CVD and aged 40-60 were recruited. Women completed physical measures (height, weight, blood pressure); 3 days of wrist actigraphy to quantify sleep duration; a blood sample to quantify lipids, insulin, and glucose; and a carotid ultrason to quantify carotid intima media thickness (IMT); and a battery of psychosocial questionnaires including the Childhood Trauma Questionnaire, a validated measure of childhood abuse. Associations between childhood abuse and carotid IMT were tested via linear regression with covariates age, race, education, body mass index, blood pressure, lipids, homeostatic model assessment, shift worker status, and cardiovascular medication use. Depressive and anxious symptoms were also considered. Actigraphy-assessed sleep duration was considered as a moderator, categorized at the median: ≤ 6 hours vs > 6 hours.
Results: 24% of women had a childhood history of emotional abuse and 20% had a childhood history of physical abuse. A history of childhood physical or emotional abuse was associated with higher mean IMT [physical: B = (standard error, SE)=.04(.01), p=.004; emotional: B(SE)=.03(.01), p=.03] and maximal IMT [physical: B(SE)=.06(.02), p=.006; emotional: B(SE)=.05(.02), p=.02] in multivariable models. Sleep duration significantly modified these associations (interaction p<.05), with elevated IMT associated with a history of abuse largely among women with ≤ 6 hours of sleep (Figure). Depressive or anxious symptoms had little impact on study findings.
Conclusions: A history of childhood physical or emotional abuse may be associated with elevated risk for subclinical CVD at midlife in women, particularly for women getting insufficient sleep. Screening for abuse history and sleep problems may be warranted in efforts to reduce CVD risk in women.
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138) Abstract 1136
FREQUENCY OF HELPING ONE'S FAMILY PREDICTS HIGHER INFLAMMATION LEVELS AMONG ADOLESCENTS WHO VIEW PARENTS AS HARSH AND INCONSISTENT
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The present research examines the association between how frequently adolescents help their families and inflammation in adolescence and, further, whether this association depends upon the nature of adolescents’ relationships with their parents. 261 healthy adolescents ages 13-16 (53.3% female) completed a parenting questionnaire as well as daily diary measures about family interactions over the course of a two-week period. For each day of the...
daily diary period, they indicated whether family members had made demands on them and whether they had helped family members for an hour or more. Measures of systemic inflammation and stimulated proinflammatory cytokine production in response to bacterial challenge were also assessed. Analyses, which control for age, gender, and ethnicity, show that the extent to which adolescents rated their parents as harsh/inconsistent moderated the association between how often they helped their family and C-reactive protein (CRP) (B = 4.8, SE = .23, p = .04), stimulated interleukin 6 (IL-6) (B = 4439.10, SE = 2100.28, p = .04), and stimulated tumor necrosis factor alpha (TNF-α) (B = 1410.50, SE = 687.77, p = .04), but not basal IL-6 (B = .03, SE = .07, p = .65). Similarly, the extent to which adolescents rated their parents as harsh/inconsistent moderated the association between how frequently their family members made demands on them and basal IL-6 (B = .09, SE = .06, p = .10), CRP (B = .42, SE = .20, p = .06) and stimulated IL-6 (B = 4882.86, SE = 2051.86, p = .02), and stimulated TNF-α (B = 1624.17, SE = 678.24, p = .02). Simple slope analyses revealed that these interactions were driven by those adolescents who rated their parents as more harsh/inconsistent. Specifically, among adolescents who rated their parents as more harsh/inconsistent, providing more help to one’s family or having more demands made by one’s family predicted higher levels of inflammation. These patterns did not emerge for adolescents whose parents were low on harsh/inconsistent parenting. These findings suggest that the physiological implications of one’s day-to-day experiences in a family depend upon trait features of the quality of one’s relationships with one’s family.

139) Abstract 1304
EARLY NUTRITIONAL DEPRIVATION HAS SEX-SPECIFIC EFFECTS ON BRAIN SIZE IN OLDER AGE
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Background: Early nutritional deprivation might cause irreversible damage to the brain. Prenatal exposure to undernutrition has been shown to be associated with an increase in central nervous system anomalies at birth and decreased cognitive function in adulthood. Very little is known about the potential effects of early nutritional deprivation on brain size and structure in older age.
Objective: To investigate brain size and structure after prenatal famine exposure at age 68 years.
Methods: Participants were from the Boricua Youth Study, a longitudinal dual site study of Puerto Ricans residing in the South Bronx, NY and the San Juan metropolitan area in Puerto Rico. Trained research assistants conducted home visits in the South Bronx NY and the San Juan metro area in Puerto Rico. Home interviews consisted of a dietary assessment, physical activity, smoking and alcohol consumption and family history of cardiovascular disease. Anthropometric as well as blood pressure measurements were conducted following standard protocol. Blood samples were collected and assayed for high sensitivity C reactive protein (hsCRP), total cholesterol and hemoglobin A1C (HbA1C). Based on prospectively collected (wave 1 2001-2004) parental reports, childhood adversity was defined as child physical or sexual abuse, parental substance use, any parental psychopathology neglect. Because of the small number of participants in the feasibility study adversity during childhood was dichotomized as experiencing any one of the events or experiencing none. We examined the relationship between child adversity and obesity, high CRP, high blood pressure and high total cholesterol collected during the feasibility study.
Results: One hundred and three participants completed the assessment, mean age was 20 years and 52% were male. In the South Bronx, NY, 39% were obese, 24% had elevated blood pressure and 29% had hsCRP (levels above 3.0 mg/L) compared to 21% obese, 21% elevated BP and 17% hsCRP in San Juan, PR. In the South Bronx site, we note a higher prevalence of obesity, high CRP (> 3.0 mg/L) and elevated blood pressure (all p < .05) among participants who experienced any one of the child adversity items. No associations between child adversities and cardiovascular health indicators were noted in the Puerto Rico site.
Conclusions: We note a higher than expected burden of obesity, total cholesterol, pre-hypertension and systemic inflammation, indicative of high cardiovascular disease risk in this population of young adults. Our feasibility study provides evidence of plausible association between prospectively measured child adversities and cardiovascular risk factors. Future studies should examine social context factors that may explain the differences in risk factors, as well as the differential relation with child adversities, noted by site.en child adversities and cardiovascular health indicators were noted in the Puerto Rico site.

141) Abstract 1645
ASSOCIATION OF MOTHERS PERCEIVED STRESS ON SALIVARY CORTISOL LEVELS AMONG LOW-INCOME CHILDREN
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Prior studies have suggested that stress is related to cortisol patterns, yet very few studies have examined the relationship between mothers’ perceived well-being, quality of sleep, and her child’s cortisol levels. The objective of this cross-sectional study was to examine whether a mother’s perceived daily stress and sleep ratings could have an effect on her children’s cortisol levels. The initial sample included 34 low-income mothers (age range=25–46 years, M=32 years; 67% earned less than $25,000 in total family income per year) and 34 children (age range=4 months – 10 years). Due to attrition and incomplete data collection, the final sample size was 18 mothers and 18 children. The mothers self-reported their perceived stress ratings (self-perceived stress) and sleep quality ratings on a Likert scale (from 1 to 5) and collected their salivary cortisol at 4 different times–points throughout one collection day (upon waking, 30 minutes after waking, 4pm and bedtime). On the same collection day, the mothers also reported how stressed they thought their child was (child’s perceived stress) on a Likert scale (from 1 to 5) and collected their child’s salivary cortisol upon waking (collection times ranged from 6am to 9am) and at 8pm. Hierarchical regression analyses revealed that mothers with high levels of self-perceived stress had children with higher-than-normal levels of morning cortisol (R²=.44, p<.01). Additionally, mothers sleep quality ratings (high ratings indicate a greater sleep satisfaction) had little to no effect on their child’s morning cortisol (R²=.44, p=.83). These results suggest that mothers’ perceived stress levels are directly correlated with their children’s cortisol levels. In conclusion, interventions that focus on stress management are necessary not only for mothers’ health and well-being but also for their children’s health and well-being.
142) Abstract 1120
DEVELOPMENT OF A NOVEL WEB-BASED GROUP INTERVENTION FOR OVARIAN CANCER SURVIVORS
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Objective: Ovarian cancer (OC) is an extremely lethal disease, and patients commonly report high distress and changes in social support during and after initial treatment. Development of psychosocial interventions for OC survivors has been limited. Using focus interview feedback, we have developed an internet-based group intervention for OC patients including elements of Cognitive Behavioral Stress Management (CBSM), Mindfulness-Based Stress Reduction (MBSR), and Acceptance and Commitment Therapy (ACT) tailored to specifically address OC issues. The internet-based platform facilitates home-based delivery of the intervention and is also available via a tablet application. Modules for daily relaxation/meditation, journaling, and review of content are available on the website for home practice. The present study assessed usability, feasibility, and preliminary outcomes of this novel internet-based intervention for OC survivors.
Method: An iterative process of laboratory and field usability testing was conducted with 11 patients to determine ease of utilization of various tablet and web-application components in the laboratory and at home. Subsequently 10 patients in 2 separate cohorts were enrolled for field testing of modules. Groups met weekly for 2 hours. In Qualitative interviews revealed that the intervention helped participants overcome a sense of isolation, and participants appreciated the ability to participate at home. Dealing with technical issues was the most common obstacle.
Conclusions: OC survivors find a web-based intervention usable and feasible and preliminary data suggest the intervention may decrease depressive symptoms and increase a sense of connection. This approach appears promising for reaching isolated OC survivors. Future work should extend this work to randomized controlled trials.

143) Abstract 1196
A SMARTPHONE APPLICATION TO HELP CANCER SURVIVORS COPE BETTER WITH CANCER- OR TREATMENT-RELATED SYMPTOMS: DESIGNING SOCIAL NETWORK FOR CANCER SURVIVORS (SONECS)
Joo-Young Lee, MD, Medical Corps of the third division, Republic of Korea Army, Cheorwon, Gangwon, Republic of Korea, Bong Jin Huh, MD PhD, Kwang-min Lee, M.D., Ji-Yeon Park, Psychologist, Dooyoung Jung, M.D., Psychiatry, Seoul National University Hospital, Seoul, Seoul, Republic of Korea Psychosocial care has been regarded as a crucial component of a quality cancer care. This includes a prompt delivery of tailored information to the patients experiencing cancer- or treatment-related side effects. Only less than optimal amount of information is being provided during time-constraint clinical appointments in which patients may negatively affect patient’s quality of life. Nowadays, personal computers and smartphones have the potential to link patients with better medical information. We introduce Social Network for Cancer Survivors (SONECS), designed by researchers from the psycho-oncology department at Seoul National University Cancer Hospital.
SONECS allows the access of cancer patients and their families via desktop computers or/and smartphones. Upon signing in, SONECS acquires users’ demographic and cancer-related information. The side effect profile, using MD Anderson Symptom Inventory (MDASI), is evaluated initially and at users’ discretion afterwards. Eleven common symptom channels were set based on MDASI, all of the articles in SONECS become designated to one of 11 channels. The default filter allows users to receive articles from their personalized channels: combinations of symptoms scoring≥4 in MDASI. Other filters allow users to view articles written by those with same sex, type of cancer, stage of cancer, and/or age group. Inter-user interaction in SONECS is based on users’ likes and replies, and it may happen almost real-time by enabling smartphone push-alarms. To make articles more presentable, users can attach graphic files and add hyperlinks. Researchers initially uploaded psychoeducational materials for each symptom channels, which included evidence-based self-help strategies. Administrators can tag important and evidence-based articles (written either by researchers or users) with “verified” marks to give them higher priority in terms of exposure.
SONECS is expected to connect cancer patients who have similar unmet needs via anecdotal articles, overcoming physical and temporal limitations. Psychosocial benefits of conventional face-to-face support groups may hopefully be replicated in SONECS. Moreover, it is designed to provide users with reliable and relevant information fast without spending too much energy. This may help patients cope better with cancer- or treatment-related symptoms. For further research purposes, SONECS may be a platform to attain patient-reported outcome measures (PROM) as well as qualitative analyses. Currently, SONECS is undergoing a qualitative pilot-test to assess user satisfaction, using patterns, and feasibility. Especially, we are conceiving ways to make SONECS friendly to older Korean population with cancer.

144) Abstract 1219
INFLAMMATORY CYTOKINES AND COGNITIVE FUNCTION IN CERVICAL CANCER PATIENTS BEFORE CHEMORADIATION
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Objective: Subsequent research has documented associations between cognitive deficits and inflammation in cancer patients after chemotherapy. However, less is known about associations of inflammatory cytokines with cognitive functioning prior to treatment. This pilot study examined associations of inflammatory cytokines with cognitive function in cervical cancer patients before chemoradiation as part of a larger study on quality of life. As inflammatory cytokines may be tumor-derived, we hypothesized that we would see elevations in inflammatory cytokines prior to chemoradiation and that higher levels of these cytokines would be associated with poorer cognitive function.
Methods: Adult participants (N = 18) completed neuropsychological testing prior to chemo-radiation for cervical cancer. Salivary cortisol was assessed for two days pre-treatment and morning blood was sampled for inflammatory cytokines (IL-6, IL1b, TNFa, IL-8, CRP) prior to chemoradiation. Measures of verbal learning and memory (Rey Auditory-Verbal Learning Test [AVLT]); auditory-verbal and visual-spatial attention and working memory (Wechsler Digit Span [DS] and Benton Visual Retention Test [BVRT], respectively); and executive functioning (Trail Making Test B [TMB]) were examined. Nonparametric correlations were used to examine associations of cognitive functioning with cytokines, and cortisol. Reading level (Wide Range Achievement Test) was used as a covariate to control for premorbid intellect.
Results: The median age of participants was 47.5 (range 24-77). The median education level of participants was 12 years (range: < high school – post graduate).Mean serum levels of inflammatory cytokines were generally elevated compared to population norms. Higher levels of inflammation (IL-6, IL-1b, TNFa, IL-8, and CRP; all p’s < .05), higher night cortisol (p = .013) and lower cortisol variability (p = .011) were all related to poorer performance on AVLT Recognition. IL-1b was related to poorer performance on BVRT (p = .023). IL-1b (p = .018) and TNFa (p = .020) were related to poorer TMB performance. No relationships were seen between cytokines and DS.
Conclusions: Associations between inflammation and cognitive impairment were most evident in the domains of learning and memory. These findings suggest the hypothesis that tumor-derived inflammation may be affecting cognition prior to treatment in these patients. Replication of these findings in a larger sample will help elucidate the role of inflammation in cognitive deficits pre-treatment in cervical cancer patients.

145) Abstract 1253
COGNITIVE BEHAVIORAL THERAPIES FOR INFORMAL CAREGIVERS OF PATIENTS WITH CANCER AND CANCER SURVIVORS: A SYSTEMATIC REVIEW AND META-ANALYSIS
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BACKGROUND: Informal caregivers (ICs) of patients with cancer and survivors report heightened levels of anxiety and depression due to the burden
associated with providing care. Furthermore, caregiver burden has been found associated with increased physical morbidity and mortality. Given the documented effect of Cognitive Behavioral Therapies (CBTs) on psychological complaints, our aim was to quantitatively evaluate interventions for ICs employing CBT components.

METHODS: Searches were conducted in electronic databases for studies presenting results of a) interventions employing one or more CBT components for b) one or more measures of psychological or physical well-being in c) informal caregivers of cancer patients and survivors. Effect sizes (Hedges’s g) were calculated and pooled for the combined and individual types of outcomes. Study design (randomized controlled trials (RCT) vs open trials (OT); active vs. non-active control; Jadad study quality score), participant (age; % women; patient disease stage; time since diagnosis), and intervention characteristics (intervention format; delivery type; treatment duration, number of sessions) were explored as moderators in meta-regressions.

RESULTS: A total of 36 unique records with sufficient data were identified. A small overall statistically significant effect of CBTs (g=0.08 95%CI: 0.02-0.14 p=0.014) was found, together with small effects on the individual outcomes of psychological, interpersonal, and physical well-being. The effects disappeared when RCTs (K=27) were evaluated alone (overall effect size: g=0.04 95%CI: 0.00-0.08) and when adjusting for publication bias (g=0.01 (-0.05-0.08)). Of the variables explored as moderators, only age (B=0.02; p=0.046) and the percentage of female participants was associated with the effect size (B=0.01; p=0.001).

CONCLUSIONS: Based on the negligible effect of CBTs across outcomes, future studies should consider moving beyond traditional CBTs methods as these do not appear efficacious. We suggest that future interventions orient towards advances in the basic affective sciences in order to better understand and treat the emotional struggles experienced by ICs.

146) Abstract 1326
FACTORS INFLUENCING QUALITY OF LIFE IN WOMEN WITH BREAST CANCER PRIOR TO NEOADJUVANT CHEMOTHERAPY
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Neoadjuvant chemotherapy has been increasingly recommended to women with large or locally advanced breast cancer to improve surgical outcomes and to raise the opportunities for breast-conserving therapy. While the women with breast cancer wait to be treated with neoadjuvant chemotherapy, they could have several distress symptoms diminishing their quality of life and positive psychosocial factors maintaining their quality of life. This study explored the quality of life and related factors in women with breast cancer prior to neoadjuvant chemotherapy.

The participants were women with stage II or III breast cancer waiting their neoadjuvant chemotherapy. Evaluation was conducted 21.15 ± 13.31 days after diagnosis of breast cancer. Self-report instruments used to assess quality of life and related factors included the Functional Assessment of Cancer Therapy-Breast (FACT-B), the Pittsburgh Sleep Quality Index (PSQI), the Hospital Anxiety and Depression Scale (HADS), the Fatigue Severity Scale (FSS), the M.D. Anderson Symptom Inventory (MDASI), the Multidimensional Scale of Perceived Social Support (MSPSS), the Adult Dispositional Hope Scale (ADHS), and Connor-Davidson Resilience Scale (CDRS). Mean FACT-B total score in the participants was 101.56 ± 18.60. Mean PSQI score (5.69 ± 2.67) indicated mild sleep disturbance and mean of anxiety (6.91 ± 3.56) and depression (6.98 ± 4.06) in HADS score indicated borderline. Whereas mean FSS score (28.60 ± 12.43) indicated normal. There was a significant correlation between FACT-B and PSQI (p=0.027), HADS (p<0.001), FSS (p=0.001), MDASI (p=0.001), MSPSS (p=0.005), ADHS (p=0.041) or CDRS (p=0.005). In a multiple regression analysis, most of the predictors of quality of life was anxiety 33.4%. Altogether perceived social support and dry mouth explained 51.7% of the variance of quality of life in the participants.

These results suggest that women with breast cancer prior to adjuvant chemotherapy who are at higher risk for diminished quality of life are those who have symptom of anxiety, less perceived social support and symptom of dry mouth.

147) Abstract 1339
SLEEP DURATION AND DIFFICULTY IN RELATION TO BREAST CANCER SURVIVAL: RESULTS FROM THE NURSES’ HEALTH STUDY
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That cancer affects not only the patients but also their family members has been documented mainly on psychological distress. In recent years, a growing number of studies examined the effects of perceived stress of having cancer in the family on one’s physical health. This study aimed to extend current knowledge by differentiating the perceived stress of cancer for oneself from that for the family, investigating both stress (Alpha-Amylase: AA) and anti-stress (dehydroepiandrosterone-sulfate: DHEA-S) neuroendocrine biomarkers, and testing dyadic effects of stress on biomarkers.

A subsample of patients recently diagnosed with colorectal cancer and their family caregivers was included in the initial analyses (n = 60 dyads: 52 years old; 62% female; 60% Hispanic). Participants reported their perception of the stress the cancer imposed on themselves (CaSt_F), and on their family members (CaSt_S), which served as primary predictors. Participants also collected saliva at wake-up and bedtime for two consecutive days. AA and DHEA-S from the saliva sample were assayed and served as the primary outcomes. Individuals’ age and gender were covariates. Data reported here are from the initial assessment about 3 month post-diagnosis. Actor-Partner Interdependence Modeling in SEM framework revealed that females had lower DHEA-S at wake-up (both patients and caregivers, β=-.28, -.32, p<.02), and among caregivers, older age related to greater AA and lower DHEA-S at wake-up (β=-.28, -.41, ps<.02). Contrasting for these effects, patients’ CaSt_S related to elevated awakening AA (β=-.36, p<.03); patients’ CaSt_F related to larger decrease in AA of their caregivers from wake-up to bedtime (β=-.35, p<.03); and caregivers’ CaSt_F related to larger decrease in DHEA-S of their patients from wake-up to bedtime (β=-.30, p<.02).

The dyadic effects found in patients’ perception that cancer is a stressor to the family on family’s biomarkers provide the first evidence that cancer is a physical stressor of the family. Findings suggest that the stress evoked by the cancer diagnosis in the family is substantial, readily manifested in biomarkers.
that are typically related to chronic stress. Findings also highlight the need for further investigation of the role of cancer-related stress in long-term health outcomes of both patients and family members.

149 Abstract 1648

CHRONIC STRESS EXPOSURE PREDICTS DEPRESSIVE SYMPTOM TRAJECTORIES OVER ONE YEAR IN OVARIAN CANCER PATIENTS

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Exposure to recent life stress is known to predict the development and clinical course of depression in the general population. Although it is generally assumed that stress exposure also influences depression levels in specific populations, such as ovarian cancer patients, few longitudinal studies have been conducted on this topic and none of these studies have employed gold-standard measures of life stress and depression. To address this issue, we recruited 88 women with suspected ovarian cancer (Mage = 59.3 years; SD = 11.4 years) and followed them longitudinally over one year to examine prospective associations between participants’ life stress exposure prior to surgery and their depressive symptoms over one year. All of the acute life events and chronic difficulties that participants experienced in the two years prior to surgery were assessed using the interview-based Life Events and Difficulties Schedule, which is a state-of-the-art system that involves administering a comprehensive semi-structured interview (~2 hours) to identify stressors that are in turn evaluated by an independent team of expert raters (~1.5 hours). In addition, participants’ depressive symptoms were assessed at the baseline (surgery) visit, and then again at 6-months and 12-months following surgery, using the Center for Epidemiologic Studies Depression Scale. Repeated measures ANOVA revealed that depression levels declined for the sample as a whole over the one year post surgery, F(2,172) = 10.86, p < .001. This main effect of Time was not moderated by the cumulative severity of the acute life events that participants experienced prior to surgery, p > .15. However, there was a significant Time × Chronic Difficulty interaction, F(2,172) = 3.84, p < .023. Decomposing this interaction revealed that depression levels decreased over time for participants experiencing low and moderate levels of pre-surgery chronic stress exposure (p < .03) but not for participants experiencing high levels of pre-surgery chronic stress exposure (p > .49). High levels of chronic (but not acute) life stress may thus represent a prospective risk factor for unremitted depression following ovarian cancer surgery. Additional research is needed to elucidate the biological mechanisms underlying these associations and to test adjunctive treatments for reducing depressive symptoms in ovarian cancer patients experiencing high levels of stress.

150 Abstract 1148

DEPRESSION AS A MODERATOR OF THE RELATIONSHIP BETWEEN POOR SLEEP QUALITY AND CIRCULATING IL-6 IN WOMEN WITH CHRONIC FATIGUE SYNDROME/ MYALGIC ENCEPHALOMYELITIS (CFS/ME)

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Background: Chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) is a debilitating immune-related illness that is characterized by a cluster of interrelated symptoms such as fatigue and unrefreshing sleep. Chronic poor sleep quality is related to pro-inflammatory cytokines IL-2, IL-6, and TNF-α in women with CFS/ME. Depressive symptoms are also comorbid with CFS/ME and have been related to elevated pro-inflammatory cytokines in other conditions. The aim of this study was to evaluate the moderating role of concurrent depressive symptoms on the relationship between subjective sleep quality and inflammation in a sample of women with CFS/ME.

Methods: Ninety-five women diagnosed with CFS/ME self-reported sleep quality with the Pittsburgh Sleep Quality Index (PSQI), and depression using the Center for Epidemiological Studies Depression Scale (CES-D). Circulating inflammatory cytokines in plasma were assayed using a multi-plex ELISA system. Associations were determined by regression analysis using age as a covariate and CES-D scores as a moderator.

Results: Moderation analysis using the interaction between poor sleep quality and depression showed that the effect of poor sleep quality on greater circulating IL-6 was moderated by greater depression levels, [F(4, 86) = 3.736, p=0.008], explaining 14.8% of the variance in IL-6. The addition of the interaction term accounted for 4.9% of the variance in IL-6, and after controlling for other variables R²=0.049, F=4.952, p=0.028. Simple slope analysis revealed that depression has a significant, positive moderating effect on the relationship between poor sleep quality and IL-6 for CES-D scores above 21, which is slightly above the clinical threshold value for depression (CES-D=16). Depression was not a significant moderator for sleep’s association with IL-2 or TNF-α (both p’s<0.05).

Conclusion: Depression moderates the relationship between poor sleep quality and circulating pro-inflammatory cytokine IL-6 levels in women with CFS/ME, such that poor sleep quality and inflammation are more positively correlated in women with higher levels of depression. Future research should examine whether targeting sleep-focused interventions to CFS/ME patients with elevated depressive symptoms can modulate inflammatory processes and improve sleep quality and other symptoms of this poorly understood chronic illness.

151 Abstract 1434

OXYTOCIN IS EXPRESSED BY MURINE MACROPHAGES, VASCULAR CELLS AND PANCREATIC ISLET CELLS.

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Objective: Oxytocin (OXT) regulates reproductive events, inflammation, and energy metabolism throughout the body by binding to its receptor (OXTR), and it is generally believed that the source of this OXT is from the hypothalamic/posterior pituitary axis. Typically, plasma OXT levels are low (1-10 pM) which is far below the Kd for the OXTR (~1 nM). In addition, OXT has a short half-life in the circulation (3-5 minutes). Taken together, this suggests that not all of the peripheral OXT effects are the result of pituitary release, but rather may come from local sources. We therefore hypothesized that peripheral tissues that express OXTR (including macrophages, vascular cells, and pancreatic islet cells) also express OXT, which may have important autocrine/paracrine functions.

Methods: OXT and OXTR gene expression were evaluated in mouse aortic tissue, a mouse macrophage cell line (RAW 264.7) and mouse insulinoma pancreatic beta cells (beta-TCS) using quantitative RT-PCR. The aorta and the pancreas were collected from C57BL/6J and atherosclerosis-prone ApoE−/− mice. The tissues were formalin fixed and processed for histological identification. Using quantitative RT-PCR, it was demonstrated that OXT and OXTR mRNA were present in mouse aortic sections of non-prone ApoE−/− mouse tissue, a mouse macrophage cell line (RAW 264.7) using quantitative RT-PCR. The aorta and the pancreas were formalin fixed and processed for histological identification. Using quantitative RT-PCR, it was demonstrated that OXT and OXTR mRNA were expressed in the mouse macrophage cell line, pancreatic beta cell line and in aortic tissue. Immunofluorescence staining of OXT was used to confirm the presence of protein in mouse tissues. OXT immunofluorescence was observed in aortic sections of non-diseased mice, predominantly in the medial layer associated with smooth muscle cells. In the atherosclerotic ApoE−/− mouse, there was also OXT labeling within the atherosclerotic lesion (neo-intima) associated with tissue resident macrophages. In the pancreas, OXT immunoreactivity was observed within peptide producing islet cells.

Conclusions: These data demonstrate that peripheral tissues including the aorta, pancreas, and macrophages express OXT and OXTR, suggesting that OXT expression/release is not limited to the hypothalamic/pituitary axis. This raises the possibility that OXT may have autocrine/paracrine actions that may be important for the regulation of OXT function in normal and diseased tissues.

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College students frequently experience high levels of stress contributing to an increased prevalence of depressive symptoms. Dispositional mindfulness has been found to ameliorate psychological stress and depression in adults. Using our laboratory’s model of mindfulness as an ameliorative factor in stress-health pathways, this study sought to explore an association of dispositional mindfulness with depressive symptoms and stress in undergraduate college students. We hypothesized students with more perceived stress (Perceived Stress Scale; PSS) would report greater depression (Beck Depression Inventories; BDI). Further, we predicted that students with greater mindfulness (Five Facet Mindfulness Questionnaire; FFMQ) would report less perceived stress and depression.

Participants (n = 59) were predominately Caucasian (71.2%) females (86.4%) with a mean age of 21.47 (sd = 3.88). Hypothesized relationships were assessed using hierarchical multiple regression, adjusted for GPA, hours of paid employment, minority status and living situation.

As predicted, perceived stress was positively associated with depression (BDI: β = .729, p < .001). Further, students reporting higher dispositional mindfulness had significantly less perceived stress (PSS: β = -.283, p = .007) and fewer depressive symptoms (BDI: β = -.453, p = .002). Post-hoc analyses showed that perceived stress fully mediated the relationship between dispositional mindfulness and depressive symptoms.

These findings suggest that mindfulness in undergraduates is associated with positive mental health and comparatively low perceived stress. Findings from post-hoc mediation analyses could help to better inform avenues in which to understand the effects of perceived stress on depression in undergraduate students. Based on these promising findings, future research could profitably investigate whether mindfulness mediates the relationship between dispositional mindfulness and depressive symptoms.

153) Abstract 1391

CHANGES IN AUTONOMIC FUNCTIONS AND BLOOD BIOMARKERS BY PRACTICING ISOMETRIC YOGA IN PATIENTS WITH CHRONIC FATIGUE SYNDROME

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Objective: We have demonstrated that isometric yoga improves the pain and fatigue in patients with chronic fatigue syndrome (CFS) syndrome who are resistant to conventional therapy by a randomized, controlled trial. The aim of this study was to investigate its possible mechanisms by comparing autonomic function and blood biomarkers before and after practicing isometric yoga.

Method: Twelve patients with CFS who hadn’t improved satisfactorily even after the conventional therapy for at least 6 months practiced isometric yoga (biweekly 20 min practice with a yoga instructor and daily home practice) for eight weeks. The short-term effect of isometric yoga on fatigue was assessed by administering of the Profile of Mood Status (POMS) questionnaire immediately before and after the final yoga session with the instructor. Autonomic nervous function test (heart rate, systolic and diastolic blood pressure, heart rate variability) and blood biomarkers (DHEA-S, prolactin, MHPG, acetylcholine, BDNF, TGF-b1, IL-6, and TNF-a) were also compared before and after practicing yoga.

Results: Practicing isometric yoga significantly reduced the POMS fatigue score (p<0.001). It also reduced heart rate (p<0.05) and increased the HF component of the heart rate variability (p<0.05). Furthermore, it increased serum levels of DHEA-S (p<0.05) significantly, had a tendency to reduce serum level of prolactin (p = 0.01), and reduced serum level of TNF-a (p<0.05).

Conclusion: As changes of these parameters are associated with the reduction of subjective feeling of fatigue, changes of the above-mentioned parameters might be associated with fatigue-relieving effect of isometric yoga in patients with CFS.

154) Abstract 1485

THE HEALTH EFFECTS OF A MINDFULNESS INTERVENTION ADAPTED FOR HISPANIC PRIMARY CARE PATIENTS

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Substantial risk factors (e.g., high poverty rates, acculturative stress) exist for Latinos that are manifested in significant health needs and inequities. The purpose of this study was to examine the potential of mindfulness-based interventions for facilitating health changes in Latinos, as well as reducing attrition. The participants were 23 Latino primary care patients who completed an eight-week Mindfulness-Based Stress Reduction (MBSR) course. The course was adapted for Latinos by including (1) motivational interviewing, (2) problem-solving retention barriers, (3) testimonial by a past Latino participant, and (4) increasing perceived applicability. Pre-to-post changes in mindfulness were examined through the Five Facet Mindfulness Questionnaire (FFM; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), as well as in health through the Health Survey Short Form 36 (SF36; Ware, Snow, Kosinski, & Gandek, 1993).

Of the 30 participants who began, 26 (87%) completed at least 5 of the 8 sessions, a statistically greater proportion than in previous studies with Latino participants (60-66%). The results indicated significant increases over time in mindfulness, t(22) = 3.49, p < .001, d = .88. Additionally, there were significant increases in both mental (t(22) = 5.84; p < .001, d = 1.27) and physical health (t(22) = 4.05; p < .001, d = 0.85).

155) Abstract 1548

EFFECTS OF MUSIC LISTENING ON STRESS AND COUPLE INTERACTION IN EVERYDAY LIFE

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Objective: Music listening in daily life has been shown to reduce stress. It has furthermore been demonstrated that this stress reducing effect is increased if music listening takes place in a social context. Yet, to date it is unclear whether music listening has beneficial effects in the context of romantic relationships by reducing couples’ stress and by improving occurrence and quality of couple interactions.

Methods: A total of N = 40 heterosexual couples was examined by means of ecological momentary assessment. On five consecutive days, both partners were asked to complete six assessments per day on a pre-programmed iPod. These assessments covered items on their momentary stress, on occurrence and quality of contact with their partner. Furthermore, both partners indicated whether they had been listening to music since the last assessment. After each assessment participants provided a saliva sample for the later analysis of cortisol (sCort) and allopregnanolone (aAA).

Results: Men, when having listened to music since the last assessment, reported more subjective stress (UC = 0.15, t(151) = 1.983, p = 0.047), whereas there was no such effect for women (UC = -0.02, t(151) = 0.234, p = 0.815). Concerning the secretion of sCort, the following pattern emerged: Both women and men showed lower secretion of sCort, if the female partner had listened to music (f: UC = 0.27, t(151) = 3.808, p < 0.001; m: UC = -0.21, t(151) = -2.919, p = 0.004). However, when the male partner had listened to music both women and men showed higher sCort secretion (f: UC = 0.25, t(151) = 3.539, p < 0.001; m: UC = 0.20, t(151) = 2.942, p = 0.003). Concerning the activity of aAA, men had higher aAA activity when women had listened to music (UC = 0.23, t(151) = 2.525, p = 0.012) and when they themselves had listened to music (UC = 0.29, t(151) = 3.18, p = 0.002). Music listening affected both the occurrence as well as the quality of interaction only for women: they reported more contact with their partner after having listened to music (UC = 0.06, t(151) = 1.91, p = 0.057), but less contact with their partner when their partner had listened to music (UC = -0.29, t(104) = 2.210, p = 0.027). Furthermore, women perceived their partner interactions as more negative when their partner had listened to music (UC = -0.55, t(104) = -3.315, p < 0.001).

Discussion: Music listening differentially influences stress and interaction of couples: Women seem to benefit to a greater extent from music listening in everyday life concerning reduction of stress, and they seem to engage more in couple interactions after listening to music compared to men. Interventions for promoting beneficial social interactions ought to take into account that women and men differ concerning their use of music in everyday life.
processes by which the two are related. A total of 570 heart surgery patients were included in the study. Based on previous theory and research, the hypothesis was that internal state self-efficacy (IS), physical recovery self-efficacy (PRSE), perceived social support (PSS), positive reinterpretation coping (PRC), and meaning-focused coping (MFC) would mediate the situational optimism-QOL association. These variables have separately been shown to be associated with situational optimism and health outcomes in previous studies. There were several significant indirect effects between optimism and 6-month QOL. The importance of each mediator differed depending on the outcome and the outcomes had varying numbers of indirect effects. First, there was a significant overall effect of situational optimism on physical function. This association was mediated by IS, MFC, and PRC. Second, there was a significant overall effect of situational optimism on self-rated health. This association was mediated by PRSE and PRC. A third finding was a significant overall effect of situational optimism on anxiety. This association was mediated by IS, PR, PSS, and PRC. Fourth, there was a significant overall effect of optimism on depression. This association was mediated by IS, PR, PSS, and PRC. All of the associations between situational optimism and the outcomes became non-significant after the inclusion of the mediators. These results suggest that the association between situational optimism and post-surgical QOL is fully mediated by self-efficacy, social support, and coping strategies. These results further support our understanding of the relationship between situational optimism and post-CABG QOL, including effects on depressive symptoms that may have implications for recurrent cardiac events. This improved understanding may eventually assist healthcare providers in delivering more tailored care that could potentially lead to improved patient outcomes.

157) Abstract 1257
SEX-DIFFERENCES IN THE SOCIAL ENVIRONMENT MODULATION OF MICROGLIA AND THEIR RESPONSE TO ISCHEMIA
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Cerebral ischemia, caused by cardiac arrest or stroke, is a leading cause of death and disability worldwide. Thus, it is important to find ways to facilitate recovery, and improve the quality of life of survivors. More than 20 years ago, it was demonstrated that stroke patients with low social support exhibit slower and less complete recovery than patients with high social support. However, the mechanisms underlying the physiological effects of social isolation on ischemic injury remain unknown. Preclinical studies reveal that isolation increases neuroinflammation, neurodegeneration and functional impairment following cerebral ischemia, therefore we hypothesize that microglia- the innate immune cells of the central nervous system- modulate the detrimental effects of social isolation on ischemic outcome by exacerbating the immune response. Environmental stressors can sensitize microglia to respond in an exaggerated manner upon further immune stimulation, and it is plausible that by triggering similar mechanisms the psychological stressor of social isolation can do the same. To study the effect of social environment on the microglial response to cerebral ischemia, mice were pair housed or socially isolated, and a week later exposed to a cardiac arrest/cardiopulmonary resuscitation (CA/CPR) or sham procedure. Following 24 hours of reperfusion the brains were dissected, homogenized, and resuspended in a percoll gradient to provide an enriched sample of microglia. Then, gene expression of cytokines and cell surface markers was assessed using quantitative polymerase chain reaction (qPCR).

Differential gene expression indicates that the social environment modulates the ischemia-induced inflammatory response differently based on the sex of the mouse. Specifically, following CA/CPR microglia from isolates males mice exhibit increased mRNA expression of proinflammatory cytokines IL-1 and IL-6, while microglia from isolated female mice exhibit increased expression of cell surface protein MHC II. These sex-differences suggest that housing conditions affect brain physiology differently based on sex. All together the data highlight the importance of including male and female mice in cerebral ischemia research, while also providing evidence that social environment can have a substantial influence on the pathophysiological response to cerebral ischemia.

158) Abstract 1277
THE DEVELOPMENT AND FEASIBILITY OF AN INTERNET-BASED COGNITIVE BEHAVIORAL INTERVENTION TO REDUCE DEPRESSION AND/OR ANXIETY AFTER A MYOCARDIAL INFARCTION - THE U-CARE HEART STUDY
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U-CARE: Heart is a randomized controlled trial of internet-based CBT (iCBT) to reduce anxiety and/or depression after a myocardial infarction. iCBT is provided through the U-CARE-portal for a period of 14 weeks with support from a registered psychologist. The development went through roughly four phases: (1) development and testing of the treatment content, (2) feasibility testing of the material in its internet context, (3) feasibility of the recruitment procedure and (4) pilot-testing.

The creation of the intervention was guided by previous research on psychological problems experienced by patients with a recent MI. The intervention was adjusted based on feedback from MI-patients and personnel working in cardiac clinics both in group discussions and individually. Thereafter the material was tested in an internet context after the addition of internet functionality. For example MI-patients were filmed thinking aloud while working with the treatment materials.

As a result the reading material was shortened and made less theoretical, and more cardiac specific examples were added. Further, a web-forum function was kept but a chat function was considered unwarranted, the user-interface was made more intuitive and an instruction video was added.

The participant recruitment procedure was adjusted throughout the feasibility testing and the pilot study. This resulted in transfer of recruitment tasks from the nurses at the clinics to the researchers to be carried out by telephone. A brochure with information about iCBT was produced to be handed out at the clinics.

Collection of blood samples was originally planned but turned out to be not feasible and was dropped.

The acceptability of, and the activity in, the self-help program were examined in a pilot-study including the first 20 participants recruited at the first four collaborating hospitals. Two predefined criteria were used: (a) at least 50% of eligible participants should accept participation, and (b) at least 50% of the participants randomized to iCBT should have submitted at least one homework assignment within three weeks from randomization. These criteria were met and the pilot study proceeded to the main study.

The complexity of developing an intervention study which could be delivered over the internet and target a specific group of cardiac patients proved to be a challenge. As a result, several adjustments were made during each stage of the development process. To this date we have randomized 99 participants from more than 20 hospitals in Sweden.
160) Abstract 1427
SCREENING FOR ANXIETY AND DEPRESSION IN PATIENTS WITH IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD) IN A CARDIAC ELECTROPHYSIOLOGY AMBULATORY CLINIC
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Up to 46% of patients with implantable cardioverter defibrillators (ICDs) experience clinically significant anxiety and depression during the first year post-ICD implantation. There is a well-recognized need for improved screening and intervention for anxiety and depression in general cardiovascular disease populations. The aim of the present study was to examine prevalence rates of anxiety and depression in cardiac patients with ICDs who were screened during recruitment for a behavioral psychology randomized clinical trial (PAM-ICD; NCT02088619). All recruitment occurred in the outpatient electrophysiology clinic during routine follow-up appointments.

Descriptive analyses were conducted on inclusion and exclusion criteria data for the “Positive Psychotherapy To Improve Autonomic Function and Mood in ICD Patients” RCT. The Hospital Anxiety and Depression Scale (HADS) was used to screen for level of anxiety and depressive symptoms. Cutoffs of 5 and 8 were defined prospectively to quantitatively measure levels of anxiety or depressive symptoms in the cohort. The inclusion criteria for the RCT was set at ≥5 for either the Anxiety Scale or the Depression Scale, whereas the cutoff for clinical significance in the literature is ≥8.

There were 185 screened patients with the eligible ICDs (single or dual chamber) (68% male, 57% White, 42% Black). ICDs were mostly placed for primary prevention (70%) and study inclusion required coronary artery disease (41%) or nonischemic cardiomyopathy (29%). On the Anxiety Scale (M=6.1±4.6), 58% and 34% scored at least a 5 or an 8, respectively; on the Depression Scale (M=4.6±3.8), 39% and 19% scored at least a 5 or an 8. Despite these high rates of current symptoms, only 4% were engaged in psychological treatment.

Rates of anxiety and depression in this sample of ICD patients were consistent with rates in previous research. Patients reported currently engaging in limited mental health services, and yet there was a clear demonstrated need for these services based on screening. Routine mental health screening is not a part of general clinical practice in this electrophysiology clinic. This reinforces the need for better screening methods for identification of symptoms as well as referral processes for mental health evaluation and treatment. Of note, in this study all patients screened are also informed of the institution’s behavioral medicine clinic for mental health care.

161) Abstract 1467
TYPE D PERSONALITY WAS ASSOCIATED WITH HYPO-ACTIVITY OF PARASYMPATHETIC SYSTEM AMONG INDIVIDUALS WITH ELEVATED BLOOD PRESSURE
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Purpose: The association between Type D personality and the higher prevalence of hypertensive disease has been proved by empirical research. But the psychopathological mechanisms linking the disease course and Type D personality are largely unknown with autonomic imbalance is one of the candidates. Therefore, the purpose of this study is to examine the association between Type D personality and reactivity of autonomic system among individuals with elevated blood pressure.

Methods: Seventy-five adults with elevated blood pressure (mean age 54 ± 8.54, females=51%) were recruited. They underwent the anger recall task and their heart rate variability (HRV) was recorded during the following stages: baseline (5 mins), anger recall (5mins), anger description (5mins), and recovery (5mins). Type D personality was assessed by Type D Scale-14 and HADS was used to calculate RMSSD and SDNN. Mixed linear modeling was performed to analyze the effects of anxiety and depression (assessed at each time point) on heart rate variability and ECG characteristics and HRV across the 6-month follow-up period.

Results: The QTc interval reduced over time (p<.001), while other measures remained stable. There was a significant interaction of time with indicators of Type D personality (p = .035), which was expected in the current population. In the total sample, depression and anxiety were unrelated to measures of HRV, heart rate and HRV across the 6-month follow-up period. We hypothesized the potential presence of moderating effects of age and sex. Anxiety and depression were included in separate models as time predictors. All patients were optimally treated but with different methods.

Conclusion: The results of this study demonstrated that Type D personality was associated with hypo-activity of parasympathetic system under anger emotional state, which might link Type D personality to the higher risk of hypertensive disease.

162) Abstract 1532
THE ASSOCIATION OF ANXIETY AND DEPRESSION WITH ECG CHARACTERISTICS AND HRV PRECEDING AND FOLLOWING PERCUSSIONARY CORONARY INTERVENTION: THE THORESCU STUDY
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Background: In patients with coronary heart disease (CHD), prognosis may be affected by psychological factors such as anxiety and depression. Heart rate, heart rate variability (HRV) and ECG signal characteristics, such as a long QTc interval, have been linked to increased arrhythmic risk, and might mediate this association.

Objective: The current study aimed to examine the prospective association of anxiety and depression with ECG characteristics and HRV over the first 6 months after percutaneous coronary intervention (PCI).

Methods: In 267 patients (age 63±10 yrs; 25% female) with CHD, a standard 12-lead electrocardiogram was taken within 48 hours before PCI (or ambulance/ER ECG in STEMI patients), and at 1 and 6 months post-PCI. ECG characteristics (QRS width, QTc interval, heart rate) were automatically determined and visually checked. All N-N intervals in the 10-s ECG strip were used to calculate RMSSD and SDNN. Mixed linear modeling was performed to analyze the effects of anxiety and depression (assessed at each time point) on QTc, heart rate and HRV across the 6-month follow-up period. We hypothesized the potential presence of moderating effects of age and sex. Anxiety and depression were included in separate models as time-varying, continuous predictors. All patients were optimally treated and started aspirin, beta blockers, ACE inhibitor and antiocoagulant therapy immediately following PCI.

Results: The QTc interval reduced over time (p<.001), while other measures remained stable. There was a significant interaction of time with indication for PCI, such that patients with a more acute indication showed a greater reduction in QTc (p=.03), which was observed in the current population. In the total sample, depression and anxiety were unrelated to measures of HRV, heart rate or QTc across measurement occasions. Regarding our hypothesized moderators, HRV was significantly reduced (p=.04) and QTc interval was significantly longer (p=.02) in patients over 60 years of age. Women had higher heart rates,
and longer QTc intervals than men across time (p<.001). In these age and sex subgroups, higher anxiety was associated with higher levels of SDNN (p=.04) in patients over 60 years of age, independent of disease severity and sex. In the multivariable models, there were no other significant subgroup effects.

Conclusions: Autonomic control of heart rate was stable over the first 6 months post-PCI. The level and course of electrocardiographic markers, heart rate and HRV over this period were foremost determined by a more acute indication of the PCI, female sex and older age. Depression and anxiety were not associated with heart rate, HRV and ECG characteristics, except for the older patients-subgroup, indicating the probability of parallel risk pathways. Determinants of individual differences in electrophysiological function after PCI may induce a differential prognostic impact, which warrants future research.

163) Abstract 1541
THE EFFECTS OF PROPRANOLOL AND ESCITALOPRAM ON CARDIOVASCULAR STRESS REACTIVITY AND RECOVERY IN HEALTHY VOLUNTEERS
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Objective: Heightened cardiovascular stress reactivity and poor recovery may be one of the processes through which stress promotes cardiovascular disease risk. We investigated the effects of beta-blockers (propranolol) and selective serotonin reuptake inhibitors (SSRIs, escitalopram) on cardiovascular recovery following psychosocial stress. Beta-blockers are frequently prescribed to cardiac patients for the treatment of hypertension, while SSRIs are favoured for the management of depressive symptoms in cardiac patients. However, little is known about the effects of these drugs on cardiovascular stress reactivity and recovery among healthy individuals.

Methods: We randomised 81 healthy volunteers to 7-day treatment with either an oral dose of 80mg propranolol, 10mg escitalopram, or placebo medication in a double-blind fashion. Following treatment, participants underwent a modified version of the Trier Social Stress Test (TSST). We monitored blood pressure (BP) and heart rate (HR) continually throughout the testing session. The post-task recovery period lasted 75 minutes.

Results: All three treatments showed increases in HR, cardiac index (CI), systolic (SBP), and diastolic blood pressure (DBP) in response to the psychosocial stress tests (all p < .001). Stress-induced changes in cardiovascular parameters were adjusted for age, sex, BMI, and smoking status. Baseline HR and CI were reduced with propranolol, and cardiovascular stress reactivity was blunted. However, propranolol had no effect on cardiovascular recovery. BP reactivity did not differ across groups. However, participants receiving escitalopram had higher SBP compared to other groups at 45 min and 75 min post-stress (p=0.006 to 0.051). The escitalopram group also had higher DBP at 45 min compared to propranolol (p=0.053) and placebo (p=0.015). Subjective stress ratings did not differ between the drug groups indicating that cardiovascular effects were not secondary consequences of subjective treatment effects.

Conclusions: Beta-blockade reduced cardiac stress responses while escitalopram was associated with poor BP recovery following stress. Results suggest that beta-blockade may protect against the cardiovascular effects of stress. However, impaired cardiovascular recovery seen in the escitalopram group merits further investigation.

164) Abstract 1552
RESPIRATORY RATE AND ITS VARIABILITY IN HEART FAILURE PATIENTS
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Objective: An important symptom of heart failure (HF) is dyspnea, which is usually accompanied by tachypnea and abnormal breathing pattern in a form of the Cheyne-Stokes respiration characterized by progressively deeper and sometimes faster breathing, followed by a gradual decrease that results in apnea. The changing pattern of breathing in HF translates into an increased variability of the respiratory rate. Both the increased respiratory rate and the presence of Cheyne-Stokes respiration translate in poor prognosis in HF patients. However, the association of the respiratory rate (RR) and its variability (RRV) with clinical condition in patients with HF has not yet been studied. The study aim was to assess the relationship between the resting RR and RRV with the structure and function of the cardiovascular system in HF with reduced ejection fraction (LVEF) <50%.

Methods: For this study 295 patients recruited originally for the "Predicting adverse clinical outcomes in patients with implanted defibrillating devices" prospective study funded by Foundation for Polish Science were enrolled. All these patients fulfilled the following criteria:LVEF<50%; preserved atrial systolic function (sinus rhythm or atrial triggered ventricular pacing modes (VAT, DDD)); implanted any defibrillating device (ICD). Cardiac structure was assessed by transthoracic echocardiography. Cardiovascular function was measured by transthoracic echocardiography, thoracic electrical bioimpedance, blood pressure measurement, and blood concentration of N-terminal brain natriuretic peptide (NT-proBNP). Mean resting respiratory rate and its variability were calculated from 30-minute resting thoracic bioimpedance recordings. In statistical analysis, patients were divided into 5 equal groups (quintiles Q1-Q5) according to either mean resting respiratory rate or its variability.

Results: Patients with RR had significantly (p>.001) lower maximal pressure gradient across aortic valve, tricuspid annular plane systolic excursion and stroke index, thicker left ventricle posterior wall, larger area of right ventricle and faster resting heart rate. The increased RRV was accompanied by a higher NT-proBNP, greater area of both atria and right ventricle, thicker posterior wall and intraventricular septum, increased E/E', E/A, systolic and diastolic blood pressure, shorter acceleration time of pulmonary flow and reduced cardiac index.

Conclusion: HF patients with LVEF<50% and ICD higher resting RR was associated with worse hemodynamic function while higher RRV with both more dilated chambers of the right heart and left atrium and worse hemodynamic function. Prospective applications of monitoring respiratory variability in HF are warranted.

165) Abstract 1610
SLEEP QUALITY AND DAYTIME SLEEPINESS DO NOT IMPAIR COGNITION IN HEART FAILURE
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Introduction: The possible effects of sleep quality and daytime sleepiness on cognition has generated some interest (Nebes et al., 2009). Moon et al. (2015) recently reported that global sleep quality and daytime sleepiness were generally unrelated to cognitive function in individuals with heart failure (HF), in contrast to earlier studies (e.g., Garcia et al., 2012). We sought to replicate and extend these findings in a larger, well-characterized sample of HF patients.

Methods: Participants were 274 heart failure patients (40.9% women, 26.6% non-white race-ethnicity, mean age = 69.05). Sleep quality and daytime sleepiness were measured with the Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS), respectively. Participants completed a neuropsychological battery to measure cognitive performance. Multiple linear regressions were used to evaluate possible effects of sleep quality and daytime sleepiness on cognitive performance after controlling for age, sex, education, and comorbidities.

Results: Less than half (47%) of the HF patients had poor sleep as indicated by PSQI ≥ 5. Global sleep quality was unrelated to cognitive function after adjusting for covariates. However, daytime sleepiness, as measured by the ESS and daytime dysfunction (PSQI subscale) had mixed results regarding their relationships to cognition. Specifically, the ESS was negatively related to attention, short-term memory, and trial-making tests, but not letter fluency (see Table). However, daytime dysfunction was only related to the trial-making test, such that those with greater daytime sleepiness had poorer cognitive performance.

Discussion: These results largely confirmed those reported by Moon et al. and contrasted with those of Garcia et al. We observed a small relationship between daytime dysfunction or sleepiness and cognition (see Table). This pattern of results suggests that relationships between sleep quality and cognition may be greater in small and dependent populations. However, the associations in the present study population may be small and dependent on sample characteristics of HF patients.
EMOTION RECOGNITION AND HYPERTENSION RISK: THE ASSOCIATIONS OF ELEVATED RESTING BLOOD PRESSURE AND ACCURACY OF EMOTION RECOGNITION

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Elevated resting blood pressure (BP) has been shown to correlate with dampened emotional responses to affect-laden stimuli (McCubbin, Merritt, Sollers, Evans, Zonderman, Lane, & Thayer, 2011). This may reflect interactive changes in central nervous system control of affect and autonomic function in the early stages of hypertension development. Existing research examining the link between BP and emotional dampening involves participant evaluation of emotional expressions in still frame photographs. Research suggests that still frame photographs do not capture the dynamic, dynamic process of emotional expression. Because natural expressions include action (Ekman, 1994), it is assumed that dynamic stimuli are more ecologically valid than static stimuli. This study sought to further explore cardiovascular-emotional dampening through examination of the relationship between resting hemodynamic measures and recognition of emotion in a sample of 105 university students (34 male; 71 female). Participants evaluated emotion expressions of stimuli selected from the Amsterdam Dynamic Facial Expression Set (ADFES). The ADFES is unique in that it contains video clips of standardized emotional expressions for six basic emotions (anger, fear, disgust, joy, sadness, and surprise) and it is thought to be a more ecologically valid representation of emotional expression than still frame photographs (Van Der Schalk, Hawk, Fischer, & Doosjee, 2011). Consistent with prior research examining cardiovascular dampening, participant accuracy in responding and ratings of valance and arousal were recorded as dependent measures. Resting blood pressure and pulse rate were obtained using a Critikon monitor (model 1846, Critikon Inc., Tampa, FL) interfaced with a DELL personal computer (DELL Computer Corporation, Round Rock, TX). Overall recognition accuracy scores were not significantly related to systolic or diastolic BP. However, when looking at individual emotions, regression analyses revealed that diastolic BP (β = -30; t = -2.84, p = .006) was a significant predictor of the accuracy at which fear stimuli are appraised. These findings remained significant after adjustment for gender, ethnicity, age, and body mass index. These results suggest potentially important links among central nervous system regulation of emotions, hemodynamic processes, and hypertension development. This is evident in the link between BP and reduced accuracy in the appraisal of fear stimuli.

PAIN CATASTROPHIZING MEDIATES THE SOMATIZATION-HEADACHE IMPACT AND SOMATIZATION-QUALITY OF LIFE RELATIONSHIPS IN HEADACHE PATIENTS

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Objective: Studies with headache patients suggest that somatization tendency appears to be higher than in the general population and it is associated with their overall functioning and quality of life. To date, few studies have investigated the mechanisms through which somatization affects the functioning and the quality of life in headache patients. The current study examined whether pain catastrophizing mediates the relationship between somatization and headache impact and the relationships between somatization and quality of life in patients with migraine and tension-type headaches. Methods: The study sample consisted of 123 patients with migraine (n=91) and tension-type headaches (n=32) who visited an outpatient clinic in the neurology department at a university hospital in Daegu, South Korea. Patients completed the somatization and anxiety subscales of the SCL-90-R, the Patient-Health Questionnaire-9, the Pain Catastrophizing Scale (PCS), the Toronto Alexithymia Scale (TAS-20), the Headache-Impact Test-6, and the SF-8. Results: A stepwise multiple regression analysis predicting headache impact found that the rumination score of the PCS (β=0.24***) was significant. PREDICTORS OF CHANGES IN PAIN LEVEL IN PATIENTS WITH NON-CARDIAC CHEST PAIN AND PANIC DISORDER

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Background: An estimated 6 million Americans consult in an emergency department for non-cardiac chest pain (NCCP) each year. The burden of NCCP is high and its course is chronic in up to 80% of cases. From 20 to 70% of patients with NCCP meet diagnostic criteria for panic disorder (PD). This high level of comorbidity could be explained by common psychological mechanisms such as anxiety sensitivity, cardiac anxiety and panic attacks.

Objectives: 1) To investigate how anxiety sensitivity and cardiac anxiety (fear, attention and avoidance of cardiac symptoms) affect chest pain intensity in patients with PD and NCCP; and 2) to document the association between these factors and changes in NCCP levels over a 3-month period.

Methods: Thirty-three patients suffering from NCCP and PD were recruited in emergency departments (mean ages=41, SD=13). At baseline, the Anxiety Disorder Interview Schedule for DSM-IV (ADIS-IV), the Cardiac Anxiety Questionnaire (CAQ), the Anxiety Sensitivity Index and the Panic attacks subscale of the PANAS and the Agoraphobia Scale were administered. NCCP severity was assessed using the Short-Form McGill Pain Questionnaire (SF-MPQ). Patients were reassessed 3 months later with the same questionnaires and change scores were computed by subtracting follow-up scores from baseline scores. During this period, 82% of patients received an evidence-based treatment for PD.

Results: At baseline, a significant association was found between the attention subscale of the CAQ and pain intensity explaining 20% of its variance (p = 0.001). There was a significant effect of time for chest pain severity (p = 0.013) but no significant interaction with treatment (p = 0.137) was found in the 53 patients for whom follow-up data were available. Change scores on the fear subscale of the CAQ was the only variable that was significantly and independently associated with SF-MPQ changes scores (p = 0.038), explaining 24% of their variance.

Conclusions: While the level of attention to cardiac symptoms is associated with NCCP severity in patients with comorbid PD, only changes in fear of these sensations appear to be associated with NCCP severity reduction over time. Interestingly, panic disorder severity was not associated with variation in NCCP intensity. Based on these results, treating PD may not be sufficient to reduce NCCP symptoms in patients with both conditions.
Process macro. Both direct (β=.17, 95% CI [.59, 1.07], p=.005) and indirect effects (β = .14, 95% CI [.08, .21]) of somatization on headache impact were significant, suggesting a partial mediation effect of ruminiation. The mediation effect of helplessness on the association between somatization and the physical QOL was also significant. Both the direct effect (β=.35, 95% CI [-.46, -.25], p<.000) and the indirect effect of somatization (β =-.13, 95% CI [-.20, -.06]) were significant, suggesting a partial mediation effect of helplessness on the somatization-physical quality of life relationship.

Conclusion: Current findings demonstrate that somatization tendency has a negative impact on the overall functioning and the physical quality of life in headache patients. The ruminiation and helplessness subscales of the PCS partially mediated these associations. Headache patients may benefit from interventions aiming to decrease the tendency of ruminiation and helplessness in order to improve their functioning and quality of life.

169) Abstract 1380
ASSESSMENT OF PAIN: COMPARISONS BETWEEN SELF-REPORT AND EXPERIMENTAL MEASURES
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Background and aims. Pain measurement is one of the most problematic issues in contemporary pain medicine. An ongoing discussion is whether asking individuals about their pain provides comparable information as experimental pain assessment. Indeed, experimental pain assessment is time-consuming, costly, and constitutes an invasive experience for the participants, and thus, alternate measures of pain should be of great interest. Results so far have been inconsistent. Therefore, the aim of this study was to compare experimental pain and self-reported pain to provide evidence about the relevance of the latter for pain assessment.

Methods. A total of 93 participants were enrolled in a larger project focusing on stress and endogenous opioid regulation of pain. They answered questions about their SRF sensitivity using the Pain Catastrophizing Scale, and went through one experimental pain assessment, including a cold pressor task and a heat pain induction/thermode summation task. Measures of psychophysical pain (threshold and tolerance), intensity rating, and subjective evaluation of pain (McGill Pain Questionnaire) were assessed during and after the experimental pain assessment. Correlations between self-reported pain and experimental pain were computed, and a meta-analysis was performed to provide an overview of the results.

Overall, the correlations of the Pain Catastrophizing Scale with measures of experimental pain and intensity rating were non-significant, except for tolerance during the thermode summation task (r=−.12, p=.029, R2=1.3%). Correlations between the Pain Catastrophizing Scale and McGill Pain Questionnaire were significant (p=.001) but moderate (r=.35, R2=.123%). The meta-analysis showed that psychophysical experimental pain measures were not significantly associated with the Pain Catastrophizing Scale (b=.101, p=.191), and that only correlations between the Pain Catastrophizing Scale and McGill Pain Questionnaire were significantly (b=.234, p=.012).

Conclusions. Self-reported pain sensitivity was associated with subjective post-evaluation of pain, but not with experimental pain and evaluation during the assessment. The results indicate that self-reported measures cover different and potentially complementary aspect of pain from that obtained using experimental pain measures.

170) Abstract 1015
DIURNAL CORTISOL PATTERNS, FUTURE DIABETES AND IMPAIRED GLUCOSE METABOLISM IN THE WHITEHALL II COHORT STUDY
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Background: Though prediabetes and psychological distress are independently associated with an increased risk of type 2 diabetes (T2D), the combination of both prediabetes and psychological distress might amplify this risk. The present study examined the synergistic interaction between prediabetes and psychological distress on the risk of T2D.

Methods: Data were from the Emotional Well-Being, Metabolic Factors and Health Status study and included 2,478 adults without diabetes at baseline between 40–69 years of age. Baseline data were collected in 2009–2010 which included blood assessments of hemoglobin A1c for determining prediabetes status as well as measures of depression and anxiety, used for assessing psychological distress. In 2014–2015, a follow-up telephone interview inquired about diabetes diagnoses received by health-care professionals since baseline. Statistical analyses compared 5-year T2D incidence rates across groups based on prediabetes status and the presence/absence of high psychological distress at baseline.

Results: In a model controlling for sociodemographic and lifestyle-related characteristics, the group with prediabetes only (OR= 3.34, 95% CI [2.61, 4.29]) and the group with prediabetes and high psychological distress (OR= 5.39, 95% CI [3.32, 8.74]) had an elevated risk of T2D relative to the group without prediabetes and with low psychological distress. The group with high psychological distress only was not more likely to develop T2D than the reference group (OR= .99, 95% CI [0.47, 2.11]). The joint effect of prediabetes and high psychological distress on the risk of T2D was synergistic in sociodemographic-adjusted analyses, as it exceeded additive risk (Synergy Index= 2.16, 95% CI [1.29, 3.62]). When additionally adjusting for lifestyle characteristics (physical inactivity, smoking, and body mass index), the joint effect of prediabetes and high psychological distress on T2D no longer exceeded additive risk.

Conclusions: Psychological distress seems to be associated with an increased risk of progressing from prediabetes to T2D. Lifestyle characteristics may partially account for the synergistic interaction between psychological distress and prediabetes. Overall these findings underscore the importance of considering psychological factors in addition to traditional risk factors for T2D.

95% conf. intervals for correlations between PCS and pain-related measures
172) Abstract 1369
RELATIONSHIPS BETWEEN POSITIVE PSYCHOLOGICAL CONSTRUCTS AND HEALTH BEHAVIORS IN TYPE 2 DIABETES: A QUALITATIVE STUDY
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Background: Among patients with type 2 diabetes (T2D), nonadherence to health behaviors (e.g., healthy diet, physical activity) is strongly associated with complications and mortality. Depression and related syndromes have been linked to nonadherence in T2D, but there has been much less study of the connections between positive psychological constructs (e.g., positive affect, optimism) and health behaviors in this population.
Methods: Semi-structured qualitative interviews were performed in 25 patients with stable T2D recruited from an academic medical center. The interviews focused on participants’ experiences of depression, positive psychological constructs, health behaviors, and their connections. Interviews were transcribed and coded using NVivo software; grounded theory was used as a theoretical structure for the interpretation of interview content.
Results: Participants reported that depression and demoralization impede nearly all health behaviors, that positive affect and optimism are associated with initiation of physical activity and diabetes self-care, and that positive constructs have a lesser effect on other health behaviors. Participation in health behaviors, especially physical activity, in turn, led to greater positive affect and reduced demoralization.
Conclusions: Positive psychological constructs may be associated with specific health behaviors in patients with T2D. Future quantitative and qualitative studies should further examine these findings, and interventions to cultivate these constructs may have the potential to improve key health behaviors in T2D.

173) Abstract 1404
PHYSICAL ACTIVITY AMONG PATIENTS WITH PREDIABETES: SOCIAL MOTIVATORS, BARRIERS, AND PREFERENCES
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Increasing prevalence of prediabetes (PA) is a primary method for preventing type 2 diabetes among those at high risk. Despite the preventive benefits of PA, promoting PA in this population is challenging; little is known about motivators, preferences, and barriers specific to this group, especially those related to the social environment. The present study assessed these aspects of PA among adults who self-identified as prediabetic (n=142, 54% male, Mage=41, MHBAlc=6.6%, MBMI=28.9 kg/m2). Participants were recruited via web and print advertisements to complete an electronic survey. Most participants (65%) perceived their lifestyles as moderately active, though 85% reported engaging in less than the weekly amount of aerobic activity recommended for prediabetic adults (i.e., 210 minutes per week). Motivation for PA in the past week was higher among those who reported strong (vs. weak) interest in social comparison (i.e., evaluating their status relative to others; r=0.30, p=0.001). Women engaged in less aerobic activity per week than did men (p=0.05, d=0.43) and reported somewhat less motivation for PA in the past week (p=0.08, d=0.34). Women also were marginally more likely to endorse lack of social support as a primary barrier to PA (χ²=2.98, p=0.08). Other primary barriers were lack of motivation (53%) and boredom (34%), which did not show gender differences; unlike the general population, lack of time was endorsed as a primary barrier by only 25% of respondents. The most frequently endorsed motivator for PA was weight loss (61%); only 30% noted preventing diabetes as their primary motivator. With respect to PA program preferences, 80% reported interest in technology-supported programs, such as those that use wearable PA monitors or promote online contact between program participants. Interest in programs that focus on goal setting or exercise form were rated as desirable by only 50% of respondents, and were more popular among men than women (62% vs. 38%). Programs involving six or more sessions were rated as appealing more frequently than one-time workshops (70% vs. 26%). Findings suggest that PA programs involving the use of technology, as well as innovative methods of sustaining motivation and participation in PA, are most successful for adults with prediabetes. In addition, programs that target prediabetic women should promote social support for PA in order to address gender-specific PA barriers.

174) Abstract 1046
POST-TRAUMATIC STRESS SYMPTOMS AND BURNOUT AMONG MEDICAL RESCUE WORKERS 4 YEARS AFTER THE GREAT EAST JAPAN EARTHQUAKE: A LONGITUDINAL STUDY
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Purpose of study
This study aimed to evaluate predictors of PTSD symptoms and burnout at 4 years after the Great East Japan Earthquake among medical rescue workers in Disaster Medical Assistance Teams (DMATs).
Subject and statement of methods
We examined participant characteristics, prior health condition, rescue work experiences, and the Peritraumatic Distress Inventory (PDI) taken at 1 month after the earthquake. Current psychological condition was assessed by the Impact of Event Scale-Revised and Maslach Burnout Inventory administered 4 years after the earthquake. We assessed the predictive value of the PDI and other baseline variables for PTSD symptoms and burnout at 4 years after the earthquake by applying univariate and multivariate regression analysis. Summary of results
We obtained baseline data from 254 participants during April 2-22, 2011. Of the 254 participants, 188 (74.0%) completed the follow-up assessment. The PDI one month after the earthquake predicted symptoms of PTSD (β = 0.35; p < 0.01) and burnout (β = 0.21; p < 0.01). Stress before deployment was an independent predictor for burnout 4 years after the earthquake in these medical rescue workers (β = 2.61; p < 0.05). It seems important for DMAT headquarters to establish a routine system for assessing the PDI of medical rescue workers after deployment and to screen those workers who have high stress prior to deployment.

175) Abstract 1094
SUICIDALITY IN PATIENTS WITH SOMATOFORM DISORDER - THE MEANINGLESS EXPRESSION OF ANGER? Rupert Conrad, MD, Nora Kämperg, MD, Sabine Staufenbiel, MSc, Stefanie Rambau, MSc, Ingo Wegener, PhD, Franziska Geiser, MD, Psychosomatic Medicine and Psychotherapy, University of Bonn, Bonn, NRW, Germany
In recent literature a sample of patients with somatoform disorder showed suicidal thoughts in about a quarter of patients and lifetime suicide attempts in one fifth (Wiborg et al., 2013). In contrast to the clinical relevance of suicidality in somatoform disorders to date there are few studies investigating and identifying relevant risk factors. Against this backdrop we investigated difficulties identifying and describing feelings, trait-anger and anger expression in a sample of somatoform patients with and without lifetime suicide attempts. A sample of 155 consecutive patients diagnosed with somatoform disorder at the Psychosomatic ambul of Bonn University Hospital filled in several questionnaires including the Symptom-Checklist (SCL-90-R), the Toronto Alexithymia Scale (TAS-20) and the State-Trait Anger Inventory (STAXI).
At least one lifetime suicide attempt was documented in 20 patients (12.9%). Somatoform patients with lifetime suicide attempts showed in a analysis of covariance (covariates sex, age, depression) more psychological distress as measured by the Global Severity Index (p<0.001), a higher alexithymia sum score (p<0.002), a higher score on trait-anger (p=0.003) and a stronger tendency to express anger towards other persons or objects (anger out; p<0.001).
Somatoform patients with lifetime suicide attempts show difficulties in identifying and describing feelings and a personality-based tendency to intensely experience and express anger. Our cross-sectional study cannot answer the question, whether there is a causal relationship between problems in identifying and verbalizing anger and suicide attempts. Future longitudinal studies should aim at a deeper understanding of a possible relationship between speechless anger and suicidality to improve prophylaxis and treatment of suicidal behaviour in somatoform patients.

176) Abstract 1398
INFORMAL CAREGIVERS FOR DEMENTIA CAREGIVERS: HIGHER DEPRESSIVE SYMPTOMS AND ALTERED COGNITIVE PERFORMANCE
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Introduction: Dementia caregiving is associated with heightened stress as well as increased anxiety and depression (1). There is also emerging evidence that the chronic stress of dementia caregiving may impact upon central nervous system
activity in informal caregivers (2). The current study aimed to examine the cognitive neurobiology and mental well-being of dementia caregivers.

Methods: Ethical approval was obtained from the Clinical Research Ethics Committee of the Cork Teaching Hospitals. We also conducted a systematic review to gauge the currently known biological impact of family dementia caregiving. Caregivers and controls completed validated tests of stress, sleep quality, anxiety, and depression. Participants also completed cognitive tasks from the CANTAB battery assessing memory, attention and executive function. Stool, blood, urine, hair and saliva samples were collected from caregivers.

Results: Our systematic review indicates evidence of altered HPA axis activity and proinflammatory phenotype in caregivers. Our preliminary study results suggest the presence of higher levels of stress and depressive symptoms than controls. Caregivers also made a higher number of errors on the paired associates learning task (PAL), which engages the hippocampus, suggesting poorer visuospatial memory.

Conclusions: Dementia caregiving is associated with a proinflammatory phenotype and high self-reported stress levels. This likely contributes to higher levels of depressive symptoms and may underpin a possible cognitive neurobiology of caregiving. A comprehensive physiological phenotyping of dementia caregivers is required to better understand the mechanisms of these effects.


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177) Abstract 1414
ASSOCIATION BETWEEN DEPRESSION AND ANEMIA IN OTHERWISE HEALTHY ADULTS FROM THE FRANCE ALCOHOLCOHORT STUDY

Background: Several studies have reported an association between depression and anemia in older adults or clinical populations but it remains unclear whether it would hold in otherwise healthy individuals. This large study aimed to determine whether depression is associated with anemia, as well as high hemoglobin level in an otherwise healthy adult population.

Methods: Hemoglobin levels were measured among 48,686 participants (31,103 men) (mean [standard deviation] age=38.85 [11.45] years), without history of chronic disease or current medication. Depression was determined according to the Questionnaire of Depression 2nd version, Abridged. Sex, age, living status, education level, occupational status, alcohol intake, smoking status, physical activity, body mass index, glycermia and creatinine clearance were included as covariates. Multinomial logistic regression analyses were used to examine associations between depression and three hemoglobin level categories (anemia, high hemoglobin level, or normal hemoglobin level).

Results: Depressed participants were more likely to have anemia compared to non-depressed participants even after adjustment for socio-demographic and health-related variables (OR=1.35; CI 95% [1.17; 1.56]). We did not find any association between depression and high hemoglobin level.

Limitations: Owing to the cross-sectional design of this study, no conclusion about causality can be drawn. Other health-related variables that might confound the association between anemia and depression were not examined.

Conclusions: In adults free of chronic disease from the general population, depression may be associated with anemia but not high hemoglobin level. Further studies are required to assess the longitudinal relationship between both conditions in the general population.
headaches (small effect size, \( \eta^2 = .02 \)), and reported significantly greater interference in daily life from physical pain (small effect size, \( \eta^2 = .02 \)) than Combat Only veterans. Compared to MST Female participants, MST Males were significantly more likely to have one or more chronic medical problems (medium effect size, Cramer’s V = .34) and report chest pain (large effect size, \( \eta^2 = .08 \)); after controlling for age, the latter association disappeared. CONCLUSIONS: The present data suggest that the experience of military sexual trauma may render an individual especially vulnerable to bothersome physical symptoms and long-term pain, specifically headaches and debilitating pain. These differences are unlikely to be rooted in gender, as no significant differences in self-reported somatic or pain symptoms were observed between men and women reporting similar trauma histories. Future studies should oversample female veterans with combat trauma and gather data on childhood sexual trauma to confirm these preliminary findings.

180) Abstract 1123 CURRENT MARIJUANA USE AND METABOLIC SYNDROME AMONG US EMERGING ADULTS BY RACE/EthNICITY

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Background: Marijuana has been shown to lower glucose and insulin levels, suggesting a potential relationship between marijuana use and metabolic syndrome (MetS). Hispanics/Latinos have the highest prevalence of MetS and lowest prevalence of marijuana use when compared to Non-Hispanic Whites (NHW) and Non-Hispanic Blacks (NHB) in the United States. This study examined the relationship between marijuana use and MetS as a function of race/ethnic group.

Methods: Data from a population-based sample of emerging adults (20-to-30-year-old) collected from the 2005-2012 National Health and Nutrition Examination Surveys were analyzed. Participants were excluded if they did not complete the drug questionnaire, reported current use of heroin, cocaine, or methamphetamine along with marijuana use, reported current use of insulin or blood sugar lowering medication, or were pregnant. Current marijuana use was defined as using at least once in the last 30-days. MetS was defined using ATP III guidelines (3 or more of the following): high fasting glucose, triglycerides, systolic/diastolic blood pressure, and waist circumference and low HDL cholesterol. Logistic regression was used to examine the association between marijuana use and MetS adjusting for age, gender, poverty to income ratio, cigarette use, and survey cycle year. Race/ethnicity was tested as a potential moderator to explore the relationship between current marijuana use and MetS among Hispanics, NHW, and NHB.

Results: Among the sample (N=4073), 18% were Hispanic/Latino, 13% were NHB, 62% were NHW, and 7% were listed as other. As expected, Hispanics/Latino emerging adults had the highest prevalence of MetS (9%) and the lowest prevalence of current marijuana use (22%). NHB had the highest prevalence of current marijuana use (44%) and lowest prevalence of MetS (7%). The prevalence of MetS was 8% and of marijuana use was 38% among NHB. Emerging adults who were current marijuana users had less than half the odds of presenting with MetS than never users (adjusted OR: 0.47, 95% CI: 0.26-0.83). The interaction between marijuana use and race/ethnicity was not significant (p=0.23); however, exploratory subgroup analyses showed that Hispanics/Latinos who were current users of marijuana had lower odds of presenting with MetS compared to Hispanic/Latino never users (AOR: 0.15, 95% CI: 0.05-0.45). The relationship between MetS and current marijuana use was not significant among NHB or NHW after adjustments in exploratory analyses.

Conclusions: Current marijuana use is associated with lower odds of presenting with MetS among emerging adults in the United States. This association may be particularly relevant for Hispanic/Latino adults. Future studies should examine temporality and dose-response, as well as potential mechanisms underlying this relationship.

182) Abstract 1078 CARDIOVASCULAR AND CEREBRAL OXYGENATION REACTIVITY TO APPLIED MUSCLE TENSION AMONG PRESYNCOPEAL REACTORS AND NON-REACTORS TO A PHLEBOTOMY PROCEDURE

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Background: Phlebotomy can elicit reductions in blood pressure and cerebral oxygenation and induce presyncope symptoms. Research at blood donor clinics demonstrates that applied muscle tension (AMT) can attenuate these reactions. The current study examined physiological reactivity to phlebotomy among an AMT group and a Control group in a lab setting. Methods: Participants were randomized to an AMT group (n=15) or a Control group (n=7). During the phlebotomy, the AMT group performed rhythmic muscle contractions and the Controls did not. Mean arterial pressure (MAP), systolic blood pressure (SBP), diastolic blood pressure (DBP), stroke volume (SV), heart rate (HR), cardiac output (CO), systemic vascular resistance (SVR) and cerebral oxygenation (rSO2) were continuously measured during a 10-minute baseline, a 498mL phlebotomy, and a 6-minute recovery period. After the recovery period, participants completed the 4-item Blood Donation Reactions Inventory (BDRI). Participants with BDRI scores in the upper third (≥4; n=13) were classified as Reactors whereas those with scores in the lower two-thirds (<4; n=13) were identified as Non-Reactors. Means were calculated for each physiological variable at the following epochs: the first 8 minutes of baseline; 10-second intervals at 0mL, 150mL, 300mL, and 450mL of blood loss; and 1-minute intervals for each of the 6 minutes of the supine recovery period. Change scores were calculated relative to baseline. Results: For each physiological variable, a 2 (Reactors vs. Non-Reactors) x 3 (AMT vs. Control vs. BDRI Reactors) x 5 (Time of phlebotomy and 6 recovery epochs) MANOVA was performed and when necessary Bonferroni-adjusted post-hoc tests were conducted. There were significant 3-way interactions for SBP, SV, CO, SVR, and rSO2 (p<.05), and a marginal 3-way interaction for HR (p=0.053). Among Reactors, using AMT attenuated reductions in SBP, SV, CO, SVR, and rSO2 during the recovery period relative to Controls but post-hoc tests were only significant for SBP. Among Reactors, AMT relative to the Controls attenuated the reduction in SBP at minute 2 of the recovery period (p<0.01). There were significant AMT x Reactor Group and Time x Reactor interactions (p<0.05) for DBP. Post hoc tests of the Time x Group interaction indicated that the Controls had lower DBP than the AMT group at 150 and 450 mL of blood loss and at each minute of the recovery period (p<0.05). Post-hoc tests of the Time x Reactor interaction indicated that Reactors as compared to Non-Reactors had lower DBP during minutes 1, 2, 5, and 6 of the recovery period (p<0.05). Discussion: Among Reactors, the Controls demonstrated greater reductions in SV, CO, SVR, BP, and rSO2 compared to the AMT group. Therefore, AMT may elicit physiological changes that protect against presyncope reactions to phlebotomy.
Background: Emotion-related vasovagal reactions have been conventionally understood as the product of systemic changes in cardiovascular activity. However, recently a complementary perspective, which focuses on specific changes in cerebral vasoconstriction associated particularly with hyperventilation-induced hypocapnia, has emerged. The notion that hyperventilation may contribute to vasovagal symptoms is not new; however, until recently its influences of was left largely unexplored in favour of investigation of cardiovascular indices.

Aim: The present study was a follow-up to a previous study in which we measured the cardiovascular activity of young adults who were exposed to a prototypical vasovagal response-inducing surgery film clip. The aim of the present study was to further examine participants’ emotion-related vasovagal reactions by employing improved measures of changes in respiratory activity. As we were specifically interested in a measure of respiratory activity and cerebral vasoconstriction, we focused on mid-tidal carbon dioxide (ETCO2) before and during presentation of a surgery film.

Method: A sample of students (n = 49) viewed one neutral film followed by a series of 4 counterbalanced 5-minute emotional films (including the surgery film), after which they reported on vasovagal symptoms. Throughout this period, physiological testing equipment was used to obtain blood pressure (oscillometric monitor), continuous ECG and impedance cardiography data (Biopac MP150 system), as well as respiration rate (RR) and ETCO2 (Microcap Plus capnometer). Participants also completed a series of questionnaires including: a brief demographic profile, retrospective reports of history of fainting and of severe dizziness, and a Medical Fears Survey.

Results: Susceptibility to dizziness significantly predicted vasovagal symptom ratings during the surgery film. Those who reported more instances of dizziness showed anticipatory decreases in HR between baseline and neutral films, and had lower RR and higher PEP throughout the study, indicating lower SNS activity. There was a significant decrease in ETCO2 during the surgery film among susceptible participants, without a significant increase in RR. Further analyses revealed participants who experienced a reduction from the neutral film in ETCO2, SBP or both, reported vasovagal symptoms during the surgery film.

Conclusion: These results suggest that while the more systemic cardiovascular measures appear to have been influenced by the initial anticipatory reaction of participants, the additional influence of a fall carbon dioxide levels, possibly associated with hyperventilation, may be important for many individuals.

184) Abstract 1300

THE RELATIONSHIP BETWEEN BLOOD VOLUME AMPLITUDE AND HEART RATE VARIABILITY DURING THE ANGER RECALL TASK

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Methods: Seventy-one adults with elevated blood pressure were recruited (age: 53.61 ± 9.79, female: 63.4%). The excluded criteria were coronary artery disease, stroke, neurologic diseases, liver diseases, kidney diseases, mental disorders, and the use of beta blockers. BVA and HRV indices were collected during the following five stages of the anger recall task: adaptation, baseline, anger recall, anger description, and recovery. The participants were then divided into the following two groups by anger recall reactivity in BVA (%): (1) vasoconstriction group (n = 59, age: 54.02 ± 9.99, male: 62.71%) with BVA (%) less than zero; (2) vasodilation group (n = 12, age: 51.45 ± 8.71, female: 66.67%) with BVA (%) greater than zero. There were no significant differences in age and gender between the two groups.

Results: During the baseline stage, the sympathetic activity indexed by LF/HF ratio of the vasodilation group was marginally greater than that of the vasoconstriction group (t = 3.15, p = .08). In the anger recall stage, there was a significant difference of parasympathetic reactivity indexed by LF/HF ratio change from the baseline stage between the two groups (t = 5.28, p < .05). The parasympathetic reactivity decreased in the vasoconstriction group (-5.62 ± 17.05), but increased in the vasodilation group (7.43 ± 21.81). Moreover, there were significantly negative correlations between BVA reactivity and total HRV reactivity (SDNN, total power) (r = -0.32, < .05; r = -0.30, < .05), as well as between BVA reactivity and sympathetic reactivity indexed by LF/HF ratio change (r = -0.38, < .05) in vasodilation group during baseline stage. Conclusion: 83% of the participants demonstrated a typical vasoconstriction reaction during the anger recall stage. Also, the level of vasoconstriction was associated with sympathetic reactivation. The remaining 17% of the participants showed higher sympathetic nerve activity than the vasoconstriction group during the baseline resting stage, and demonstrated an atypical vasodilation reaction during the anger recall stage while the sympathetic nerve failed to increase as the counterpart of the vasoconstriction group did. This sympathetic hyperactivity might occur among vasodilation group participants with a vigilant response when feeling threatened in an unfamiliar situation.

185) Abstract 1464

STRESSOR EXPOSURE, STRESSOR REACTIVITY AND SYMPATHETIC NERVOUS SYSTEM PROFILES

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Daily stressors, such as an argument with a spouse, a traffic jam on the way to work, or a missed deadline are the minor hassles of life. These minor hassles, however, are not without consequence; compared to stressor-free days, on days people experience stressors, they report diminished affective experience, an increase in physical health symptoms, and an exacerbation of physical health conditions. Studies also indicate that daily stressors are associated with short-term changes in physiological biomarkers, including increased daily cortisol and low heart rate variability. It is unclear, however, whether daily stressors are associated with acute, long-term physical health indices. The current study examined concurrent and longitudinal associations between daily stressor exposure, affective reactivity to daily stressors and sympathetic nervous system functioning. Results indicate that more frequent exposure to daily stressors at T1 is associated with riskier SNS profiles at T2 (B = .56, p = .048). At T2, however, stressor exposure is no longer associated with SNS functioning; instead heightened reactivity to daily stressors predicts riskier SNS profiles (B = 3.19, p = .037). Findings suggest that stressor exposure and reactivity may work in tandem over time to produce clinically-relevant outcomes.

186) Abstract 1596

RESTING HEART RATE VARIABILITY PREDICTS INTRAVENOUS REACTION TIME VARIABILITY ON THE STROOP TASK: EVIDENCE FOR CARDIAC VAGAL TONE AS A MARKER OF PREFrontAL INHIBITORY CONTROL

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Intravenous reaction time variability (IV) is defined as the variability in trial-to-trial response times when completing a cognitive or attentional task. IV is considered a measure of cognitive focus, and greater IV is associated with both cognitive decline and dysfunction in executive brain areas such as the prefrontal cortex. Resting high frequency heart rate variability (HF-HRV) is widely considered a proxy of prefrontal inhibitory capabilities. In fact, cholinergic systems, such as the inhibitory neurotransmitter acetylcholine, have been implicated in the neuromodulation of both IV and HF-HRV. A recent study using the Simon Effect Task showed resting HF-HRV and IV to be negatively correlated, such that those with higher resting HF-HRV were found to have less IV. The current study sought to replicate these findings using the Stroop Task paradigm, a widely validated task designed to measure attentional and inhibitory control. Continuous heart rate data was measured as a sample of 86 participants (mean age = 18.91, SD = 1.56) underwent a 5-minutes baseline-resting period before completing the Stroop Task. During the task, participants were required to name the color of the word presented to them. In the congruent trials, both the color of the word and the word itself were the same (i.e. the word “green” in the color green), and during incongruent trials, the color of the word and the word itself were different (i.e. the word “green” in the color red). Both mean response time (RT) and accuracy (ACC) were recorded with each trial, and IV was quantified as the standard deviation of RTs. When controlling for potential confounds, including RT and ACC, correlation analysis revealed a negative relationship between HF-HRV and IV (rpartial = -.244, p = .025) on incongruent trials only. These results further validate and expand upon the relationship between HF-HRV and IV. IV and HF-HRV share similar neural networks and our evidence further supports this notion. Additionally, results suggest that resting HF-HRV may indeed be a proxy of prefrontal inhibitory capabilities. Further implications and future directions will be discussed.
ATTACHMENT AND CORTISOL ReactIVITY

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Research suggests that attachment anxiety and avoidance are associated with dysregulated patterns of cortisol reactivity to the Trier Social Stress Test (TSST; Kirschbaum et al., 1993), but the findings have not been entirely consistent. Some studies have shown an association between attachment anxiety (but not avoidance) and elevated cortisol secretion (Meuwly et al., 2012; Quirin, Pruessner, & Kuhl, 2008). In contrast, other research suggests an association between dismissive-avoidant attachments (but not anxious-preoccupied) and elevated cortisol secretion, and between fearful-avoidant attachments and suppressed cortisol secretion (Pierrehumbert et al., 2012). Thus, further research is needed to clarify the relationship between attachment and cortisol reactivity.

The current study examines the association between attachment measured by the Experiences in Close Relationships – Revised (ECR-R) scale (Fraley, Waller, & Brennan, 2000) and cortisol secretion in a modified TSST with partner support. The prediction is that higher attachment anxiety and avoidance will be associated with greater cortisol reactivity. This study is part of a larger study examining partner support, Expressed Emotion, and cortisol reactivity. The study is expected to have data from at least 10 participants collected and analyzed by March, 2016. The current results are reported for the first 5 participants. Participants completed the ECR-R and the TSST. Salivary cortisol was collected at baseline and at 0, 10, 25, and 40 minutes following the TSST. Area under the curve (AUC) analyses with respect to ground and intercept were conducted. Preliminary analyses revealed AUCg was negatively correlated with both attachment anxiety (r=-0.67, p=0.21) and attachment avoidance (r=-0.64, p=0.24). In other words, higher anxiety and higher avoidance were associated with reduced cortisol secretion. Similar but weaker trends were found on AUCI and attachment anxiety (r=-0.21, p=0.74) and attachment avoidance (r=-0.18, p=0.77).

It is possible that higher attachment anxiety and avoidance are associated with suppressed cortisol secretion. However, only 5 participants completed the study to date, providing limited data for analyses. More data will be collected and analyzed for further investigation. If accepted for the conference, the results would be presented and discussed.

MATERNAL EXPOSURE TO CHILDHOOD ABUSE IS ASSOCIATED WITH INCREASED RISK FOR ASTHMA AND ALLERGIES IN 2-YEAR-OLD CHILDREN

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Objectives: Exposure to child abuse (CA) is associated with increased risk of developing asthma and allergies; however, if it is unknown if that risk is transmitted across generations. This study investigated if 2-year-old children born to mothers with a history of CA were at an increased risk of receiving a diagnosis of asthma or allergies. Potential mediators of the association between maternal CA and 2-year-old asthma/allergy diagnosis were also examined.

Methods: Data was collected as part of the All Our Babies (AOB) study, a prospective pregnancy cohort established in 2008. Participants included 1,551 women who gave birth to singleton pregnancies, provided data about their own history of CA (assessed retrospectively during pregnancy), and provided information about their child’s medical history at a 2-year follow up visit. Maternal CA included any history of physical, sexual or emotional abuse reported to have occurred before the age of 18, and was coded dichotomously as yes/no. The main outcome was clinician diagnosed asthma and allergy, documented by maternal report when children were 2-years-old. Potential mediators included symptoms of depression, anxiety and substance use assessed in late pregnancy and symptoms of depression, anxiety and breast-feeding history assessed at 2-years-postpartum.

Results: Compared to children born to mothers without a history of CA, 2-year-old children born to mothers with a history of CA were more likely to have been diagnosed with asthma (7.4% vs 4.2%, p = .02) or allergy (15.6% vs 9.2%, p < .001). The main outcome was clinician diagnosed asthma and allergy, documented by maternal report when children were 2-years-old. Potential mediators included symptoms of depression, anxiety and substance use assessed in late pregnancy and symptoms of depression, anxiety and breast-feeding history assessed at 2-years-postpartum.

Conclusions: The results indicate a transgenerational association between maternal exposure to CA and increased risk of asthma and allergy in 2-year-old children. They also point to the potential impact of maternal mental health in pregnancy and the postpartum as important mechanisms linking maternal CA to increased risk of child asthma and allergy.

EFFECTS OF POVERTY ON THE NEURAL REGULATION OF NEGATIVE EMOTION AMONG FIRST-TIME MOTHERS

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Cognitive reappraisal of aversive events is an adaptive emotion regulation strategy associated with well-being. Difficulties in reappraisal have been associated with depression and anxiety. To date, however, little is known about the possible association of poverty and neural regulation of negative emotion among new early postpartum mothers, who are vulnerable to postpartum depression.

We investigated if poverty exposure in first-time mothers was linked to aberrant neural activity in regions involved in emotion regulation while performing an Emotion Reappraisal task (ERT). Poverty was assessed using the income-needs ratio (INR) by dividing income by the federal poverty line adjusted for family size (M = 2.51, SD=1.60). Twenty-eight mothers (Mage = 25.04, SD=5.69), with infants aged 0-6 months, participated in this study.

Functional MRI was used to measure BOLD signal during an ERT. During the LOOK condition, participants simply looked at emotionally neutral images. During the MAINTAIN condition, participants were instructed to look and maintain emotional responses to negatively valenced images. During the REAPPRAISE condition, participants were asked to reappraise (e.g., reinterpret) negatively valenced images to make them less aversive. Participants rated the intensity of their negative affect after each condition (1=least negative, 4=extremely negative). Behaviorally, ratings of negative affect before two conditions, Reappraise and Maintain, were significantly different, t(27) = -3.21, pM=2.94±0.58). Mean ratings decreased from Maintain (M=2.94±0.58) to Reappraise (M=2.42±0.58). Effortful regulation of negative emotions (Reappraise–Maintain ratings) was marginally associated with INR, r=0.34, p=0.08. This suggests that lower income mothers were less effective at reappraising negative content.

Analyses revealed an INR x Condition interaction in the superior frontal gyrus(L), medial temporal gyrus(L), cingulum(R), middle temporal gyrus(L), cingulate gyrus(R), and medial frontal gyrus(L). The Reappraise condition elicited greater activation in the superior frontal gyrus(L), medial temporal gyrus(L), cingulum(R), middle temporal gyrus(L), cingulate gyrus(R), and medial frontal gyrus(L), p<0.05, corrected. Posthoc analyses revealed that neural activation in the following regions during Reappraisal was positively correlated with INR, p’s<0.05.

Overall, poverty-exposed first time mothers (compared to middle income first time mothers) exhibited reduced activity in frontal and temporal regions associated with emotion regulation while engaged in an ERT. These findings suggest that new mothers living in poverty are more likely to have difficulty in effortful regulation of negative emotion, which may increase risks for postpartum mood disorders.

PERPECTIVES OF THE OPTIMISM BIAS ON BEHAVIOR MODELING IN NEW AND PROSPECTIVE PARENTS

Spencer J. Nielson, N/A, Wendy C. Birmingham, PhD, Jordan Sgro, N/A, Kristen Ray, N/A, Emily Hartung, BS, Erin Kaseda, N/A, Chris Herron, N/A, Psychology, Brigham Young University, Provo, UT, Chelsea Romney, BS, Psychology, University of California, Los Angeles, Los Angeles, CA

Background: Childhood obesity is a problem in the US and other industrialized nations. Parental modeling of healthy lifestyle behaviors can contribute to healthier or unhealthy lifestyle choices in maturing youth. Exposing youth to the behaviors of their parents may influence their behavior in positive or negative ways.

New or prospective parents may intend to promote healthy behaviors for the benefit of their children. However, per the optimism bias, future parents may have unrealistic expectations about their ability to maintain healthy lifestyles once the responsibilities of childcare become reality. Future parents might also have an unrealistic view of their ability to change their current lifestyle behaviors when envisioning the future responsibilities of childrearing.

Methods: As part of a larger study, 42 married heterosexual individuals (45% male, mean age = 23; mostly white; mostly educated) completed demographic surveys and a personal interview assessing current and anticipated future health behaviors, including assessments of how parental status would aid in maintaining or improving current health practices. 35 participants indicated...
intentions of becoming parents one day; 7 participants were currently new parents. Results: Both new and prospective parents overwhelmingly viewed parenthood and childrearing as positively associated with healthy behaviors both for themselves and in terms of how they would raise their children (i.e., being a “good example”). Most current (86%) and prospective (78%) parents predicted their health habits as parents with an optimistic bias, such that they would eat healthier, exercise more often, and engage in healthy behaviors if they were currently doing so. In fact most (57%) did not have a realistic expectation of what eating and exercise would entail as a parent. Common statements included: “We would try and be a little bit more health conscious ... to set a good example.” “I would probably be more healthy—stop eating sweets and whatnot.” “I think that it will make me stop being so lazy.”

Conclusions: The optimism bias asserts we forecast our future thinking only of the good things we want to do. Future parents may underestimate the efforts needed to maintain healthy lifestyle behaviors for themselves and their children once they become parents. Future studies should address how to best help new/future parents make realistic plans to create and maintain healthy behaviors both now and when they become parents.

191) Abstract 1588
THE INFLUENCE OF MATERNAL CULTURAL STRESSORS DURING PREGNANCY ON OFFSPRING'S HEART RATE VARIABILITY
Adriana Maldonado, B.A., Kimberly L. D'Anna-Hernandez, Ph.D., Psychology, California State University San Marcos, San Marcos, California
Exposure to maternal stress during pregnancy may predispose offspring to the development of adverse mental health outcomes. The offspring of Mexican-American and Anglo women may be especially vulnerable to the effects of stress during pregnancy as Mexican-American women experience high levels of psychosocial stressors and unique cultural stressors. A physiological marker of this increased vulnerability might be obtained through infant’s heart rate variability (HRV). Heart rate variability, a potential marker of early brain development, has been associated with vulnerability to the development of mental health disorders later in life. Thus, the purpose of the current study was to investigate the association of prenatal exposure to maternal cultural stressors on offspring’s HRV. Mexican-American (n = 19) pregnant women were recruited and information on maternal cultural stressors -collected throughout pregnancy. Infants’ electrocardiograms were recorded at rest when babies were 53 weeks old. There was a positive association between acculturative stress and RMSSD, vagus-mediated control of the heart, (r = 0.39, p = 0.025), such that higher levels of acculturative stress were associated with an increased infants’ RMSSD (increased vagus-mediated HRV). In addition, a negative association between Anglo orientation and RMSSD (r = 0.33, p = 0.05) was found. Indicating that higher levels of Anglo orientation were associated with lower infants’ RMSSD (decreased vagus-mediated HRV). These results suggest that maternal acculturative stress might have protective effects on offspring nervous system development for offspring’s mental health, while maternal Anglo orientation may be a risk factor.

192) Abstract 1598
THE ASSOCIATIONS BETWEEN ACCULTURATIVE STRESS AND TRADITIONAL CULTURAL VALUES ON MATERNAL ANXIETY DURING PREGNANCY
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Experiencing anxiety during pregnancy is associated with adverse prenatal and birth outcomes for the mother-child dyad. Experiencing stress during pregnancy may contribute to anxiety levels in pregnant women. Mexican Americans, the fastest growing minority population, may be at greater risk for these outcomes as they experience high levels of psychosocial stressors such as lack of mental healthcare, language barriers, and discrimination. In addition, they experience stressors related to the psychological consequences of cultural adaptation, such as acculturative stress, could be a which could further impact Mexican American pregnant women’s stress during the vulnerable time of pregnancy and increase her risk of anxiety symptoms. However, traditional cultural values could serve as protective factors against mental health disorders, but the role of cultural stressors on maternal perinatal anxiety is unclear. It was hypothesized that mothers who report high levels of acculturative stress will report high levels of state anxiety symptoms across pregnancy, but those who adhere to Mexican cultural values will report lower anxiety symptoms. A sample of 104 Mexican-American pregnant women completed three visits across pregnancy to assess state anxiety, acculturative stress and traditional cultural values. A multilevel model analysis was used to test if acculturative stress predicted the trajectory of anxiety symptoms across pregnancy. No significant differences were found. However, Mexican-American traditional values did moderate the relationship between acculturative stress and state anxiety levels. In the first trimester, mothers who highly valued the Anglo cultural value of competition and reported low acculturative stress reported higher state anxiety. In addition, those who reported high acculturative stress and low competition also reported higher state anxiety symptoms. Identifying with Anglo cultural values may be a risk factor for those experiencing less acculturative stress and increase the risk for maternal anxiety during pregnancy. Culturally competent interventions are needed address stress related to cultural adaptation during pregnancy.

193) Abstract 1620
PRENATAL MATERNAL STRESS INFLUENCES CHILD INTERNALIZING SYMPTOMS IN FEMALE OFFSPRING: EVIDENCE FOR SEX DIFFERENCES IN FETAL PROGRAMMING
Mariann A. Howland, B.A., Psychiatry and Human Behavior, University of California, Irvine, Orange, CA, Elysia P. Davis, Ph.D., Psychology, University of Denver, Denver, CO, Curt A. Sandman, Ph.D., Psychiatry and Human Behavior, University of California, Irvine, Orange, CA, Laura M. Glynn, Ph.D., Psychology, Chapman University, Orange, CA
Offspring sex plays a key role in determining the effects of early life stress on fetal developmental trajectories (Doyle et al., 2015; Sandman, Glynn, & Davis, 2013; Weinstock, 2007). Evidence suggests that male fetuses invest most of their resources in growth regardless of environmental cues, rendering them at higher risk for mortality and mortality early in life if exposed to adversity. Conversely, female fetuses rely more on conservation strategies, allowing them to adapt in response to maternal signals. Because females avoid the risk of early morbidity and mortality, they are at higher risk for certain vulnerabilities later in development. Previous studies have linked elevations in maternal psychobiological stress signals with infant fearful temperament and child anxiety selectively in female offspring (Sandman et al., 2013). The current study examined associations between prenatal maternal psychological stress and child self-report of internalizing symptoms at age 5. A sample of 88 women with singleton pregnancies reported their levels of psychological stress using the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) at 15, 19, 25, 31, and 36 weeks’ gestation. Child self-report of internalizing symptoms at age 5 were obtained using scales of the Berkeley Puppet Interview (Measelle et al., 1998; Ringo et al., 2013). In a hierarchical multiple regression, maternal prenatal psychological stress averaged across pregnancy was positively associated with child self-report of internalizing symptoms (see Table 1). Child sex moderated this effect (Table 1), such that the association maternal prenatal psychological stress and child internalizing symptoms was significant among girls, slope = 0.61, t = 3.83, p < .001, but not boys, slope = 0.14, t = 0.89, p = .38 (Figure 1). Maternal perceived stress measured at the time of the child assessment did not explain this effect. This investigation examined young children’s own reports of their internalizing symptoms as the outcome of interest, which may provide unique information about their emotional functioning. As such, our finding is remarkably consistent with existing evidence that exposure to early life stress is linked to higher anxiety-related symptoms selectively in female children.

Table 1. Hierarchical regression model predicting child self-report of internalizing symptoms.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
<th>R² change</th>
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<td></td>
<td></td>
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<td>Offspring sex</td>
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<td>0.13</td>
<td>.37</td>
<td>3.82***</td>
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<td>Maternal prenatal psychological stress</td>
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<td>0.12</td>
<td>.32</td>
<td>3.30**</td>
<td>.22***</td>
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<td>Model 2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offspring sex</td>
<td>0.49</td>
<td>0.13</td>
<td>.36</td>
<td>3.86***</td>
<td></td>
</tr>
<tr>
<td>Maternal prenatal psychological stress</td>
<td>0.14</td>
<td>0.16</td>
<td>.12</td>
<td>0.898</td>
<td></td>
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<tr>
<td>Interaction term</td>
<td>0.46</td>
<td>0.23</td>
<td>.28</td>
<td>2.04</td>
<td>.04*</td>
</tr>
</tbody>
</table>

*p < .05, ** p < .01, ***p < .001
195) Abstract 1651
PRENATAL ORIGINS OF OBESITY RISK
Stephanie A. Stout, MA, Psychology, University of Denver, Denver, CO, Jennifer A. Hahn-Holbrook, PhD, Psychology, Chapman University, Orange, CA, Emma V. Espel, PhD, Psychology, University of Denver, Denver, CO, Laura M. Glynn, PhD, Psychology, Chapman University, Orange, CA, Curt A. Sandman, PhD, Psychiatry and Human Behavior, University of California Irvine, Irvine, CA, Elyssa P. Davis, PhD, Psychology, University of Denver, Denver, CO
Obesity affects nearly 18% of children and adolescents in the United States. There is increasing evidence that prenatal maternal stress signals influence fetal growth, child obesity, and metabolic risk. Catch-up growth, a rapid and dramatic increase in body size within the first two years of life, is an early predictor of poor health outcomes, including obesity. In the studies presented here, we evaluate the role of prenatal stress hormones in the programming of infant growth and obesity risk. The current prospective, longitudinal cohort provides a unique opportunity to evaluate the span from fetal to infant developmental periods and will provide new insight into the origins of obesity. Healthy term-born individuals (n=246; 120 girls, 126 boys) and their mothers were followed from early gestation through 2 years. Maternal hypothalamic-pituitary-adrenal (HPA) and placental axes hormones, including cortisol and placental corticotropin-releasing hormone (CRH), were evaluated at 5 gestational intervals. Child body size was evaluated at birth, 3, 6, 12 and 24 months. Associations between prenatal stress hormones and postnatal growth patterns were examined. In the first study, infants with the highest placental CRH exposure during the third trimester exhibited low birth weight followed by a rapid increase in BMI (catch-up growth) across infancy. For the second study, three distinct prenatal trajectories of plasma cortisol were identified. Women exhibiting an atypical plasma cortisol profile characterized by chronically elevated cortisol levels with a minimal increase across pregnancy, had infants with an exaggerated increase in BMI across the first 6 months. These findings provide evidence that dysregulated patterns of prenatal maternal cortisol and elevated placental CRH exposure predict growth patterns in infancy through childhood, independent of postnatal factors. Thus, we propose that placental CRH and maternal cortisol exposure during fetal development are involved in prenatal programming of obesity risk.

196) Abstract 1667
PRENATAL EXPOSURE TO MATERNAL DEPRESSION PREDICTS BOYS’ SELECTIVE ATTENTION TO AFFECTIVE IMAGES
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A growing body of evidence indicates that maternal depressive symptoms during pregnancy are associated with their children’s later cognitive and affective development. In parallel, animal models have identified neural and behavioral pathways through which maternal adversity could alter offspring psychological development. Both the human and animal literatures have documented sex-differences in responses to prenatal adversity. This prospective study longitudinally examined links between maternal depressive symptoms during pregnancy and their children’s attention to affective images. The sample included 210 mother-child dyads (51% male children). Maternal depressive symptoms were assessed prenatally at 15, 19, 25, 31, and 37 weeks’ of gestation. Children completed the dot probe task at age 8-16 (M = 11.0, SD = 2.3). In this task, each trial begins with a 500-ms presentation of a central fixation cross, followed by a 500-ms presentation of a face pair (angry/neutral or neutral/neutral) selected from the NimStim Face Stimulus Set. Immediately after the face pair disappears, an asterisk probe appears on the right or left, and participants press a button as quickly as they can to indicate the side on which the probe appeared. Attentional bias to angry faces is scored as faster responses when the asterisk appears behind the angry than the neutral face. Results revealed that maternal depressive symptoms at 25 and 31 weeks of gestation predicted greater attentional bias to angry faces among boys (p = .04 and .01) but not girls. Our findings suggest that prenatal exposure to maternal depression in the second and third trimesters increases selective attention to social threats among boys but not girls. An intriguing possible explanation is that fetal exposure to maternal adversity alters neural development to prepare boys for a harsh environment in which, relative to girls, they are particularly likely to encounter aggressive conspecífics.

197) Abstract 1173
VULNERABILITY TO THE EFFECT OF SOCIAL ADVERSITY ON DEPRESSIVE SYMPTOMS: THE DOUBLE STIGMA FOR HIV-POSITIVE AFRICAN AMERICANS
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Rationale: Socially marginalized groups, such as racial/ethnic minorities or those living with a stigmatized chronic illness (e.g., HIV), are more likely to be exposed to adversity (e.g., discrimination, economic hardship), potentially increasing their vulnerability to poor health outcomes, as compared to non-stigmatized groups. Although the association between adversity and negative mental health outcomes is well established, few studies have examined how exposure to adversity differentially affects those with multiple, co-occurring stigmatized identities. In the current study, we evaluated the association between social adversity on depressive symptoms among HIV+ and HIV-seronegative adults who self-identify as either African American or Caucasian. We hypothesized that greater lifetime adversity would be more strongly associated with higher depressive symptoms for HIV+ (vs. HIV-negative) individuals, but only among African Americans, due to the intersecting identities of living as an
ethnic/racial minority with a stigmatized disease. Method: Participants (n=134; 70.9% male, 65.8% AA) were recruited as part of a larger study examining the effects of HIV and psychosocial factors on psychological, physiological, and neurologic functioning. A composite index of lifetime social adversity was derived from measures of perceived racial discrimination, financial strain, current objective SES, current subjective neighborhood SES, and childhood subjective neighborhood SES. Depressive symptoms were assessed using the Beck Depression Inventory (BDI-II). Predictors were entered into a hierarchical regression using the following steps: 1) age, gender, marital status, medical comorbidities, and past substance abuse/dependence as control variables; 2) lifetime social adversity, race/ethnicity, and HIV status; 3) all two-way interactions between adversity, race/ethnicity, and HIV status; 4) the three-way interaction between adversity, race/ethnicity, and HIV status. Results: Findings revealed a significant three-way interaction between lifetime social adversity, race/ethnicity, and HIV status on depressive symptoms (b=0.64, p=.046). For African American participants, higher adversity scores significantly predicted more depressive symptoms for those who were HIV+ (b=3.28, p=.001) but were unrelated to depression for those who were HIV-negative (b = -0.23, p = .866). Furthermore, these slopes differed significantly from each other, (t=3.51, p=.034). Among Caucasian participants, adversity scores were unrelated to depressive symptoms for those who were HIV+ (b=-0.31, p=.421) and HIV-negative (b=4.64, p=.065). These slopes did not differ significantly from each other (t=3.33, p=.264). Conclusions: As predicted, greater scores of social adversity predicted higher depressive symptoms, but only among HIV+ African Americans. Findings suggest that those with the multiple stigmatized identities (e.g., HIV+ status and African American race/ethnicity) may be particularly vulnerable to poor mental health outcomes.

198) Abstract 1189
PERCEIVED RACISM AND SMOKING: THE MODERATING ROLES OF NEIGHBORHOOD - LEVEL SOCIOECONOMIC ADVANTAGE AND ETHNIC DENSITY
Angela Monge, PhD, Elizabeth Brondolo, PhD, Psychology, St. John’s University, Queens, New York
Objective: Perceived racism has been consistently linked to smoking status in prior research. In addition, neighborhood factors, such as neighborhood socioeconomic conditions and race/ethnicity composition, have been associated with both racism and smoking. However, there is limited research on the degree to which neighborhood factors exacerbate or mitigate the effects of racism to smoking. The present study tested the hypotheses that neighborhood socioeconomic conditions (i.e., advantage versus disadvantage) and ethnic density moderate the relationship of racism to smoking status and frequency. Methods: Participants included 484 U.S.-born Black and Latinx/a community dwelling adults. We examined both lifetime and recent exposure to racism using the Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CV). An ecological momentary assessments obtained with an electronic diary were used to collect data on smoking every 20 minutes throughout one testing day. Block group census data (year 2000 census) corresponding to participants’ addresses were obtained and merged with the original data set. Using factor analysis, compositions of neighborhood advantage (N-Advantage) and disadvantage (N-Disadvantage) were created. Neighborhood ethnic density was assessed using block group variables of the percent Black and Hispanic residents. Results: Adjusting for individual – level covariates, recent racism significantly predicted smoking status, whereas lifetime racism predicted the amount of smoking episodes endorsed during the day of testing. Participants living in less deprived neighborhoods (i.e., high N-Advantage, low N-Disadvantage) were two times more likely to be smokers for unit increases in recent racism. These relationships, however, were accounted for by participants’ relative income position in their community. In addition, per one unit increase in recent racism, Black participants living in “high” Hispanic communities were four times more likely to be smokers, in adjusted analyses. Conclusion: The findings suggest that disparities between the individual’s income and that of their neighbors may activate social comparison processes that exacerbate the effects of racism on health habits, such as smoking.

199) Abstract 1210
RACIAL AND ETHNIC DISCRIMINATION, DAILY ANGER EXPRESSION, AND AMBULATORY BLOOD PRESSURE
Khahema Bwer, MS, Counseling Psychology, University of Miami, Coral Gables FL, Elizabeth Brondolo, Ph.D., Psychology, St. John’s University, Jamaica, NY
Racial/ethnic discrimination refers to unfair treatment received because of one’s race/ethnicity. Exposure to discrimination has been consistently positively associated with ambulatory blood pressure (ABP). Investigators have suggested that racial discrimination may affect blood pressure, in part, because discrimination elicits anger and influences the expression of anger. In turn these episodes of anger and anger expression may drive repeated increases in BP. The bulk of the research on the relationships among discrimination, anger expression and BP has focused on trait measures of discrimination and anger expression. The aim of this study was to assess the associations of lifetime and recent discrimination to measures of anger expression captured in daily life, and to assess the relationship of these momentary variations in anger expression to ABP. The hypotheses were tested in a sample of 600 (297 women, 312 Black) urban adults. Participants wore an ambulatory blood pressure (BP) monitor and completed an electronic diary for 24 hours. Every 20 minutes throughout the day, measures were made of BP, moods, and social interactions. If participants were talking with others, measures were also made of anger expression (anger suppression, overt anger expression, calm anger expression). Perceived ethnic discrimination was assessed with the Perceived Ethnic Discrimination Questionnaire–Community Version (PEDQ-CV). Across participants, measures of anger expression were obtained on an average of 14.4 observations (range 0-48), with participants reporting they suppressed anger on 7.2% of the observations and outwardly expressed anger on 4.7% of the observations. Perceived discrimination and each of the four PEDQ-CV subscales were positively associated with the average daily use of anger suppression (r(600) = .09-.24, ps < .02-.001); negatively related to calm expression of anger (rs(600)= .09-.22, ps < .04-.001). Total perceived discrimination was not related to outward anger expression. On a momentary basis, there was a significant main effect of anger expression on SBP (F(2,5434) = 5.37, p < .005). SBP was significantly higher during anger suppression (Adjusted mean = 153.44mmHg) than calm expression (mean = 132.28 mmHg, p < .01). The findings suggest that the psychological demands of anger expression may contribute to elevated BP reactivity, and potentially to hypertension.

200) Abstract 1283
THE ASSOCIATION BETWEEN TRAIT MINDFULNESS, PERCEIVED STRESS AND DIURNAL CORTISOL IN SEXUAL MINORITY YOUNG ADULTS
Anita Manigault, BS, Wilson Figueroa, MS, Anna Mendlein, BSW (in progress), Eileen Parry, BS, Cari Hollenbeck, BA, Alex Woody, MS, Peggy Zoccola, PhD, Psychology, Ohio University, Athens, Ohio
Sexual minorities experience unique stressors independent of general stress, and therefore may be more susceptible to stress-related disease outcomes. The Mindfulness Stress Buffering account (MSB) posits that mindfulness reduces the extent to which individuals appraise events as stressful and thereafter physiologically reacts to them. Previous research supports the MSB account and suggests that mindful individuals display a lower increase in cortisol levels relative to less mindful individuals following an acute stressor. Repeated and prolonged acute cortisol responses can lead to poor regulation of the HPA axis and dysregulated diurnal cortisol rhythms. Thus, we sought to investigate the effects of dispositional mindfulness on daily reports of perceived stress and diurnal cortisol in a sample of Sexual Minority Young Adults (SMYA). We hypothesized that greater dispositional mindfulness would predict lower perceived stress and normative diurnal cortisol patterns. Fifty four SMYA (aged 18-35, 66% female) completed baseline and daily evening questionnaires. A randomly selected subset (n = 23) also provided salivary cortisol samples at wake, 45 minute post-, 12 hours post-wake, and at bedtime over 7 days. Dispositional mindfulness was measured using the Five Facet Mindfulness Inventory-Short Form at baseline (5 factors: observing, describing, acting mindfully, loving yourself, and detaching). Perceived stress was measured daily with the 4-item Perceived Stress Scale. Participants completed the morning cortisol sample at wake, and at 12 hours post-wake, and the evening cortisol samples at bedtime. Total mindfulness was negatively related to daily perceived stress averaged over the week (r = -.316). A 2 (median-split mindfulness: high vs. low) x 4 (time: awakening, 45 min., 12 hrs., bedtime) repeated measures ANOVA was performed to predict cortisol concentrations averaged over the week. The analysis revealed a significant interaction of mindfulness-loving and time (quadratic), F(1, 17) = 5.560, p = 0.029, partial η2 = 249. The quadratic trend suggests that cortisol concentrations increase from wake to 45 minutes, decrease 12 hours later and further decrease during bedtime for individuals high in mindfulness-love (see figure). Low mindfulness-love individuals showed a flatter curve and significantly higher bedtime cortisol (p<.05). Total mindfulness score showed a similar but nonsignificant pattern. Results indicate that mindful SMYA perceive less stress throughout the week. Further, SMYA low on the loving yourself factor of mindfulness showed elevations in evening cortisol that were not mediated by mindfulness. These results could potentially inform mindfulness-based interventions in SMYA, and therefore provide this high risk population a tool to counteract the influence of stress on health outcomes.
201) Abstract 1405
SHORT NOCTURNAL SLEEP DURATION AND FATIGUE MODERATE THE RELATIONSHIP BETWEEN DAYTIME NAPPING AND INFLAMMATION IN BLACK AND WHITE MEN

Karen P. Jakubowski, MS, Psychology, Jennifer M. Boylan, PhD, Jenny M. Cundiff, PhD, Psychiatry, Karen A. Matthews, PhD, Psychiatry and Psychology, University of Pittsburgh, Pittsburgh, PA.

Methods: Participants (n=231) were from a sample of black and white men (Pittsburgh Youth Study). They completed a week of actigraphy and diary measures of sleep and napping and provided a fasting blood sample. Napping was measured as the proportion of days with at least 30 minutes of napping and the average minutes napped per day. Linear regression was utilized, adjusting for race, BMI, smoking, and use of medications that affect sleep or inflammation, followed by interaction terms.

Results: There were no significant main effects of actigraphy- or diary-measured napping on IL-6 or hsCRP. Moderation analyses indicated a significant interaction between actigraphy-assessed proportion of days napped and fatigue on IL-6 [B(SE)=.96(.49), p=.05]. Simple slope analyses revealed more napping is associated with higher IL-6 among those who reported always feeling fatigued [B(SE)=.90(.46), p=.05], but not for those who reported never or sometimes feeling fatigued. There was also a significant interaction between actigraphy-assessed average minutes napped and nocturnal sleep on IL-6 [B(SE)=.03(.01), p=.009]. Simple slope analyses revealed more minutes napped is associated with higher IL-6 among those who demonstrated short (<1SD) nocturnal sleep [B(SE)=.03(.02), p=.014], but not for those who demonstrated average or long (+1SD) nocturnal sleep. Race did not moderate the relationship between actigraphy-assessed napping and IL-6. Moderation analyses involving diary measures of napping or hsCRP were not significant.

Conclusion: Daytime napping is related to higher IL-6 in men who demonstrate shorter nocturnal sleep duration or who report greater fatigue. Further examination of the direction of this effect is warranted. Overall, daytime napping is an important behavior to monitor to better understand the relationship among short nocturnal sleep, fatigue, and inflammation.

202) Abstract 1634
FAMILISM, PERCEIVED SOCIAL SUPPORT, AND SOCIAL NETWORK SIZE: RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL)

SOCIOCULTURAL ANCILLARY STUDY

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The cultural determinants of social support have implications for understanding relationship processes and health. Familism is a cultural value that emphasizes warmth, close, and supportive family relationships but also that family be prioritized before self. This study examined the associations of three facets of familism with (a) perceived social support and (b) social network size in a diverse community sample of U.S. Latinos. Participants from the Sociocultural Ancillary Study of HICH/SOL (N=5,313; 55% male, 18-74 years at screening) self-reported familism, perceived social support, social network size, and demographic characteristics. After accounting for a host of sociodemographic characteristics, neither family obligations, family involvement in decision making, nor family support were associated with perceived social support. However, higher family obligations and family support were associated with significantly larger high contact social network size β=.18, p=.02; β=.13, p=.04, and greater family involvement in decisions making was marginally associated with larger high contact social network size β=14, p=.06.

203) Abstract 1175
CAN A PATIENT BE ATTACHED TO A HEALTH CARE PROVIDER? EXPLORING PATIENT PERCEPTIONS OF THE PATIENT-PROVIDER RELATIONSHIP

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BACKGROUND. Patterns of adult attachment that are measured with respect to romantic relationships are correlated with healthcare utilization and physician-patient interpersonal difficulty. This may occur because patients direct attachment behavior toward healthcare providers when health issues provoke feelings of insecurity. Patterns of attachment toward psychotherapists have been measured, but not towards primary healthcare providers. METHODS. We developed 37 items for an Attachment in Healthcare Settings Survey (AHSS). Adult participants in an online survey (n=97) completed these items with respect to a self-selected healthcare provider (HCP) as well as measures of adult attachment, therapeutic alliance, perceived positive HCP characteristics (technical skills, availability, reliability, interpersonal skills, courtesy) and health utilization. Exploratory factor analysis identified three common factors, which we named “HCP experienced as reliable, responsive, concerned/secure base” (15 items, SECURE), “HCP experienced as aversive” (10 items, AVERS), and “wants more from HCP” (8 items, WANT) respectively. RESULTS. Internal reliability was high (alphas of .94, .87, .81). SECURE was strongly correlated with alliance (R=.87), moderately to strongly correlated with perceived positive HCP characteristics (R=.51 to .74), and unrelated to utilization or dimensions of adult attachment. AVERS was moderately correlated with both attachment anxiety (R=.37) and attachment avoidance (R=.39), negatively correlated with alliance (R=.59) and with positive HCP characteristics (R=.26 to .54) and unrelated to utilization. WANT was more strongly correlated with attachment anxiety (R=.52) than attachment avoidance (R=.36), and was associated with increased utilization (F=6.2, df4, p<.001). WANT was not significantly correlated with alliance or perceived positive HCP characteristics. CONCLUSIONS. SECURE appears to measure positive appraisal of HCP characteristics. AVERS measures dissatisfaction and discomfort in the HCP relationship that is correlated with both insecurity and perceived negative HCP characteristics. WANT measures an unmet need for greater connection with a HCP that is related to attachment insecurity and higher healthcare utilization but independent of HCP characteristics. The AHSS may be useful in studying the links between adult romantic attachment and the dynamics of attachment behavior in health care settings. Replication in other cohorts is required.

204) Abstract 1432
DEVELOPMENTAL ORIGINS OF INFANT STRESS REACTIVITY PROFILES: A MULTI-SYSTEMS APPROACH

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Background: Fetal programming of the stress response system (SRS) is thought to be a central mechanism by which early life experiences influence human development. The SRS comprises the parasympathetic and sympathetic divisions of autonomic nervous system and the hypothalamic pituitary adrenal (HPA) axis. Most previous research has focussed on individual components of
the SRS despite the fact that these systems work together. Our objective was to identify infant stress response profiles across major components of the SRS and examine stress-sensitive in utero exposures that may contribute to the developmental origins of individual differences in infant stress responses. 

Methods: The sample comprised 254 women and their infants. Maternal psychological distress, salivary cortisol, respiratory sinus arrhythmia (RSA), and salivary α-amylase (sAA) were assessed at 15 and 32 weeks gestational age. Infant salivary cortisol, RSA, and sAA reactivity were assessed in response to a series of structured laboratory frustration tasks at 6-months post-partum. Infant responses were used to classify them into stress reactivity profiles using three different classification schemes: autonomic classification based upon the doctrine of autonomic space, HPA-axis classification, and multi-systems classification based upon Bauer’s interactive hypothesis. Discriminant function analyses were used to identify the prenatal variables that best discriminated infant reactivity profiles within each classification scheme.

Results: Markers of maternal parasympathetic, sympathetic-adrenal-medullary, and HPA-axis activity, along with self-reported psychological distress during pregnancy discriminated between infants with different stress response profiles. For the HPA axis, daytime cortisol slope and basal RSA in early pregnancy along with daytime sAA slope in late pregnancy distinguished between responsive and non-responsive profiles. Autonomic response profiles were distinguished by daytime cortisol slope and psychological distress measures from late pregnancy. The multi-systems profiles were distinguished by daytime cortisol slope and the sAA awakening response in early pregnancy along with basal RSA in late pregnancy.

Conclusions: These results suggest that maternal psychological and physiological states during pregnancy have broad effects on the organization of the infant SRSs.

205) Abstract 1400
THE BIGGER, THE BETTER: GREATER SMILE INTENSITY DURING PAIN IS ASSOCIATED WITH HIGHER PARASYMPATHETIC FUNCTION DURING STRESS RECOVERY
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Positive affect has been linked consistently to better stress profiles, and in particular, to improved recovery following aversive experiences. Recent research has pointed to the possibility that positive expressive behavior, specifically smiling, may play a role in these benefits. For example, covert experimental smiling manipulation has been tied to steeper heart rate recovery following both psychological and physical stressors. A likely but untested mechanism of these smiling-related benefits is activation of the parasympathetic nervous system. The vagus nerve not only innervates the myocardium, but also communicates with the facial and glossopharyngeal nerves that control facial muscle movements, providing a plausible direct pathway connecting positive expressions to the stress response. Thus, the current study explored the effect of naturalistic, affective facial expressions on respiratory sinus arrhythmia (RSA) response to and recovery from a stress-inducing experimental pain manipulation. Participants (N=62, 77.4% female, Mage=21.3) completed a 2-minute painful, coldpressor task (i.e., immersing hand in ice water), and then a quiet 5-minute recovery. Video and respiratory sinus arrhythmia (RSA) measures were recorded continuously throughout the study via Mindware BioLab 3.0.13. Positive facial expression intensity (i.e., smiling) was objectively coded via Noldus FaceReader 6. Results revealed that greater smiling intensity during pain predicted higher RSA during recovery, β = 3.9, t(55) = 2.31, p = .025, even after accounting for stress reactivity. Surprisingly, physiological differences in recovery from cold did not translate into self-reported differences in pain, p > .05. These results support past research on the stress recovery effects of smiling, point to an underlying parasympathetic mechanism of these effects, and finally, imply that smiling during acute pain may be physiologically adaptive.

206) Abstract 1041
THE EFFECT OF HAPPY SCIENCE INTERCESSIONARY PRAYER ON DEPRESSIVE SYMPTOMS IN A DOUBLE BLIND RANDOMIZED CONTROLLED TRIAL
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A large number of publications have previously shown spirituality/religiosity may boost mental resilience and alleviate psychiatric illness. Religiosity and spirituality can be defined broadly as feelings, thoughts, experiences, and behaviors that arise from a search for the “sacred”, with the former implying group or social practices and doctrines and the latter tending to refer to personal experiences and beliefs. Our previous studies have reported an impact on decreasing depressive symptoms by a novelty-developed spiritual group psychotherapy based on the Principles of Happiness of “Fourfold Paths” preached in Happy Science which is one of the largest Japanese religious institutions. In this study, we aimed to evaluate the efficacy on depressive symptoms, by the intercessory prayer of Happy Science in a double blind randomized controlled trial with 365 Japanese out-patients (Control, n=187; Trial, n=178) suffering from major depression. The trial participants were treated with the intercessory prayer twice a day (in the morning and in the evening) for one month; the morning and evening prayer are “Byok-Iheiyu Kigan” (spiritually healing prayer) and “Akuire-Gekitai Kigan” (exorcism prayer), respectively, while the control patients received usual care including medication. The intercessory prayer was conducted by 3-6 Happy Science believers. Mental status was assessed at three time-points before, after, and three months following the intervention using the Center for Epidemiologic Studies Depression scale. In an analysis comparing the intervention and control conditions, we adjusted for important confounders such as diagnosis, illness duration, medication, religious background, smoking, drinking, body mass index, marital status, and education. The present report will show some intriguing results and explain possible underlying mechanisms and the differences between previously-reported prayer trials and this trial.

207) Abstract 1057
HEART RATE VARIABILITY MODERATES THE ASSOCIATION BETWEEN DIVORCE-RELATED PSYCHOLOGICAL DISTRESS AND LATER BLOOD PRESSURE REACTIVITY
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Divorce is a life stressor associated with poor mental and physical wellbeing. Not all people, however, respond negatively to the end of marriage. Blood pressure (BP) reactivity is one possible mechanism that might explain poor long-term health following divorce. People who cannot adaptively control their BP response to external stressors may experience repeated elevations that ultimately lead to prolonged wear-and-tear on the vasculature; over time, these repeated elevations contribute to poorer cardiovascular health. The current study assessed two candidate predictors of blood pressure reactivity among divorced adults: heart rate variability (HRV) - as indexed by respiratory sinus arrhythmia (RSA) - and psychological distress. Recently separated adults (N = 134) were evaluated over nine months. Participants' BP reactivity scores were calculated by residualizing BP during a math stressor task from blood pressure in a divorce-specific mental activation task, during which participants are asked to reflect silently on their separation experience. Results indicate that RSA and divorce-related distress interacted to predict systolic and diastolic BP over time, and this finding remained when including relevant covariates. For people with low RSA, there was no association between divorce distress and BP reactivity. People high in RSA, in contrast, had a positive association between divorce-related distress and BP reactivity, such that the people who reported higher subjective distress also had higher BP reactivity –similar to people with low RSA. People with both high RSA and low subjective distress, however, showed the lowest levels of BP reactivity of all participants. These findings suggest that for divorced adults with a higher cardiac vagal capacity, BP reactivity depends on their subjective psychological adjustment. People with low capacity for control have higher BP regardless of their self-reported psychological adjustment. Differences in HRV and divorce-related distress might predict long-term health-related outcomes for people following divorce via failure to adapt physiologically, which might differentially affect peoples cardiovascular system post-divorce.
208) Abstract 1063
PERIPHERAL INFLAMMATORY BIOMARKERS ARE LINKED WITH MOMENTARY AFFECT BUT NOT GLOBAL RECALLED AFFECT
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Emerging evidence suggests that measures of psychosocial phenomena are more strongly linked with indicators of physiological functioning when they are derived from ecological momentary assessments at multiple time points per day in daily life (e.g., via ecological momentary assessment, or EMA; see Conner & Barrett, 2012). As part of a larger investigation we examined whether several indicators of negative and positive affect (NA and PA) differentially predicted concentrations of peripheral inflammatory cytokines and high-sensitivity CRP; we compared affect measures derived from EMA with global self-report (using recall "over the past month" on a common adjective checklist). Participants (N=219) were community adults recruited from the Bronx, NY and were socioeconomically and racially diverse (e.g., 63% African-American and 24% Hispanic); they completed questionnaires at baseline and then EMAs 5x/day for 14 days (totaling 70 assessments), after which their blood was drawn. From plasma, multiplex technology was used to determine levels of IL-1β, IL-2, IL-4, IL-5, IL-6, IL-8, IL-10, TNF-α, IFN-γ and GM-CSF, and ELISA was used to determine CRP. Analyses controlled for BMI, age, gender, household income, marital status, race/skin color, healtholina and morbid obesity, antidepressants; cytokine data were transformed to deal with non-normality. Reports of NA or PA derived from standard questionnaire assessment were unrelated to any inflammatory biomarker. EMA reports collected many ratings of mood states in the moment, and these were aggregated across each of the two weeks for an index of typical mood. Higher EMA-derived NA in week 2 (more proximal to the blood draw) was associated with higher CRP (p=.05) and with higher levels of IL-1α (p=.04) and IL-6 (p=.01) after controlling for age and gender. EMA-derived PA in week 2 was associated with lower IL-6 and CRP (p=.05), but not other cytokines. Week 1 EMA-derived affect was not associated with any biomarker. This research is the first to our knowledge to demonstrate that aggregated momentary affect more robustly links with inflammatory markers than standard recalled affect. Findings suggest that EMA-derived measures of affect should be used when feasible for predicting physiological outcomes that change over short periods of time. Moreover, the temporal proximity of EMA and biomarker assessments may be critical.

209) Abstract 1074
POTENTIAL CONFOUNDBING AND MEDIATING EFFECTS ON THE RELATIONSHIP BETWEEN DELAY DISCOUNTING AND ADIPOSYNE
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Obesity is a worldwide epidemic and a leading mortality risk factor. Obesity is ultimately a behavioral disorder, and the tendency to prefer smaller but instant rewards over larger, future rewards (delay discounting, DD) has been found to correlate positively with obesity as estimated by body mass index (BMI). However, BMI is an imprecise estimator of percent body fat or adiposity. Furthermore, existing research has inconsistently controlled for potentially confounding sociodemographic factors (years of education and race). Finally, whether the association between DD and obesity or adiposity is mediated by individual differences in physical activity participation is unknown. Here we address these literature deficiencies in a cohort of 490 community volunteers (30-52 y/o; 51% female; 83% Caucasian, 14% African-American, 3% other) in whom the following measures were available: computerized delay discounting scores, BMI (range 17.5-49.6, mean=26.6), % body fat (%Fat) (range 5.1-52.7, mean=28.39) tested using bio-electrical impedance (Tanita), and objectively measured physical activity over 4 days (Body Media SenseWear system). In regression analyses controlling for age and gender, DD was positively related to both BMI (ΔR2=0.014, p < 0.01) and %Fat (ΔR2=0.017, p < 0.001). Additionally, controlling for education, DD was marginally associated with BMI (p=.088) but remained associated with %Fat (p=.009). The addition of race eliminated any association between DD and either obesity or adiposity. There was no interaction between race and DD for either BMI or %Fat, though there was a significant difference (t=-6.697, p=.000) in discounting between Caucasians and African-Americans. Controlling for age and gender, DD in Caucasians (N = 376, mean=2.88) was marginally associated only with %Fat (p=.062) and was lost when controlling for education. DD was not associated with obesity or adiposity in African Americans (N= 68, mean=2.16). In the full sample, regression analysis controlling for age and gender showed a significant negative relationship between DD and vigorous physical activity (p=.028). The relationship between DD and vigorous physical activity became insignificant after controlling for education (p=.122) and additionally for race (p=.515). In the entire sample, vigorous physical activity partially mediated the relationship between DD and both %Fat and BMI (ΔR2=0.192, p < 0.001, CI=0.070, 0.700), but not when additionally controlling for education and race. Our data shows that there is little evidence for immediate rewards over larger, delayed rewards is associated with multiple measures of obesity and adiposity, possibly mediated in part by lack of participation in vigorous physical activity. However, further analysis of the confounding effects of education and particularly race, a factor not considered in prior studies, will be important to ongoing investigation in this area.

210) Abstract 1077
DIFFERENT FACETS OF EMOTION DYSREGULATION AS A MEDIATOR BETWEEN RESTING HEART RATE VARIABILITY AND TRAIT ANXIETY
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Converging studies have established that lower resting vagally mediated heart rate variability (vHRV) is associated with greater trait anxiety. Emotion dysregulation (emotion dysregulation scale, or EDERS), proposed as one of the many mechanisms underlying this association. Furthermore, it has been suggested that emotion dysregulation is comprised of six dimensions: (i) nonacceptance of emotional responses, (ii) difficulties engaging in goal-directed behavior, (iii) impulse control difficulties, (iv) lack of emotional awareness, (v) limited access to emotion regulation strategies, and (vi) lack of emotional clarity. However, to our knowledge, research has yet to examine each of these facets of emotion dysregulation on the connection between resting vHRV and anxiety. The current study examined this relationship in 183 undergraduate students (98 female, 60 minority, Mean Age = 19.34; CI:Image4523.png; @1500a4f39311acac 2.18 years). Participants completed a 5-minute baseline-resting period, followed by the Trait Anxiety Inventory (STAI-T) and the Difficulties in Emotion Regulation Scale (DERS), including the six subscales designed to assess the types of emotion dysregulation described above. High frequency HRV was analyzed and calculated in accordance with Task Force guidelines and used as the index of vHRV. Using PROCESS (a custom dialogue program in IBM SPSS Statistics), six separate mediation analyses revealed that all subscales, with the exception of a lack of emotional awareness, yielded a Bootstrapping confidence interval (BootCI) that did not span zero. A mediation analysis that included all subscales simultaneously revealed a significant indirect effect of resting vHRV on STAI-T scores, the proportion of both limited access to emotion regulation strategies (b = 1.091, SE = 0.433, BootCI [-2.808, -0.352], p < 0.05) and a lack of emotional clarity (b = 0.243, SE = 0.150, BootCI [-0.653, -0.031], p < 0.05). All other subscale results did not significantly mediate this association. These results support the idea that individuals with lower resting vHRV may experience greater anxiety due in part to difficulties in emotion regulation. Moreover, this study extends previous work on vHRV and anxiety, suggesting that limited access to emotion regulation strategies and lack of emotional clarity make a unique contribution to this link. Future studies should identify potential mediators of emotion dysregulation and associated facets on the links between vHRV and other mental health outcomes, in addition to other clinical samples.

211) Abstract 1089
THE IMPACT OF MENOPAUSAL STATUS ON HEART RATE VARIABILITY DURING BEREAVEMENT
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Women have higher heart rate variability (HRV), which has been identified as a protective factor against deaths due to cardiovascular disease (CVD) (Abhishekh et al., 2013; Furholz et al., 2013). Estrogen has been identified as an endogenous sex hormone creating the cardio-protective ability found in women. However, this cardio-protective hormone decreases after menopause and research has shown a concomitant shift in HRV from pre to post menopause resulting in
similar HRV levels between the sexes (Brockbank et al., 2000; Yang et al., 2013). Acutely bereaved people are more susceptible to cardiovascular disease (Buckley et al., 2009, 2012; O’Connor et al., 2002). Therefore, we examined whether the relationship between HRV, as measured by respiratory sinus arrhythmia (RSA), and bereavement in women is moderated by menopause. The present study compared bereaved (n=10) and non-bereaved (n=12) persons of both sexes (female: 12; postmenopausal status: 9). Bereaved persons had experienced the death of a spouse within the last year. HRV was recorded using a Zephyr BioHarness 3, sampled at 1024 Hz. There was a significant difference in RSA between pre- and post-menopausal women when implementing a one-way ANOVA [F(1,10)=5.79, p <0.04]. When completing a regression analysis of RSA, postmenopausal women had lower RSA [F(1,8)=7.84, p <0.03] compared to premenopausal women, and menopause was a better predictor than bereavement status. Despite the small sample size, these results support the finding that women lose their cardio-protective higher HRV after menopause. Importantly, acute bereavement may not affect HRV in women uniformly as previously thought when taking menopausal status into account.

212) Abstract 1146
PREDICTING ADHERENCE TO AIRWAY CLEARANCE THERAPY AT 1 YEAR FOLLOW-UP IN ADULTS WITH CYSTIC FIBROSIS
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Airway clearance therapy is a core aspect of daily treatment for patients with cystic fibrosis (CF). Poor adherence is recognized as a serious problem however, exacerbated by the multiple treatment regimens that patients undergo each day. Research on adherence in adult patients has been quite limited, especially regarding modifiable factors that can be targeted in intervention. Drawing on aspects of Social Cognitive Theory and the Theory of Planned Behavior, this study reports longitudinal findings regarding predictors of airway clearance therapy adherence. Participants were drawn from a regional CF center. Mean FEV1%, was 64.5 (24.1), mean age was 27.3 (9.3) years, and 52.5% were male. Predictor variables were evaluated at baseline, and included outcome expectations (i.e., perceived necessity and concerns regarding airway clearance therapy from the Beliefs about Medication-Specific scale), social norms, and self-efficacy for airway clearance therapy. The Cystic Fibrosis Treatment Questionnaire was used to assess self-reported adherence to airway clearance at baseline and 12-month follow-up. Adherence was poor (i.e., missing more than 2x/week) in 34.4 % of participants at 1 year, and in 52.5% during at least one of the assessments (baseline or 1 year). In bivariate analyses, all predictor variables assessed at baseline were significantly related to sustained adherence (i.e., from baseline through 1 year; all p’s <.03), with the exception of social norms. In logistic regression analyses that modeled the effects of these predictors simultaneously while controlling for FEV1%, ever concerns about airway clearance therapy (OR= 83.95%, CI: 69% - 99) and greater self-efficacy (OR=1.09, 95% CI: 1.00-1.18) remained independent predictors of better adherence.

Findings highlight poor levels of adherence to airway clearance among adults with CF, which is a critical concern. Consistent with the theoretical model, social cognitive constructs were significantly related to long-term self-reported adherence over the course of one year. In particular, outcome expectancies (concerns about airway clearance therapy) and self-efficacy were the strongest predictors, through effect sizes were modest. If confirmed in future research, these variables might be among the useful targets to include in interventions, to help address a pressing need in this population.

213) Abstract 1176
EFFECT OF EUDAIMONIC WELL-BEING ON PHYSICAL ACTIVITY PARTICIPATION 10 YEARS LATER
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Background Physical activity participation is associated with a host of positive health outcomes. Despite these benefits, long-term participation is seldom maintained by a majority of the population. Recent evidence suggests that positive psychosocial factors, such as eudaimonic well-being – a sense of purpose, meaning, and engagement in life – may increase physical activity. However, most of these studies have been cross-sectional or short-duration interventions, and so assess age differences rather than sustained change over time. Moreover, specific dimensions of well-being linked to health behaviors, including purpose in life and personal growth, are associated with greater self-reported and objective physical activity, although no individual subscales have been examined longitudinally. The aim of this study was to investigate the relationship between eudaimonic well-being and physical activity participation 10 years later. We hypothesized that total eudaimonic well-being would be directly associated with future levels of physical activity. Additionally, we explored the individual subscales for specific associations.

Methods Participants (N=3,929) were from the longitudinal Survey of Midlife Development in the United States (MIDUS). Data were collected at MIDUS 1 (1995-1996) and MIDUS 2 (2004-2006). A composite eudaimonic well-being score, as well as six individual subscales, were used as independent variables in linear regression analyses with physical activity frequency at MIDUS 2 as the dependent variable. These analyses were adjusted for demographics and physical activity from the previous time period.

Results In line with our hypothesis, eudaimonic well-being independently predicted physical activity frequency 9-10 years later, B (SE)=2.05 (0.48), p<.001, after adjustment for age, sex, race, education and baseline physical activity. Among the subscales, purpose in life, personal growth, self-acceptance (all p<.001), and positive relations with others, (p=.034), were positively associated with future physical activity after the same adjustments. When simultaneously entered into one model, only higher purpose in life, B (SE)=0.98 (0.35), p=.005, and personal growth, B (SE)=0.86 (0.42), p=.042, continued to predict greater physical activity after full adjustment.

Conclusion This study provides the first evidence that eudaimonic well-being predicts future physical activity participation. These results suggest that underlying facets of purpose and self-improvement make unique contributions to sustained, long-term physical activity.

214) Abstract 1218
PREDICTORS OF ACUTE PSYCHOSIS IN NON-SCHIZOPHRENIC PATIENTS WITH URINARY TRACT INFECTION: INFLAMMATION AS A TRIGGER OF PSYCHOSIS
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Objective: Increased inflammation has been suggested to have a role in the development of psychosis. In this regard, increased prevalence of acute psychosis has previously been associated with urinary tract infections (UTIs) in schizophrenic patients. UTIs have also been associated with psychosis in susceptible populations with either dementia or delirium. Accordingly, the aim of this study was twofold (i) to evaluate the association between UTI, delirium, and acute psychosis, and (ii) potential biomarkers obtained from urine specimens in non-schizophrenic patients who develop psychosis and are hospitalized with UTI.

Methods: A total of 192 (F = 132), consecutive inpatient cases (age ≥ 78 ± 13.0) with no prior history of schizophrenia were assessed retrospectively by chart review. The diagnosis of UTI was identified by urine culture, presence of urinary nitrites, and leukocyte esterase. Behavioral variables included in the analysis were delirium and acute psychosis as the main outcomes. Delirium was defined as symptoms of confusion, disorientation, altered mental status, not awake and alert as denoted on chart review. Logistic regression analyses were used to examine the relationships between acute delirium and urine cultures as predictors of acute psychosis.

Results: After controlling for the demographics of age and gender, patients positive for urinary nitrites and patients with delirium were significantly (p <.001) more likely to develop psychosis OR 4.81(95%CI 1.57-14.73) and OR 6.58(95%CI 1.9-22.7), respectively. Analyses further demonstrated a significant (p <.001) interaction, indicating that patients with both delirium and urine positive for nitrites were more likely to develop psychosis OR 9.14(95%CI 3.37-24.74). Leukocyte esterase was shown to have no association with developing acute psychosis. Although E.coli was the most frequently isolated microorganism in urine cultures (85%), this bacterium was found not to be a significant predictor of psychosis.

Conclusions: Results demonstrate that patients with UTI positive for urinary nitrites and delirium who have no history of schizophrenia, are more likely to develop psychosis. The presence of both urinary nitrites and delirium in patients who develop psychosis, in the background of UTI, suggest that psychosis may be triggered by an immune system response. This is evident in that psychotic symptoms diminished back to baseline once the UTI was resolved. Potential...
applications to use urinary nitrites as a biomarker for psychosis in susceptible populations with no history of schizophrenia are warranted.

215) Abstract 1262
GREATER FEAR BIAS ASSOCIATES WITH LOWER HEART RATE VARIABILITY IN CHRONIC FATIGUE SYNDROME
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Heightened anxiety has been associated with both an attentional bias for threat-related stimuli and low heart rate variability (HRV), reflecting reduced parasympathetic nervous system activity. According to the neurovisceral integration model, cognitive processes such as attention deployment involve the same brain systems that regulate autonomic function. Few studies to date, however, have examined whether HRV covaries with extent of bias toward threat-related stimuli. Here, we examined associations of bias assessed toward fearful, angry, and happy faces with high frequency HRV (HF-HRV) in a community sample of 337 midlife adults (M age = 43 years, 55% Female, 82% white). Attentional bias was assessed using a dot-probe detection task comprised of fearful, angry, and happy facial expressions, and HF-HRV was derived from a continuous electrocardiogram (ECG) recording during 5-minutes of paced respiration (HF-HRV was also collected for spontaneous respiration and results were similar for analyses using these data). Linear regression analyses controlling for standard demographic covariates (age, sex, race) showed lower paced HF-HRV related to greater bias toward fearful faces (β = -.17, p = .04) but unrelated to biases toward anger (β = -.03, p = .59) or happy (β = -.03, p = .53) facial expressions. These results indicate that preference for fearful stimuli may mediate fear-related stress, in particular, relate to variation in cardiac autonomic control. Because lower HF-HRV is associated with a number of negative health consequences, including an increased risk of cardiovascular disease (CVD), fear-related attentional biases may represent a core neurocognitive attribute of individuals behaviorally predisposed to ill-health, such as those of anxious disposition. Supported by NIH PO1 HD409622

216) Abstract 1273
PARENTING STRESS MEDIATES THE RELATION BETWEEN PARENT ANXIETY AND SOMATIC COMPLAINTS IN HIGH RISK EARLY HEAD START CHILDREN
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Introduction: Preliminary evidence suggests that both maternal anxiety symptoms and parenting stress each independently predict child somatic complaints (Wolff et al., 2009). However, the pathways among these variables have not been well characterized. This information has the potential to identify points of leverage for providers across disciplines.

Participants: Participants were 89 Early Head Start children (M=28.3, SD=7.2 months, 39% female) and their parents (95% mothers). Children were 69% (n=60) Caucasian, 21% (n=18) African American, and 62% (n=55) Hispanic. Over 89% of families were within 150% of the federal poverty level.

Methods: Cross sectional data were collected over 3 years. Parent generalized anxiety was assessed via the Generalized Anxiety Disorder-7 scale (Spitzer et al. 2006). Child somatic complaints were assessed via the Child Behavior Checklist (Achenbach & Rescorla, 2000). Parent total stress was determined by the Parenting Stress Index (Abidin 1983) and explored as a mediating factor.

Results: Parent anxiety was associated with parent stress (B=1.62, t(86)=4.57, p<.001) and child somatic complaints (B=10, t(86)=2.88, p<.005). Parent stress was also associated with child somatic complaints (B=0.03, t(86)=2.47, p=.015). In the present study, the 95% confidence interval of the indirect effects with 5,000 bootstrap resamples (MacKlenon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008) confirmed the mediating role of parent stress in the relation between parent anxiety and child somatic complaints (B=-3.0; Cl=-10 to 0). In addition, results indicated that the direct effect of parent anxiety on child somatic complaints became non-significant (B=-0.6, t(86)=1.57, p=.12) when controlling for parenting stress suggesting full mediation (Figure 1).

Discussion: Results demonstrate that parent total stress fully mediates the relation between parent generalized anxiety and child somatic complaints. Parenting-related stress may indicate a point of leverage for home visitors, who may not be in a position to offer caregivers mental health services, however, do have the access and training to provide support for parents and potentially reduce stress associated with parenting. Thus targeting parenting stress may be an impactful approach to reducing somatic symptoms in children of parents with anxiety.

217) Abstract 1383
INDIVIDUALS WITH CHRONIC FATIGUE SYNDROME (CFS) DISPLAY AN ATTENTION AND INTERPRETATION BIAS FOR ILLNESS RELATED INFORMATION INDEPENDENT OF COMORBID ANXIETY, DEPRESSION AND ATTENTIONAL CONTROL DEFICITS
Rona Moss-Morris, PhD, Alicia Hughes, MSc, Colette Hirsch, PhD, Trudie Chalder, PhD, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, London, United Kingdom

Aim: Chronic fatigue syndrome (CFS) is characterized by severe and disabling fatigue. Theoretical models of CFS propose the way patients attend to and interpret illness related information contributes to maintenance of symptoms and disability but there is limited experimental work in this area. The aims of this study were to investigate whether (1) CFS participants have an attentional bias towards illness related information and an interpretive bias towards somatic information, (2) CFS cognitive processing biases are independent of anxiety and depression and (3) cognitive processing biases in CFS are associated with illness beliefs, fatigue, attention control deficits and disability.

Method: Fifty two CFS and 50 healthy control participants completed three experimental tasks (1) A visual-Probe task measuring attention bias towards illness versus neutral words (2) The Attention Network Test measuring attentional control (3) A recall task measuring positive versus somatic interpretations of ambiguous information. Participants also completed a clinical diagnostic interview and self-report measures of fatigue, disability, and cognitive and behavioral symptom responses.

Results: The CFS group had significantly more mood disorders, fatigue and disability. They showed an attentional bias for illness words (p<.005) compared to healthy controls; and were significantly less likely to show a positive interpretation of ambiguous information (p<.005) even when controlling for comorbidity. The CFS group had poorer attentional control than healthy participants (p<.005), but this unrelated to cognitive processing biases. Attentional bias was associated with increased disability and avoidance of activity and boom/bust behaviours. Positive rather than somatic interpretations were inversely associated with depression, fatigue, disability, and negative symptom interpretations and behaviours.

Conclusion: People with CFS allocate more attention to illness related information and are less likely to positively interpret ambiguous information than healthy controls. These biases are unrelated to comorbid mood disorder or attentional control and may independently play a part in maintaining symptoms by reinforcing negative illness beliefs and behaviours. Enhancing adaptive processing, such as positive interpretation biases and more flexible attention allocation, may provide beneficial intervention targets.

218) Abstract 1384
POSITIVE AND NEGATIVE PSYCHOLOGICAL CONSTRUCTS: INTERRELATION AND INDEPENDENCE IN PREDICTING GENERAL ADHERENCE
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Background: In cardiac patients, positive psychological factors have been associated with improved medical and psychological outcomes. To date it is still unclear whether psychological well-being and psychological distress should be considered as opposite ends of a bipolar continuum or as separate, independent dimensions of mental health. The current study examined the interrealtion between and independence of multiple positive and negative psychological
constructs. Additionally, the role of positive psychological constructs in predicting cardiac adherence was investigated.

Method: 507 percutaneous coronary intervention (PCI) patients were included (mean age=64.7±10.2; 78.7% male). Self-report questionnaires were administered 1 month after PCI. Positive psychological constructs included positive mood (GMS), optimism and low pessimism (LOT-R); negative constructs were depression (PHQ-9, BDI), anxiety (GAD-7) and negative mood (GMS)). Six months after PCI general adherence (MOS) was determined.

Results: Factor Analysis of the total scale scores, using Oblimin rotation, revealed the presence of 2 components (r = -.492), positive psychological constructs and negative psychological constructs (Table 1). Unadjusted multivariate linear regression analysis showed that optimism, low pessimism and positive mood were associated with better general adherence at 6 months (p<.05). In multivariable analysis, only optimism was significantly related with general adherence, independent of demographics, clinical variables, depression and anxiety (p < .05). Higher optimism at baseline was associated with higher general adherence at 6 months follow-up.

Conclusions: Factor analysis showed that the positive and negative constructs should not be considered as opposites of one continuum, rather there are 2 distinct latent dimensions underlying these concepts. In predicting outcomes, such as general adherence, optimism may be of incremental value to negative psychological constructs (depression and anxiety).

Table 1. Summary of exploratory factor analysis results for multiple positive and negative psychological constructs (N=507)

<table>
<thead>
<tr>
<th>Items</th>
<th>Rotated factor loadings</th>
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<tbody>
<tr>
<td></td>
<td>Negative constructs</td>
</tr>
<tr>
<td></td>
<td>Positive constructs</td>
</tr>
<tr>
<td>Depression (PHQ-9)</td>
<td>.94</td>
</tr>
<tr>
<td>Anxiety (GAD-7)</td>
<td>.89</td>
</tr>
<tr>
<td>Negative mood (GMS)</td>
<td>.85</td>
</tr>
<tr>
<td>Depression (BDI)</td>
<td>.80</td>
</tr>
<tr>
<td>Low pessimism (LOT-R)</td>
<td>.84</td>
</tr>
<tr>
<td>Positive mood (GMS)</td>
<td>.65</td>
</tr>
<tr>
<td>Optimism (LOT-R)</td>
<td>.62</td>
</tr>
</tbody>
</table>

PHQ-9= Patient Health Questionnaire 9, GAD-7= Generalized Anxiety disorder 7, GMS= Global Mood Scale, BDI= Beck Depression Inventory, LOT-R= Life Orientation Test Revised

219) Abstract 1422

ASSESSING INDIVIDUAL CHARACTERISTICS PREDICTING SYMPTOM SEVERITY AND RESPONSES TO BRIEF BEHAVIORAL INTERVENTIONS IN PEOPLE WITH PRIMARY INSOMNIA

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Objective: People with primary insomnia suffer from sleep problems not linked to an underlying health condition. The susceptibility to developing insomnia may be linked to some personal traits, and such traits may predict responses to insomina treatments. How these traits relate to sleep disturbance and their role in treatment responses have not been adequately assessed. The study examined personality traits related to baseline symptom severity and assessed which traits relate to treatment responses in insomnia sufferers.

Methods: Adults with insomnia were assigned to one of two behavioral interventions: 1) sleep hygiene education combined with hypnosis for sleep improvement or 2) a sleep hygiene education alone. Prior to the intervention, subjects rated their expectancy of improvement due to the interventions, and completed NEO Five-Factor Inventory assessing personality traits. Subjects also rated their sleep quality and functioning using the Pittsburgh Sleep Quality Index and Functional Outcomes of Sleep Questionnaire; they also underwent objective actigraphic sleep assessments at baseline and after the intervention. The preliminary analyses included bivariate correlations, with all study measures used as continuous variables.

Results: To date, 24 subjects (83% female, mean age = 55.6) completed the study. Preliminary results showed relationships between personality trait agreeableness and the number of wake bouts (r = -.42) assessed by actigraphy. Agreeableness was also related to self-rated functional outcomes of sleep on both general productivity (r = .42) and social outcomes subscales (r = .46). Next, personality trait conscientiousness was related to sleep fragmentation (r = .44) assessed by actigraphy and self-rated daytime dysfunction (r = .47). Further, expectancy of improvement due to hypnosis was negatively associated with baseline actigraphic sleep quality measures sleep efficiency (r = .47), wake after sleep onset (r = -.44), and sleep fragmentation (r = -.55). The results describing how personality traits predict post-intervention changes in sleep quality will also be discussed.

Conclusions: Preliminary results suggest associations between personality characteristics and objective and subjective sleep measures. Further, the severity of baseline symptoms may influence participants’ expectancy of sleep improvement due to an intervention.

220) Abstract 1475

EFFECTS OF EMOTIONAL SUPPORT ON COGNITIVE PERFORMANCE MAY BE MODERATED BY PERSONALITY FACTORS

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Participants and Methods: Participants were 352 African-American and White, urban-dwelling adults (mean age = 48.3±years; 67% female; 46% White; 32% below poverty line) from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study who completed the NEO Personality Inventory – Revised Version, Emotional Support Questionnaire, the California Verbal Learning Test (CVLT), Benton Visual Retention Test, Trail Making Test, and the WAIS-R Digit Span Forward and Backwards. Multiple regression analyses were used to test personality traits, emotional support and their interaction on neuropsychological functioning controlling for age, poverty status, and education. Analyses were then stratified by race and sex.

Results: For extraverion, there were significant interactions with emotional support for African American men on visual memory (BVR; β=-.205, p=.018) and verbal learning (CVLT; β=.042, p=.025) and for White women on verbal learning (CVL Long Delay Free Recall; β=.098, p=.024), such that those who were low on extraversion performed better when they had less emotional support, while those high on extraversion performed better when they had more support.

For agreeableness, there were significant interactions with emotional support for White men (Trails B; β=.014, p=.019) and African American men (Trails B; β=.049, p=.008) on visual attention and task switching, such that performance decreased as a function of high Agreeableness and low emotional support. Low agreeableness and low support were associated with poorer performance for African American women on visual memory (BVR; β=.126, p=.047). However, this effect became less prevalent with more support, such that social support was less relevant for visual memory at high levels of agreeableness.

Conclusions: The effects of emotional support on cognitive performance may be moderated by personality factors. It appears that higher levels of social support are particularly beneficial for people who are high in extraversion, while the picture is less clear for the trait of agreeableness.

221) Abstract 1516

PSYCHOLOGICAL DISTRESS AND BLOOD LIPID LEVELS: FINDINGS FROM THE NURSES’ HEALTH STUDY

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Background: Psychological distress has been linked with biological dysregulation, including dysregulation of blood lipids. We aimed to expand on previous research by determining if symptoms of depression or phobic anxiety are associated with lipid levels among women, an under-studied population. We considered associations not only with total cholesterol (as often done in previous studies) but also with LDL-C, HDL-C, and triglycerides.

Methods: Participants were 6,329 women (mean age 59) from the Nurses’ Health Study (NHS) who were free from major illnesses and provided blood samples between 1989 and 1990. Depressive symptoms were assessed with the 5-item Mental Health Index. Phobic anxiety was assessed with the 8-item

A-121
Ambivalence towards supervisor behavior is associated with reduced vagal activity

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Introduction: Ambivalent social ties, i.e., whereby a relationship is comprised of positive and negative terms, have been identified as stressful and a risk factor for health. However, the role and consequences of ambivalent relationships at work have not been studied. The current study examined cross-sectional and longitudinal associations between ambivalent attitudes towards one’s supervisor and 24-hour ambulatory heart rate variability (HRV).

Methods: Cross-sectional and longitudinal data of the Mannheim Industrial Cohort Studies were used. Ambivalence towards leadership was determined as the co-occurrence of positive supervisor behaviour and burdening supervisor behaviour, assessed with separated 5-item scales (alpha > .84). HRV indices comprised root mean square of squares of successive differences (RMSSD), standard deviation of all NN intervals (SDNN), low-frequency (LF), and high-frequency power (HF) from 24-hour, a day-time and a night-time mean. General linear models explored adjusted (age, sex, lifestyle) associations of ambivalent leadership with HRV indices cross-sectionally (24-hour n = 491; day n = 271; night n = 254) and longitudinal (mean follow up: 6 years; 24-hour n = 355; day n = 205; night n = 191).

Results: In cross-sectional analysis ambivalent leadership was negatively associated with night-time HRV measures (RMSSD beta = -.156, p = .020, SDRR beta = -.131, p = .052, LF power beta = -.152, p = .035, HF power beta = -.150, p = .033). In longitudinal analysis, an increase in ambivalent leadership was associated with reduced 24-hour HRV (RMSSD beta = -.114, p = .076, SDNN beta = -.123, p = .053, LF power beta = -.169, p = .029, HF power beta = -.164, p = .036). These associations tended to be stronger for night-time HRV (RMSSD beta = -.200, p = .025, SDRR beta = -.196, p = .035, LF power beta = -.222, p = .039, HF power beta = -.225, p = .032). Conclusion: Stronger ambivalence towards a supervisor was associated with decreased HRV. The detrimental impact on night-time measurements suggests that ambivalent leadership may impair physiological recuperation during sleep as indexed by vagally mediated HRV measures. Ambivalent ties at the work place may deserve further investigation as a novel determinant of employee distress and health and a potential target for intervention.

Heart rate variability, inhibition, and false memories: further evidence for the model of neurovisceral integration

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The neurovisceral integration model (NIM) posits that executive brain areas such as the prefrontal cortex are not only responsible for the adaptive regulation of emotional processing, and behavior, but also the vagus nerve. The vagus innervates many vital organs, including the heart. The NIM posits that the outflow of executive brains areas can be measured at the level of the heart via the vagus – a measure termed vagally mediated heart rate variability (vmHRV). While converging evidence has linked resting vmHRV with overall self-regulation, in the domain of cognitive control, our group recently showed resting vmHRV to predict false memories – such that individuals with lower vmHRV showed better mnemonic performance than a lower performance between true and false memories. While it is theorized that inhibition is the underlying mechanism linking such a relationship, little research has directly investigated these claims. The current analysis uses a self-report measure of inhibition to analyze the theorized mediating role of inhibition on the link between resting vmHRV and cognitive control, specifically, false-memory recall. The sample consisted of 63 undergraduate students (34 female, mean age 18.76) who had completed a heart rate data collection and a false memory task during a 24-hour baseline period. Students then completed a false-memory paradigm, the Deeese-Roiger-McDermott (DRM) task, in which the students viewed 18 word lists (12 words per list), and were subsequently instructed to identify previous words (true memories), and to reject novel words (false memories). Participants then completed the Effortful Control Subscale of the Adult Temperament Inventory.
Questionnaire (ATQ), which consists of scales for inhibitory, attention, and activation control. The inhibitory control scale was of particular interest for our study, given the aforementioned link between inhibition, vmHRV, and cognitive control. Mediation analyses controlling for age and body mass index showed that the inhibition subscale only mediated the relationship between vmHRV and false-alarm rates on the DRM paradigm (β = .0049, SE: .0035, Boot CI: [.152, -.0003]). These results directly support the NIM, suggesting that inhibition indeed links resting vmHRV with cognitive control processes such as the appropriate recall of memories. These results further lend support to the notion that resting vmHRV may represent activity in executive brain areas and self-regulation capacity. Implications for health and cognition will be discussed.

225) Abstract 1637
RELATIONSHIP QUALITY AND BODY IMAGE: CAN SUPPORTIVE SPOUSES MAKE A DIFFERENCE?
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Background: Women receive many body-image media messages which can negatively affect eating behaviors and self-image. Previous research has associated eating behavior disorders (ED) with marriage and intimate relationships, but less is known about how the quality of these intimate relationships impacts ED behavior and how a quality relationship may buffer these negative messages. Additionally, much of the literature focuses on women who are already diagnosed with ED while ignoring women who may exhibit ED behaviors but have not been diagnosed (e.g., sub-clinical). Sub-clinical symptoms are the most common forms of ED and many individuals with sub-clinical anorexia nervosa eventually develop full syndrome. Our study examined the association between relationship quality (RQ) and ED symptoms in 24 sub-threshold women.
Method: 24 sub-threshold (i.e., not diagnosed but showing symptoms) married women ages 18-50 (M=30; mostly white) completed RQ measures and participated in a one-on-one interview with researchers in order to obtain more in-depth information regarding their relationships, self-esteem and body image. Results: Most women (76.2%) did not meet clinical levels of distress in their relationship, indicating that their relationship was positive and supportive. Most (95.8%) indicated that intimate relationships do have an effect on a woman’s self-esteem and body image. Further, most (91.7%) reported that when they are feeling unhappy with their appearance, their spouses respond positively and supportively. However, despite their assertions of positive RQ, most (83.3%) responded negatively to the question “When I see myself nude in the mirror, my reaction is...”. Responses included words or phrase, such as “gross”, “disappointment”, “you look awful”, “to look away”, and “appalled”.
Conclusions: Our results demonstrate that there appears to be a disconnect between women’s perception of how a relationship impacts body image, and the reality of their own marital relationship and body image. Most of our sub-threshold women claimed their husbands were supportive and their relationship was good but contradict these statements as they self-report harsh and negative statements about their bodies in the written response question. These results demonstrate that RQ may not be effective at buffering the negative messages women receive regarding their bodies.

226) Abstract 1654
PREDICTING POLICE PERFORMANCE FROM STRESS PHYSIOLOGY: IMPLICATIONS FOR POLICE TRAINING POLICIES
Judith P. Andersen, PhD, Psychology, University of Toronto, Mississauga, Ontario, Canada, Konstantinos Papazoglou, MA, Psychology, University of Toronto, Mississauga, Ontario, Canada, Marian Piel, HBSc, Ashini Weerasinghe, HBSc, Andrew Daoust, HBSc, Psychology, University of Toronto, Mississauga, Ontario, Canada
Standard police training focuses on de-escalation of critical incidents without regard to the officer’s psychological or physiological state. Although promising, no scientific evidence indicates that current training improves performance. In prior research, the authors examined multi-day cardiovascular and cortisol profiles among Special Forces police officers in North America and Europe (n=86). Baseline cardiovascular parameters (e.g., heart rate, heart rate variability, and cortisol diurnal patterns were measured in addition to cardiovascular and cortisol reactivity to stressful critical incidents. Despite the officers’ reports that they were not stressed by the simulated critical incidents, results revealed significantly elevated cardiovascular and cortisol reactivity to critical incident scenarios (e.g., elevated heart rate max and anticipatory cortisol, and extended heart rate and cortisol recovery). In many cases, the level of flight or flight reactivity was to the degree associated with serious perceptual distortions such as tunnel vision, auditory exclusion, loss of cognitive acuity and poor motor dexterity.
Based on these results, we examined if physiological stress reactivity predicted police performance during critical incident scenarios. Male police officers (n=14) during a 10-day intensive training program for entrance into police special forces. Training included classroom learning and advanced tactical scenario training (e.g., hostage situations, school shootings, gang violence). Experienced Special Forces police trainers, independent of the research, rated participants’ performance at the end of each tactical scenario and assigned an overall performance score to each participant at the end of the 10-day period. Performance was operationally defined as a composite of: cognitive function during stress, skill level, use of force decision making (e.g., shoot/no shoot), and ability to follow police ‘best practices.’ Adjusting for BMI, physical fitness and age, results revealed that physiological reactivity, in terms of heart rate max during a critical incident, and time to recover following an incident, were associated with performance ratings (r=.05). Specifically, significantly elevated max heart rate during the scenario and extended time to recovery (e.g., return to resting heart rate) was associated with poor performance ratings. Significantly elevated anticipatory cortisol was also present among poor performers. Results suggest that addressing police physiological stress reactivity to stress may be of critical importance when designing training curriculum to improve police health and use of force decision-making. Implications for public policy will be discussed.

Police Officers’ Physiological Reactivity During a Smokey Building Scenario

227) Abstract 1671
NEED FOR AFFECT AND HEART RATE VARIABILITY: A CAREFUL EXAMINATION OF THE MOTIVATION TO APPROACH AND AVOID EMOTIONAL EXPERIENCES
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The need for affect (NA) can be defined as the motivation to approach, and not avoid, emotional experiences. Resting vagally mediated heart rate variability (vmHRV) is widely recognized as a psychophysiological index of emotional control. Recently, we showed a negative association between resting vmHRV and NA in 50 subjects, indicating that lesser avoiding and approaching of emotions are associated with higher resting vmHRV (no relationship between vmHRV and overall NA). These findings suggest that those who have better emotional and autonomic control regulate emotions as they emerge (neither approach nor avoid). In the current investigation, we reevaluate the association between HRV and NA (approach and avoid) by controlling for potential confounds in a larger sample of 82 undergraduate participants (52 female, 56 European Americans, mean age = 19.18, SD = 2.06). While attached to a 3-lead electrocardiogram (ECG), participants completed a baseline-resting period for 5-minutes, and then completed the 26-item NA Scale, which includes the motivation to avoid (NA-avoid) and approach (NA-approach) subscales, where higher scores reflect greater avoiding and approaching of emotions, respectively. High frequency heart rate variability was analyzed in accordance with Task Force guidelines, and is regarded as an index of vmHRV. Zero-order correlations replicated our previous finding, showing that lower vmHRV is associated with higher NA-approach (r=.223, p < .05) and NA-avoid (r = .219, p < .05) scores. However, regression results show that after controlling for trait rumination, trait anxiety, BMI, gender, ethnicity, age, respiration, vmHRV is negatively correlated with NA-approach (r = -1.924, r partial = -272, A-123
p=0.021 (0.05), but not NA-avoid (β= -0.087, t(1,077), p=0.468 (0.05). These results suggest a unique relationship between vmHRV and approaching emotional experiences – individuals with lower vmHRV tend to approach emotional experiences. This pattern of behavior seems maladaptive, as lower vmHRV is indicative of lesser control of emotions, particularly when negative. Future research is needed to determine possible physiological and psychological impact that may occur due to this seemingly maladaptive behavior.

**229) Abstract 1677**

**SELF-ESTEEM MODERATES THE RELATIONSHIP BETWEEN SLEEP DURATION AND DEPRESSIVE SYMPTOMS AMONG HIGH SCHOOL STUDENTS**

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Sleep disturbances have a persistent negative effect on both physical and mental health, and are associated with depressive symptoms, anxiety, low levels of self-esteem and psychological distress. Adolescents are chronically more sleep-deprived than preadolescents and adults, making them an important population to study. Of the negative mental health issues associated with sleep disturbance, depression is one of the most prevalent psychiatric disorders among adolescents. Research is needed to understand factors involved in the relationship between sleep and depressive symptoms among adolescents. Past studies indicate that self-esteem contributes in the development and maintenance of depression; therefore we examined the impact of self-esteem in the relationship between hours slept and depressive symptoms among high school students. One previous study has examined the relationship between sleep, self-esteem, and depressive symptoms among high school adolescents (average age 14.17, 25% Hispanics) establishing that those with lower sleep quality and self-esteem had higher depressive symptoms. The current study extends this area of research by exploring self-esteem as a moderator of the relationship between sleep and depressive symptoms among an ethnically diverse sample of 976 high school students (60% female, average age=15.38, SD= 1.099; 67% Hispanic). Participants took the 10-item CES-D (alpha=.96), Rosenberg Self-Esteem Scale (alpha=.83), and reported on an average school night, how much sleep they get. A linear model testing the main effects of sleep and self-esteem, and their interaction, was significant, F(3, 703)= 131.46, p < .001, and explained 36% of the variance in depressive symptoms. Both main effects and the interaction (t = 3.42, p < .01) were statistically significant, indicating that low self-esteem strengthens the relationship between sleep and higher depressive symptoms. Youth with depressive symptoms are at high risk of developing clinical depression. Recent research suggests that behavior treatments may overall improve depressive symptoms by increasing self-efficacy and self-esteem in depressed patients. Early prevention and intervention programs relating to the improvement of sleep and self-esteem may help adolescents cope effectively with adjustment problems and symptoms of depression.

**230) Abstract 1681**

**WANT BETTER SLEEP AND LESS DEPRESSION? PUT MORE DISTRACTING ACTIVITY IN YOUR DAILY LIFE**

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Many behavioral interventions (e.g., meditation) have benefits for sleep problems and depressive symptoms but tend to have poor adherence. They may improve these conditions partly by absorbing and directing attention away from one’s negative thoughts about stressful events (PCs, i.e., perseverative cognitions or worry and rumination). Also, more John Henryism active coping (JHAC, i.e., high striving coping style) predicts less depression risk. We posited that stronger profiles (i.e., more positive mental state, less difficulty, more distraction, and less thinking about negative life events based on separate factor analytic tests) for recurring self-selected activities (SSAs) over the prior month may also be linked with better sleep quality and lower depressive symptoms in the past week and that those prone to PCs and lower on JHAC were less likely to show these effects. Participants (n = 362) rated each of 2 SSAs with 11 items [e.g., how (distracting; challenging; rejuvenating) the activity was; and while doing the activity how much they (thought about negative events; became so absorbed in the activity that they did not notice anything else going on around them)]; and the degree to which hectic aspects of life became less relevant while doing the activity; and responded to the Pittsburgh Sleep Quality Index (PSQI), the CESD Depression, Penn State Worry, Rumination Response and JHAC scales.

Regression analyses (adjusting for age, sex, BMI and parents’ education) tested if the factor analyzed dimensions of combined SSAs: (a) a positive mental state while doing the activity (SSA-PO); (b) difficulty doing the activity (SSA-DF); (c) distracting (SSA-DI); and (d) think about negative event (SSA-TN), and their respective interactions with trait PCs and JHAC predicted total sleep quality (higher scores signify worse quality) and depression scores. The relationships of SSA-DI and SSA-TN with depression scores were moderated by PCs (std. b=.447 to .611; Ps < .006) and by JHAC (std. b=-1.190 to -.577; Ps < .073). The relationships of SSA-DI (std. b = 1.820; P < .0001) and SSA-TN (std. b = -.1.074; P < .022) with sleep quality scores were moderated by JHAC. Follow-up analyses revealed that SSA-DI and SSA-TN were each unrelated to depression and sleep quality at low PCs or high JHAC but that more SSA-DI and SSA-TN each predicted more depression and worse sleep quality for those more prone to PCs or with lower JHAC (see selected Figures below). The results suggest that more distraction from negative events during SSAs predicts less depression and better sleep quality for those who tend to perseverate less or strive more. Thus, SSAs may serve as an adjuvant intervention strategy to lower depression and improve sleep quality.

![Image](https://via.placeholder.com/150)

**Figure 1. SSA-DI score by PC level in CESD scores.**

**Figure 2. SSA-TN score by JHAC level in PSQI scores.**

**231) Abstract 1551**

**DOES CHILDHOOD PSYCHOLOGICAL DISTRESS MEDIATE THE RELATIONSHIP BETWEEN EARLY-LIFE SOCIAL DISADVANTAGE AND ADULT CARDIOMETABIC RISK?**

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Objective: Prior research on the relationship between early adversity and adult chronic disease has often relied on retrospective reports of a narrow range of childhood exposures, and has not been able to consider childhood psychological distress as a mediator of the effects of adversity. Building on prior work focusing on cardiometabolic disease, we test the hypothesis that early social disadvantage leads to higher distress in childhood, which in turn leads to greater cardiometabolic risk in middle adulthood.

Methods: We used data from the 1958 British Birth Cohort study (sample N=6071). We created an early social disadvantage index based on 16 exposures...
related to family instability and socioeconomic hardship from birth to age 7. Childhood psychological distress was ascertained from teacher-reported internalizing and externalizing symptoms assessed at, and averaged across, ages 7, 11, and 16 years. We created a Z-standardized cardiometabolic risk score based on nine immune, cardiovascular, and metabolic biomarkers measured when participants were 45 years old. Linear regression models were used to assess the relationships between early social adversity, distress, and subsequent cardiometabolic risk, and formal tests of mediation were conducted. Results: Increased early social disadvantage exposure predicted increased adult cardiometabolic risk (β = 0.05, SE = 0.01, p < 0.001). Mediation analyses revealed a significant direct (path c′; β = 0.03, SE = 0.01, p < 0.003) and indirect (path ab; β = 0.02, 95% CI: 0.02–0.03) effect of social disadvantage on cardiometabolic risk, adjusting for potential confounders. Child psychological distress accounted for 40% (95% CI: 28–67%) of the observed association. Conclusions: This study supports the hypothesis that early life exposure to adversity leads to cardiometabolic dysregulation across multiple biologic systems, and suggests an important role of child psychological distress as a pathway linking early disadvantage to higher risk of developing cardiometabolic diseases. If replicated, results suggest the importance of impeding the translation of psychosocial to biological risk during a potentially sensitive developmental window. Directing policy and intervention efforts at children (and families) experiencing adversity and distress early in life may help to mitigate long-term vulnerability to cardiometabolic disease.

Figure 1. Mediation model, adjusting for sex, low birth weight, childhood physical health problems, maternal age, and maternal education.

### 232) Abstract 1684 USING SYSTEMATIC REVIEW TO TRANSLATE DISCOVERIES FROM BENCH TO PRACTICE

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Systematic Review has the strength and power to take previously hidden- at-results to monetary-savings or applicable-practices. Though this type of research uses past empirical research as "participants", the strength of analytical outcomes is none-the-less itself primary and empirical in nature. The novel data synthesized has never before been generated. Current arguments as to whether this type of research "counts" as primary research may be useless, egotistical, and short-sighted as practical, evidence-based, and innovative outcomes can attest.

Psychoneuroendocrinology research was recently undertaken by our group to discover trends in biomarkers and depression; however, in addition to biomarker utility, the research revealed structural strengths and weaknesses in the research of the far and recent past. This presentation discusses methodological considerations with regard to parameters such as heterogeneity, clinical significance, and statistical analyses when undertaking a) this type of primary review research, and b) the observational and/or experiential research used for initial investigations. We also discuss the difficulties undertaking Systematic Review such as obtaining the data, the lack of transparency within the research or its publication, and huge monetary losses to the United States, in particular, and the world in general. Lastly, we discuss how a Modified Systematic Review was used to answer a large biopsychological question.

### 233) Abstract 1119 INFLAMMATORY CYTOKINES, SEXUAL DYSFUNCTION AND HEALTH-RELATED QUALITY OF LIFE (HRQOL) IN MEN WITH LOCALIZED PROSTATE CANCER

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Previous work has shown that inflammatory cytokines are associated with greater symptom burden in cancer populations. However, most of this work has focused on symptoms such as fatigue and has been conducted in breast cancer samples. Men with localized prostate cancer (LPC) may experience sexual dysfunction and other decrements in health-related quality of life (HRQOL) even prior to the start of cancer treatments. Research in men without a history of cancer has shown that greater inflammation may contribute to sexual dysfunction and erectile dysfunction, but this has not been evaluated in LPC. This study evaluated the association between pro-inflammatory cytokines (IL-1β, IL-6 & TNF-α) and sexual functioning, sexual bother and HRQOL and in men with LPC who had not yet started active treatment. We hypothesized that greater inflammation would be associated with greater sexual dysfunction and bother, and lower HRQOL, adjusting for relevant covariates (i.e., age, time since LPC diagnosis, comorbid health conditions).

Participants were 104 ethnically diverse men (mean age 63.08 [SD=8.19], 45% Hispanic, 55% non-Hispanic white) with LPC who completed the Expanded Prostate Cancer Index Composite (EPIC) and the Functional Assessment of Cancer Therapy-General (FACT-G) at a single time-point. Peripheral blood samples were collected to measure PBMC stimulated production of IL-1β, IL-6 & TNF-α prior to the start of active prostate cancer treatment. Hierarchical regression models controlling for relevant covariates were conducted to evaluate the association between pro-inflammatory cytokines, and EPIC sexual functioning and bother scores, and HRQOL.
Greater IL-6 had modest correlations with poorer overall HRQoL, social well-being, and sexual functioning (r=−0.20 to −0.26, p<0.05); and greater TNF-α was also related to poorer sexual functioning (r=−0.28, p<0.05). There were no significant relationships between IL-1β and HRQoL or sexual function and bother. After controlling for covariates, TNF-α was no longer significantly related to sexual outcomes, but there were trends for greater IL-6 related to poorer sexual functioning. Study findings demonstrate that select inflammatory cytokines (IL-6) may be related to poorer sexual functioning in men with LPC when accounting for clinical or demographic factors, but that other factors (e.g., comorbidities) are more robustly associated with these symptoms. Findings partially support previous studies that linked greater inflammation with increased erectile dysfunction in non-cancer populations. Future studies should address these associations in the post-treatment period when inflammatory states and treatment related dysfunction are more common.

234) Abstract 1297

BRIEF 5-WEEK COGNITIVE BEHAVIORAL AND RELAXATION TRAINING INTERVENTIONS DEMONSTRATE COMPARABLE INCREASES IN BENEFIT FINDING TO 10-WEEK CBM Intervention among Post-surgical Breast Cancer Patients

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Objective: 10-week Cognitive-Behavioral Stress Management (CBSM) group intervention has been shown to increase benefit finding (BF) compared to half-day education control among post-surgical breast cancer patients up to 12-month follow-up. However, studies have not yet examined such effects for briefer 5-week Cognitive Behavioral (CB) and Relaxation Training (RT) interventions that make up the 10-week CBSM, or compared these BF effects to those of 10-week CBM intervention. The present comparative effectiveness study compares 5-week CB and RT (CB/RT) intervention effects on BF at 6 and 12-month follow-ups vs. 10-week CBSM vs. a half-day education control.

Method: Two randomized controlled trial samples were compared. In sample one (N = 101), women up to 8 weeks post-surgery were randomized to 10-week CBMS intervention or half-day education control group, while in sample two, women at the same point in treatment (N = 116) were randomized to 5-week CB or RT intervention or education control group. All conditions were administered in groups of 3 – 8 women. In both samples, women completed a 17-item Benefit Finding Scale (BFS) at baseline (T1), 6-month follow-up (T2), and 12-month follow-up (T3). A 3 x 3 repeated measures ANOVA tested whether 5-week CB or RT (CB/RT) interventions increased BF relative to 10-week CBMS and half-day education control group.

Results: Women in CB/RT reported increased BF from T1 to T3 (p < .001). The omnibus group x time interaction comparing CB/RT vs. CBSM vs. control was significant (p = .008). Follow-up comparisons revealed no significant difference in T1-T3 BF increases between women in 5-week CB/RT vs. women in 10-week CBM (p = .622), while women in both 10-week CBSM (p = .006) and the 5-week CB/RT (p = .003) showed significantly greater increases in BF from T1-T3 compared to half-day education control.

Conclusions: Women who receive brief, 5-week CB or RT group-based interventions report increases in BF across a 12-month follow-up that are comparable to BF increases achieved by a 10-week CBM group intervention. Findings suggest that brief interventions may be sufficient to promote increases in BF as part of women’s overall coping and recovery following surgery for breast cancer.

235) Abstract 1441

THE ASSOCIATIONS AMONG AWARENESS OF HPV INFECTION, SOCIODEMOGRAPHIC FACTORS AND HEALTH RESOURCES AMONG ADULT WOMEN IN THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 2009-2012

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Background: Human papilloma virus (HPV) is a highly prevalent sexually transmitted infection and the leading cause of cervical cancer in the United States. Because most HPV infections are asymptomatic and remit spontaneously, many women are unaware of their HPV status. Research has yet to consider factors that may identify women with high risk HPV who are unaware of infections.

Methods: We assessed the association between awareness of HPV infection, sociodemographic variables, and health resources among adult women using 4 years of cross-sectional data from the National Health and Nutrition Examination Survey (N=595). Participants who tested positive for high risk HPV (via vaginal swab) were asked whether a doctor had ever told them they had HPV. A binary variable was created to identify awareness of HPV infection (1=Unaware/0=Aware). Sociodemographic characteristics included age, race/ethnicity (Mexican American/Other Hispanic/Non-Hispanic Black/Other vs Non-Hispanic White), high school education (yes/no), income to poverty ratio (130-349%, >350% vs <130%), marital status (widowed/divorced/separated/never married vs married/cohabiting), Health resource variables included insurance status (insured vs not insured) and availability of a routine place to go for healthcare (yes/no). A multivariable logistic regression analysis was conducted to assess the association of these variables with awareness of HPV infection.

Results: Nearly 88% of women with high risk HPV were unaware of their infection. Age, education, and race/ethnicity were independently associated with awareness. Compared to those aged 18-24, those aged 25-29 (OR=0.28, 95% CI, 0.10-0.78) and those aged 30-34 (OR=0.22, 95% CI, 0.10-0.50) were less likely to be aware of their infection. In contrast, those aged 40-44 had over four times the odds of being unaware of their HPV infection (OR=4.21, 95% CI, 1.15-15.37). Finally, compared to Non-Hispanic Whites, those of Other and multiple race/ethnicities were less likely to be unaware (OR=0.30, 95% CI, 0.13-0.72), as were those with at least a high school education (OR=0.40, 95% CI, 0.18-0.88).

Conclusions: These data indicate that most women with high risk HPV are unaware of their infection. Although awareness of HPV infection was associated with several sociodemographic characteristics, it was not associated with health resources.

236) Abstract 1452

POSITIVE AFFECT AND EMOTIONAL WELL-BEING RELATE TO LESS PRO-INFLAMMATORY LEUKOCYTE GENE EXPRESSION IN DISSEMINATED WOMEN WITH NON-METASTATIC BREAST CANCER AFTER SURGERY

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Objective: Women diagnosed with breast cancer (BCa) report high levels of cancer-specific distress prior to the start of adjuvant therapy. Existing literature indicates that distress may support inflammation by disrupting HPA axis related inflammatory control through increased cortisol secretion. Subsequent increases in pro-inflammatory chemokines such as CCL3 (a chemokine that supports tumor growth) or CXCR7 (a receptor on CXCL12, which is a chemokine that may contribute to metastases) can contribute to outcomes & disease progression. Our aim was to explore the less studied relationship between positive affect & emotional well-being and pro-inflammatory chemokine gene expression in women who report high levels of cancer-specific distress prior to adjuvant treatment.Methods: Women (N=183) with non-metastatic stage 0-III BCa were recruited 2-10 weeks post-surgery to participate in a psychosocial intervention prior to adjuvant therapy. For the present study, we focused on women (N=65) who had both top 50% gene expression in association with cancer-specific distress, the Impact of Events Scale (Intrusion Subscale, M=2.04, SD.57, n=64, 7 items) and provided blood samples. Women also completed the Affect Balance Scale and the Emotional Well-Being subscale of the Functional Assessment of Cancer Therapy – Breast (FACT-B, α=.81, 6 items). A shortened inventory of the FACT-B Emotional Well-Being subscale was created to specifically assess fears of death and recurrence (α=.71, 3 items). Chemokine (CCL3, CXCL12, and chemokine receptor (CXCR7) gene expression was measured by quantitative PCR analysis of B-cells.Results: Multiple regression analyses showed that greater positive affect and emotional well-being, as well as few fears of death and recurrence, were significantly related to less pro-inflammatory chemokine gene expression (CCL3, CXCR7) when controlling for age, stage, time since surgery, and BMI (all ps<0.05).
Conclusions: Positive affect & emotional well-being are related to less pro-inflammatory chemokine gene expression in distressed women recently diagnosed with BCa above and beyond effects of potential confounders. Future research should investigate whether psychosocial interventions promoting positive affect and emotional well-being may have salutary effects on inflammatory signaling for women with high distress after BCa surgery.

237) Abstract 1478
PATIENT-REPORTED AND FITBIT-ASESSSED PHYSICAL ACTIVITY: ASSOCIATIONS WITH INFLAMMATION AND RISK OF READMISSION AFTER METASTATIC CANCER SURGERY
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Background: Regular physical activity has been associated with lower levels of systemic inflammation, and sustained activity during cancer treatment promotes quality of life. Possible beneficial effects of perioperative activity on inflammation and clinical outcomes following metastatic cancer surgery have not been investigated.
Methods: Patients with metastatic peritoneal cancer scheduled for curative surgical resection were enrolled at their preoperative clinic visit. Self-reported exercise frequency was assessed before surgery. After surgery, a Fitbit Flex device was placed on patients’ nondominant wrist to track steps taken each day over the duration of their inpatient recovery. Measures of postoperative recovery include: (1) serum IL-6 levels and (2) hospital readmission within 30 days of discharge.
Results: To date, 17 patients have completed the protocol (mean age = 58.7 years, SD = 9.7, range = 43-72; 41% female; mean body mass index = 25.5, SD = 5.2; 53% with appendiceal cancer). Serum IL-6 increased significantly from the morning of surgery to postoperative day 3, with most patients exhibiting a slight decline in IL-6 by postoperative day 7. Mean length of postoperative hospital stay was 13 days, and more than half (59%) of patients were readmitted within 30 days of discharge. Patients reporting higher levels of preoperative exercise had: 1) more Fitbit-assessed steps over the postoperative recovery period (r(15) = .61, p = .015); 2) greater increases in number of steps per day over the course of their postoperative recovery (r(15) = .58, p = .025); 3) lower IL-6 levels prior to surgery (r(15) = -.57, p = .028) and at 7 days post-surgery (r(10) = -.86, p = .002); 4) greater reductions in IL-6 from postoperative days 3 to 7 (β = -.63, p = .012); and 5) reduced 30-day readmission risk (F(1,15) = 4.41, p=.053). Fitbit-assessed steps on postoperative day 6 were associated with greater reductions in IL-6 from postoperative day 3 to 7 (β = -.57, p = .045), and greater increases in steps per day during postoperative recovery were associated with lower readmission risk (F(1,13) = 7.30, p = .018).
Conclusions: Patient-reported physical activity prior to surgery and increasing Fitbit-assessed activity during postoperative inpatient recovery were associated with lower levels of IL-6 and reduced likelihood of readmission following surgical resection of metastatic cancer. These preliminary results suggest that higher levels of perioperative physical activity may benefit surgical oncology patients, reducing inflammation and improving outcomes. If findings are replicated in a larger sample and are robust to statistical adjustment for covariates, commercial activity trackers may provide scalable opportunities to measure and promote perioperative physical activity.

238) Abstract 1482
EFFECTS OF CHRONIC AND ACUTE STRESS ON ALPHA AMYLASE AMONG FAMILY CANCER CAREGIVERS
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Cancer imposes stressful challenges to the family caregivers that are likely to be exacerbated by existing chronic stress and alleviated by existing resources. Those individual-level sociocultural risk and resource factors are also likely to play different roles by ethnic groups. We tested, with family caregivers of colorectal cancer patients, (a) the effects of stress from perceptions of discrimination and social support (chronic factors) and of becoming a caregiver (acute factor) on alpha-amylase (AA), a stress biomarker; and (b) the role of ethnicity as a moderator of these effects. Family caregivers of cancer patients who were newly diagnosed with colorectal cancer participated in the study (N =92, 50 years old; 75% female; 64% Hispanic; 3-mm post-diagnosis). Caregivers collected saliva at wake-up and bedtime for two consecutive days; AA was assayed and served as an outcome. Perceived discrimination (Perceived Discrimination Scale), caregiving stress (Pearl Stress Scale), social support (ISEL), and ethnicity (Non-Hispanic White vs Hispanic) were primary predictors. Age was a covariate. Caregivers were comparable between the two ethnic groups in study variables, except that Hispanics reported lower levels of perceived discrimination, unexpectedly, than Whites (p=.04). Hierarchical regression analyses revealed that awakening AA was positively related to older age (β=−.37, p=.001). Bedtime AA remained related to older age, but more weakly (β=−.22, p=.04). Above and beyond reported greater perceived discrimination related to higher bedtime AA among Hispanics (β=.18) but lower bedtime AA among non-Hispanic Whites (β=−.31), p<.04. Caregiving stress and social support were not related to AA, regardless of ethnicity. Findings suggest that chronic stress, such as discrimination, is manifested differently in biomarkers between Hispanics and non-Hispanic Whites during the time after the cancer diagnosis of a family member. Testing the assumption of the Reserve Capacity Model, investigation of long-term health outcomes of Hispanic caregivers’ perceived discrimination is warranted. Unexpected findings of White caregivers reporting greater discrimination and its relation to better biological regulation at bedtime need to be replicated for meaningful interpretation. Longitudinal investigation including other ethnic groups and sociocultural risk and resource factors will be fruitful.

239) Abstract 1495
OXYTOCIN, PSYCHOSOCIAL FACTORS, AND BETA-ADRENERGIC SIGNALING IN OVARIAN CANCER: PARADOXICAL FINDINGS
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Objective: Oxytocin, often referred to as the “bonding hormone”, is a neuropeptide released during social and affiliative behaviors. Oxytocin has received attention as a stress buffer and a potential mechanism by which social support may provide health benefits. Social support is a known predictor of survival in ovarian cancer and ovarian tumor cells express oxytocin receptors. Exogenous oxytocin has been shown to inhibit growth of ovarian tumors, but the role of endogenous oxytocin in ovarian cancer is unknown. The following study examined relationships between plasma oxytocin, beta-adrenergic signaling, and psychosocial factors in ovarian cancer patients. We predicted that high levels of social support would be related to higher levels of plasma oxytocin and that in-vitro, oxytocin would buffer against the known stimulatory effects of norepinephrine (NE) on ovarian tumor cell production of vascular endothelial growth factor (VEGF), an angiogenic cytokine.
Methods: Pre-surgery, 107 ovarian cancer patients completed measures of perceived social support (Bem Social Support Scale), mood (mini-POMS) and provided a sample of peripheral blood. Based on our previous work, the social attachment subscale of the SPS was dichotomized at a median value of 14. Oxytocin was extracted from plasma using solid phase chromatography and analyzed by ELISA. Plasma NE was assessed by HPLC with ECD. To examine potential interactions between oxytocin and NE in the tumor microenvironment, SKOV3 ovarian tumor cells were treated with oxytocin, NE or both and supernatants were assayed for VEGF via ELISA.
Results: Contrary to expectation, participants with lower social attachment had higher plasma oxytocin (p=.045). Plasma oxytocin was positively related to depressed mood (r=.237, p=.015) and plasma NE (r=-.324, p=.018). In-vitro experiments indicated that physiologic levels of oxytocin (100 pM) enhanced VEGF production from SKOV3 cells by over 20% (p=.045) and acted synergistically with NE to increase VEGF by nearly 200% compared to control conditions (p=.004) or NE alone (p=.021).
Conclusion: This study is the first to look at the role of endogenous oxytocin in ovarian cancer patients. The paradoxical findings from this study challenge the traditional assumptions about the role of oxytocin in tumor biology and the relationship of oxytocin to social support in the context of a stressor. Understanding relationships between oxytocin, psychosocial factors and tumor biology in ovarian cancer may help identify additional pathways by which psychosocial factors may influence disease progression. Additional studies are needed to further elucidate the mechanisms by which oxytocin affects tumor growth.
240) Abstract 1658
DEPRESSIVE SYMPTOMS, DIET QUALITY, AND WEIGHT GAIN: LONGITUDINAL RELATIONSHIPS AMONG BREAST CANCER SURVIVORS
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Objective: The majority of breast cancer survivors gain weight in the years following their cancer treatment. Weight gain increases risk for breast cancer recurrence and cardiovascular disease during survivorship. Poor diet quality is a risk factor for weight gain and depressive symptoms are linked to unhealthy diets. We explored the longitudinal relationship between diet and weight among breast cancer survivors. We also investigated whether depressive symptoms predicted change in diet quality over time.
Methods: Breast cancer survivors (N = 140, stages 0-IIIA) completed two study visits, one six months after the completion of their cancer treatment and another one year later. Women completed self-report questionnaires assessing depressive symptoms, 24-hour dietary food recalls, and had their weight measured at each visit.
Results: Survivors with healthier diets at baseline gained less weight than their poorer eating counterparts. Also, women with fewer baseline depressive symptoms ate healthier diets over time compared to more depressed breast cancer survivors.
Conclusion: Our data suggest that survivors’ diet quality predicts weight gain over the course of one year. Survivors with fewer depressive symptoms improved their diet quality compared to more depressed women. Depressive symptoms appear to be a barrier to healthy eating and may ultimately lead to weight gain, demonstrating one pathway through which depression influences health during survivorship.

241) Abstract 1664
INFLAMMATION AND ATTENTIONAL BIAS IN BREAST CANCER SURVIVORS
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Background: Evidence suggests an association between inflammation and depression, although findings are mixed. Focusing on core processes in depression may clarify associated biological underpinnings. Attentional bias towards negative information is a key component of depression, but has not been examined in relation to inflammation. Thus, we tested the hypothesis that elevated inflammatory markers would be associated with negative attentional bias in a sample of breast cancer survivors. Exploratory analyses examined whether these associations were moderated by depression vulnerability factors (trait rumination and history of depression).
Methods: Participants were 93 breast cancer survivors (mean = 4.75 years post-diagnosis) who had completed cancer treatment and showed no evidence of current or past cancer. All provided blood samples for assessment of reactive protein (CRP) and completed questionnaires and behavioral tasks. Attentional bias was assessed with a dot-probe computer task in which sad and neutral faces were briefly presented side by side on the screen, and then replaced with a small dot. Women were instructed to respond when they saw the dot; if they were looking at the sad face, reaction time was faster when the dot appeared in that location. Bias scores were calculated as reaction time differences; positive scores indicated negative attention bias (i.e. more attention to sad faces).
Results: As predicted, circulating concentrations of CRP were positively correlated with negative attentional bias (r = 0.24, p = .03), such that women with higher CRP attended more to sad faces. CRP was marginally associated with negative bias when controlling for age and BMI (b = 6.42, p = .1). In exploratory analyses, the association between CRP and negative bias was moderated by depression vulnerability factors: depression history (b for interaction = -18.04, p = 0.03) and rumination (b for interaction = -8.92, p = .01). Simple slope analyses indicated that higher CRP was associated with greater negative attentional bias only in women without a history of depression (b = 10.58, p = .02) and in women with lower trait rumination (b = 16.45, p = .004).
Conclusions: Elevated CRP was positively, but weakly associated with negative attentional bias. Exploratory analyses revealed a surprising pattern: higher CRP was associated with negative attentional bias only for less vulnerable women. This is inconsistent with models of stress sensitization of the pro-inflammatory response, and suggests that these vulnerability factors may decrease sensitivity of attentional bias to normal variation in inflammation.

242) Abstract 1337
LONELINESS IS ASSOCIATED WITH INCREASED ENDOTHELIAL CELL INJURY IN HEALTHY ADULTS
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Objective: Loneliness is a key risk factor for cardiovascular disease (CVD). The mechanisms underlying this association, however, are unclear. Recently, endothelial cell (EC) injury and EC regenerative capacity, accessed by circulating levels of endothelium-derived microparticles (EMPs) and bone marrow-derived endothelial progenitor cells (EPCs) respectively, have been shown to be underlying cellular pathways for endothelial dysfunction and onset of CVD. The purpose of this study was to investigate the association between loneliness and EC injury and EC health, characterized by circulating EMP and EPC levels. Methods: 111 apparently healthy adults (mean age: 26.9 ± 8.9 years, 44.1% male) residing in New York City completed the UCLA-10 loneliness questionnaire. Fasting blood draws were obtained after a 30-minute period of rest to assess circulating EMPs and EPCs. CD62E+ and CD31+/CD42- EMPs, phenotypic for EC activation and apoptosis respectively, and KDR+CD34+CD133+ EPCs were quantified by flow cytometry. Results: Higher levels of self-reported loneliness was associated with greater circulating CD31+CD42- EMPs, phenotypic for EC activation and apoptosis respectively, and KDR+CD34+CD133+ EPCs were quantified by flow cytometry. Results: Higher levels of self-reported loneliness was associated with greater circulating CD31+CD42- EMPs in an unadjusted model (β=11.6, 95% CI: 1.4 - 21.9, p-value=0.026) and after adjustment for age, gender, black race, Hispanic ethnicity, and body mass index (β=10.9, 95% CI: 0.2-21.5, p-value=0.046). There we no significant associations of loneliness with circulating CD62E+ EMPs (unadjusted β =-4.7, 95% CI: -16.3-2.5, p-value=0.809; adjusted β=3.1, 95% CI: -15.5-9.3, p-value=0.753) or circulating EPCs (unadjusted β=0.6, 95% CI: -1.3-2.4, p-value=0.897; adjusted β=0.3, 95% CI: -1.6-2.2, p-value=0.872).
Conclusions: Loneliness is associated with increased EC injury characterized by apoptosis of ECs, but not EC activation or regenerative capacity, in healthy participants. These findings suggest that EC apoptosis may contribute to the link between loneliness and increased CVD risk.

243) Abstract 1649
INTERACTIVE EFFECTS OF ADRENERGIC AGONISTS AND HYPERLIPIDEMIA ON CULTURED HUMAN ENDOTHELIAL CELLS
Jessica S. West, B.A., Angela Szeto, PhD, Psychology, Caroline J. Granger, None, Biochemistry, Natalie R. Hamilton, None, Alexandra L. Isaias, None, Psychology, University of Miami, Coral Gables, Florida, Oliver Umland, PhD, Armando J. Mendez, PhD, Diabetes Research Institute, University of Miami Miller School of Medicine, Miami, Florida, Philip M. McCabe, PhD, Psychology, University of Miami, Coral Gables, Florida.
Objective: Vascular endothelial cell (EC) dysfunction is one of the proximal events in the pathophysiology of atherosclerosis. Although a variety of factors can influence ECs, it is believed that hyperlipidemia and oxidized lipids are important variables in EC dysfunction, leading to increased chemotaxis, cell adhesion, and monocyte infiltration into the vessel wall. There has been some suggestion that emotional stress, resulting in enhanced sympathetic nervous systems activity and catecholamine release, can accelerate the disease process, perhaps by contributing to EC dysfunction. Therefore, the current study examined the effect of adrenergic agonists and hyperlipidemia, and their potential interaction, on cultured human EC function.
Methods: Cultured human umbilical cord vascular endothelial cells (HUCVECs) were incubated with either native LDL cholesterol or oxidized LDL (0–100 μg/ml) for 24 hours, and then treated with phenylephrine or isoprenaline (alpha and beta adrenergic agonists, respectively) for 3 hours. Surface ICAM-1, VCAM-1, and E-Selectin expression were measured using flow cytometry. The percent expression of viable ECs and the median fluorescence intensity were obtained from 20,000 cells.
Results: Oxidized LDL increased surface expression of ICAM-1, VCAM-1 and E-Selectin in a dose dependent fashion (at the highest dose, 100%, 150% and 800%, respectively). The addition of 200 nM of isoprenaline or phenylephrine attenuated the oxidized LDL increase in E-Selectin by 50-80%, whereas the adrenergic agonists had no effect on the surface expression of ICAM-1 or VCAM-1.
Conclusions: As anticipated, oxidized LDL increased EC adhesion molecule surface expression, particularly for VCAM-1 and E-Selectin. Whereas the adrenergic agonists did not affect the expression of ICAM-1 or VCAM-1, both agonists markedly inhibited the surface expression of E-Selectin induced by the presence of oxidized LDL. These data suggest that catecholamines, working through both alpha and beta adrenergic receptors, attenuate cellular adhesion to ECs. The findings support the notion that catecholamines can, in some instances, be anti-inflammatory and actually retard cellular adhesion and migration into the vessel wall. Supported by HL116387 and HL047262.
244) Abstract 1599 PSYCHOSOCIAL CORRELATES AND PREDICTORS OF RESISTANT HYPERTENSION IN THE JACKSON HEART STUDY (JHS)
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Objective: Treatment resistant hypertension (rHTN) is common and is associated with increased risk for cardiovascular events. African Americans have the highest prevalence of rHTN. Factors associated with rHTN include older age, obesity, female sex, longer duration of HTN, and comorbid chronic diseases. Little is known about whether psychosocial factors are associated with rHTN. The Jackson Heart Study (JHS) is a longitudinal study to evaluate cardiovascular disease in African Americans adults in the Jackson, Mississippi area. The goal of the current analysis is to identify psychosocial factors associated with rHTN vs. non-rHTN, independent of medication adherence, in the JHS sample.
Methods: rHTN was defined as controlled blood pressure ([BP] systolic/diastolic BP 140/90 mm Hg) with 4 BP classes of BP medication or uncontrolled BP with 3 classes of BP medication. Non-rHTN was defined as individuals with controlled BP taking 3 classes of BP medication. The mean of two clinic BP measurements taken one minute apart with a Hawksley random zero sphygmomanometer was used for this analysis. Medication adherence was defined as taking all BP medications in the past 24 hours based on pill bottle review and self-report. Stress, hopelessness, depression, perceived social support, and social network (a composite of marital status, friendships, relatives, social groups, and frequency of social contacts) were measured using self-report inventories with established psychometric properties. Psychosocial correlates of rHTN among individuals adherent to their BP medications were examined using linear and Poisson regression. Analyses were adjusted for age, sex, body mass index, income, education, physical activity, and cohabitation.
Results: Of the 5,301 JHS participants, 1,859 (35%) met criteria for rHTN and non-rHTN. Among these, 337 (14%) had rHTN and 1,522 (62%) had non-rHTN. Among rHTN participants, 69% reported being adherent compared to 78% of non-rHTN participants (p<.001). Among those who reported being adherent to their medications, those with rHTN had higher levels of hopelessness, lower social support, and smaller social networks compared to those with non-rHTN (p<.02). When all psychosocial factors were included in one regression model, adjusting for covariates, only social network was significantly associated with rHTN (OR=80; 95% CE .69-.93; p<.01).
Conclusions: These findings suggest that social network is an independent correlate of rHTN in African Americans, over and above important confounders such as medication adherence.
Implications: Given the high prevalence of rHTN among African Americans and the associated cardiovascular risk, the role of social network as a potentially modifiable determinant of rHTN warrants further investigation.

245) Abstract 1183 ASSOCIATIONS OF N-TERMINAL PRO-B TYPE Natriuretic PEPTIDE (NT-proBNP) WITH ANXIETY, COPING, AND QUALITY OF LIFE IN DEPRESSED PATIENTS WITH CORONARY ARTERY DISEASE (CAD)
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Background: Natriuretic peptides (NPs) are used as indicators of heart failure severity. They are involved in hemodynamic counterregulation but also have been associated with reduced anxiety in samples of cardiac patients. However, these results need replication. Furthermore it is unknown if NPs are also related to other dimensions of well-being.
Methods: We used data from the multicenter SPIRR-CAD trial of stepwise psychotherapy for depressed CAD patients to study associations between NT-proBNP and anxiety as well as other dimensions of affect, personality, coping, and quality of life.
In 133 CAD AD patients (79% men, mean age 59±8y), we measured NT-proBNP using a validated assay. Anxiety, depression (HADS, HAM-D), coping (FQCI), vital exhaustion (MQ), negative affectivity, social inhibition (DS14) and quality of life (SF-36) were measured by established scales.
Results: Median NT-proBNP was 189 (IQR 82-469) ng/l. Log-transformed NT-proBNP values were approximately normally distributed. Higher log(NT-proBNP) was related to more severe illness as indicated by higher HNYA class, Charlson comorbidity score, lower ejection fraction and self-rated physical function. In contrast, higher log(NT-proBNP) was significantly related to lower anxiety in both bivariate (r=-.165; p<.005) and multivariate analyses (beta=-.128; p=0.003 when adjusting for age and sex; beta=-.146 with additional adjustment for depressive symptoms). Furthermore, it was associated with less negative affectivity (r=-.111; p=0.010), less depressive coping (r=-.105; p=.021, more trust in physicians (r=.118; p=.009), less exhaustion (-.117; p=.009) and less pain (r=.101; p=.024; SF-36: higher scores=less pain). After adjustment for age and sex, associations remained significant for negative affectivity, trust in physicians, and pain, while NT-proBNP was not independently related to depressive coping, exhaustion or depression severity.
Conclusion: NT-proBNP is associated with greater physical morbidity and disability but reduced anxiety in this sample of depressed CAD patients. While NT-proBNP was not related to depression severity, its associations with other dimensions of well-being support its possible role as a relatively specific neuromodulator involved in emotion regulation.

246) Abstract 1194 INCIDENCE AND PREDICTION OF PSYCHIATRIC DISORDER AFTER AN ACUTE CORONARY SYNDROME IN JAPAN: AN INTERIM REPORT OF THE CONPAC STUDY
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Purpose of Study: Cohort with Nutritional Aspect for Psychiatric Disorder after Acute Coronary Syndrome (CONPAC Study) has been carried out in Tokyo since 2014. This study examined the association of nutritional, medical and psychosocial variables evaluated shortly after an emergent percutaneous coronary intervention (PCI) with later psychiatric disorder risk in patients with acute coronary syndrome (ACS). The aim of the present interim report is to show both the incidence of new-onset psychiatric disorder and its potential predictors.
Subjects and sample of statement of methods: ACS patients (unstable angina or acute myocardial infarction) consecutively admitted in a coronary care unit in a teaching hospital in Tokyo were recruited to the CONPAC Study. Psychiatric morbidity as a primary endpoint was measured using Mini-international Neuropsychiatric Interview and Clinician-Administered PTSD Scale at 3 months after the PCI. The baseline investigation consisted of an extensive interview and evaluation of socio-demographic characteristics, medical history, laboratory data, Peritraumatic Distress Inventory, Impact of Event Scale-revised, Hospital Anxiety and Depression Scale (HADS).
Summary of results: Between March 2014 and September 2015, out of 111 patients who were asked to participate in the CONPAC study, 64 ACS patients were enrolled and 58 completed follow up assessment. A total of 6 patients (10.3%) showed some form of new-onset psychiatric disorder at 3 months. The majority consisted of depression (major depression, n=4; minor depression, n=1) and PTSD (full PTSD, n=1; partial PTSD, n=1). Psychiatric disorder was predicted by Body Mass Index (odds ratio, 0.39) and HADS total score (odds ratio, 1.51). This study indicated that the incidence of psychiatric disorder in Japanese ACS patients might be lower than that of Western countries. The predictor of psychiatric disorder should be considered carefully until the end of the final participant enrollment.
SCAD (SPONTANEOUS CORONARY ARTERY DISSECTION) SURVIVORS: AN UNDER-RESEARCHED CARDIAC POPULATION, THEIR PHYSICAL AND PSYCHOLOGICAL SURVIVORSHIP EXPERIENCE, AND TREATMENT NEEDS

Kaitlin V. Ross, M.S.Ed., Psychology, University of Denver, Denver, Colorado, Courtney J. Stevens, MA, Tina Pittman Wagers, Psy.D, Psychology and Neuroscience, University of Colorado Boulder, Boulder, Colorado

Spontaneous Coronary Artery Dissection (SCAD) is a serious cardiac condition that represents 1-4% of acute coronary syndromes. 80-90% of SCAD patients are women, with an average age of 42. These patients are usually active and without typical cardiac risk factors. 25% of SCAD patients are pregnant or in the postpartum period when their SCAD occurs. This condition is not widely recognized, researched, or comprehensively treated. Only recently have researchers begun to study this condition and the population it affects.

In order to address this gap in the literature, the present study was developed to poll SCAD survivors (N = 411) about their sources of social support, access to medical and treatment information, experiences interacting with their health care team, how their SCAD affected their daily life, and their physical symptoms and related psychological sequelae. The survey was distributed using social media outlets (e.g., Facebook, Twitter) to both national (United States) and international respondents. To date, this is the largest survey of SCAD survivors’ experiences that has been undertaken in any setting. The central aim of this investigation was to describe a detailed picture of the global SCAD survivorship community.

Participants reported experiencing between 1 and 4 SCADs in their lifetimes, with most participants only reporting 1 SCAD. Pain, pressure, and sweating were the most commonly reported SCAD symptoms. Most participants reported seeking help immediately upon noticing symptoms, but approximately 1/3 of respondents sought help after a delay. The majority of participants were first seen in the emergency department, and then referred to a cardiologist who later made the diagnosis. Participants were asked to rate how stressful their SCAD was in the context of other life events on a scale from 1 ("minimally stressful") to 10 ("most stressful event ever experienced"); on average participants found their SCAD to be highly stressful compared to other events they have experienced (M = 8.65). In the year prior to experiencing their last (or first) SCAD, the most commonly reported stress event was “change in employment status” (N = 125), and in the two weeks prior to experiencing their last (or first) SCAD the most commonly reported stress event was “extreme or unusual physical exertion” (N = 121). Qualitative information regarding resources participants were referred to after their SCADs, and the extent to which those resources were helpful will also be summarized.

Overall, survey results point to the need for greater understanding of SCADs, both in the medical and behavioral health community, and for more attention toward development of evidence-based treatment for SCAD survivors.
health. The current study evaluated the relationship between reported dietary habits and HRV in heart failure (HF) patients.

Methods: The sample (N = 94) was aged 67.99 ± 8.79, 64.9% male, and 84.0% Caucasian. Participants completed a survey about their dietary habits. HRV was assessed during the resting phase of a laboratory protocol to provide a measure of autonomic nervous system functioning. Hierarchical multiple linear regressions were performed to determine whether dietary habits explained variability in HRV (LF-n.u., HF-n.u., RMSSD, and LF/HF).

Results: Demographic and medical variables did not explain variability in RMSSD, F(5, 93) = 2.08, p = .08. Adding the dietary habits composite did not improve model fit, ΔF(6, 93) = .52, p = .47. Demographic and medical variables did not explain variability in LF/HF, LF-n.u., or HF-n.u. (p's > .13), and dietary habits composite did not improve model fit, (p's > .60).

Discussion: To our knowledge, dietary habits have not been examined in relation to HRV. In this sample, diet was not associated with any of the HRV variables, which is similar to the randomized controlled trials conducted on micronutrients. Using an HF sample may have obscured potential relationships due to effects of HF on HRV. Future studies are needed to elucidate the relationship between dietary habits and cardiovascular health in HF patients.

Table 1. Multiple Hierarchical Regression Results Using Dietary Habits to Predict Heart Rate Variability.

<table>
<thead>
<tr>
<th>Dietary Habit</th>
<th>RMSSD (b)</th>
<th>LF/HF (b)</th>
<th>LF-n.u. (b)</th>
<th>HF-n.u. (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-1.3 (10)</td>
<td>20.23 (3)</td>
<td>10.4 (3)</td>
<td>-19.4 (9)</td>
</tr>
<tr>
<td>Age</td>
<td>-10.9 (3)</td>
<td>-11.03</td>
<td>10.24</td>
<td>-13.24</td>
</tr>
<tr>
<td>2 MST</td>
<td>0.16 (6)</td>
<td>-12.00</td>
<td>10.69</td>
<td>-14.99</td>
</tr>
<tr>
<td>Hypertension</td>
<td>0.11 (2)</td>
<td>-0.75 (2)</td>
<td>-0.34 (3)</td>
<td>0.54 (4)</td>
</tr>
<tr>
<td>Diabates</td>
<td>-42.8 (1*)</td>
<td>-10.24</td>
<td>0.94 (4)</td>
<td>-0.41 (1)</td>
</tr>
<tr>
<td>P2 status</td>
<td>.06</td>
<td>.09</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>Adj R²</td>
<td>2.08</td>
<td>1.62</td>
<td>1.74</td>
<td>1.71</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Pattern</td>
<td>.06 (3)</td>
<td>-0.95 (3)</td>
<td>-0.67 (6)</td>
<td>-0.67 (6)</td>
</tr>
<tr>
<td>Adj R²</td>
<td>.65</td>
<td>.02</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>F</td>
<td>12</td>
<td>22</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

Note: RMSSD = 2-minute step test, RMSSD (b) = natural log transformation of square root of the mean squared difference of successive NNs, LF/HF (b) = natural log transformation of low frequency to high frequency power ratio. LF-n.u. = low frequency power in normalized units, HF-n.u. = high frequency power in normalized units. Hypertension: 0 = no, 1 = Yes. Diabates: 0 = no, 1 = Yes. N = 94 for all analyses.

251) Abstract 1572

DEPRESSION IS ASSOCIATED WITH REDUCED PHASE II CARDIAC REHABILITATION COMPLETION RATES: A META-ANALYSIS

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Depression is common in patients with cardiac disease and is associated with increased cardiac mortality rates. Phase II cardiac rehabilitation (CR) is an empirically supported outpatient intervention for patients with established heart disease, reducing cardiac mortality risk. Accumulating research has examined the relationship of depression with phase II CR completion. The current study conducted a random-effects meta-analysis to investigate the relationship between depression and phase II CR completion. A comprehensive review from inception through 2014 of three electronic databases (PsycINFO, MEDLINE, and Dissertation Abstracts International) identified 17 observational studies with a total of 19 independent samples (N = 30,586) that met inclusion criteria. A medium effect size was observed (Hedge's g = -.44, 95% CI -.587 to -.296), indicating that patients with depression had lower CR completion rates. Subgroup and meta-regression analyses found no significant moderators. However, several potential sociodemographic variables were unable to be examined in moderator analyses due to insufficient reporting in this literature. Finally, some minor publication bias was detected. Overall, depression appears to have a negative impact on phase II CR completion rates. Future observational research on depression and phase II CR completion should include relevant sociodemographic moderator variables more comprehensively, while phase II CR intervention research should consider addressing depression as a potential barrier to completion.

252) Abstract 1020

EFFECTS OF MARITAL SUPPORT AND STRAIN ON HEALTH OUTCOMES

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Objective: This study takes an epidemiological look at the role of spousal support and strain as possible determinants of physical and mental health at 7-10 year follow-up.

Method: Participants from the Midlife in the US (MIDUS) national longitudinal study who were age 50 and older at follow up and who answered questions on spousal support and strain were included for analysis. Statistical analyses were performed to assess the effect of spousal support on mental and physical health. Age, education level, income, depression levels and prior health condition were adjusted for the analyses.

Results: There were a total of 2,298 mature adults included in the study. As expected, prior health status was the best predictor of future health. After adjusting for the covariates, we found no significant effect of spousal support on physical health and likewise, no evidence that spousal strain was related to worse health. Examining only those in their first marriages similarly showed no significant effect of spousal support or strain on physical health at follow-up. Spousal support had a positive significant effect on mental health.

Conclusions: Despite past research showing a relationship between marital quality and health outcomes, this study of an older population did not support the claim that spousal support or strain can be tied directly to physical health outcomes. However, it supports evidence that higher levels of spousal support and strain are associated with mental health, even after controlling for prior depression levels.

253) Abstract 1170

A CLOSED SCOPE ATTENTIONAL PROFILE PREDICTS CORTISOL OUTPUT FOLLOWING A STRESSOR

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Prior work finds rumination is associated with increased cortisol output following a stressor, which may have long-term health consequences. Rumination is often measured via self-report but there is increasing evidence that rumination is associated with certain attention patterns. The Attentional Scope Model of rumination (Whitmer & Gotlib, 2013) holds that rumination (i.e., repetitive thought with a negative valence) measured at the attentional level is characterized by reduced suppression of internal, recently available stimuli, which may explain the “downward spiral” of rumination. The Attentional Scope Model and experimental findings predict that fast responses to recently relevant information and slow responses to novel information represent a narrow or closed attentional scope, and are indicative of ruminative thought. Therefore, having a closed scope should be associated with greater cortisol output following a stressor.

Healthy undergraduate students (53% men) in the upper (n = 40) or lower quartile (n = 37) of the rumination subscale of the Ruminatia-Reflection Questionnaire (Trapnell & Campbell, 1999) completed a backwards inhibition task, where response times (RT) to recently available (RTA) and novel (RTN) stimuli were recorded, and then underwent a modified Trier Social Stress Test. Salivary cortisol was collected pre-stressor and at +40 and +65 min and area under the curve-ground was calculated. Four profiles were derived from the backward inhibition task: Closed scope (fast RTA/fast RTN), Open scope (slow RTA/fast RTN), Overall slow responses (slow RTA/slow RTN), and Overall fast responses (fast RTA/fast RTN).

There was an interaction between trait rumination and backwards inhibition task profiles on cortisol (b = 4057.10, SE = 1733.94, p = .02, etap2 = .1). As shown in figure, results were consistent with the Attention Scope model; trait ruminators who had a closed scope (fast responses to recently relevant information and slow responses to novel information) had higher cortisol output relative to trait ruminators who had response profiles not associated with a closed scope (open, overall fast, overall slow). There were no main effects of trait rumination or RTs on cortisol.

Current findings provide support for the Attention Scope model by demonstrating that implicit measures of rumination among trait ruminators have similar negative physiological outcomes as self-report measures in prior studies. Moreover, the association between rumination at the attentional level and the physiological stress response may be helpful for focusing treatment and analysis on people more prone to cognitive patterns associated with greater cortisol output.
The relationship of partner support and expressed emotion to acute cortisol reactivity in a community sample.

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Partner support has been shown to reduce cortisol reactivity to a psychosocial laboratory stressor, but the literature is scarce and the extent of stress reduction is not uniform (Kirschbaum et al., 1995; Ditzen et al., 2008); it may depend on characteristics of the relationship. Expressed Emotion (EE) may moderate the effects of partner support on biological stress reactivity. EE is a composite of hostility, criticism, and emotional involvement. A high level of EE within a relationship is significantly related to rate of relapse for schizophrenia, unipolar and bipolar depression, eating disorders, and alcohol use disorder (Hooley, 2007). Less extensive research has also linked EE with symptom exacerbation of physical health conditions (e.g., Band et al., 2014). Therefore, high levels of EE in a partnership may contribute to an increase, rather than a decrease, in stress reactivity (Butzlaff & Hooley, 1998). Additionally, although EE has been assessed in multiple clinical populations, research on high EE in community samples is non-existent, and there is limited research investigating the relationship between EE and cortisol reactivity (Christiansen et al., 2010).

The purpose of the current study is first to determine whether a new partner support modification for the Trier Social Stress Test (TSST; Kirschbaum et al., 1993) elicits elevated cortisol secretion, second, to determine whether high EE exists in a college population using a modified form of the Camberwell Family Interview (CFI; Vaughn & Leff, 1976), and third, to assess whether high EE predicts greater cortisol section across the TSST. This study is a pilot for a future grant proposal to use the current methodology with individuals with Chronic Fatigue Syndrome and Major Depressive Disorder.

The participant goal for the current study is 20 college student dyads. The current results are reported on the cortisol assays for the first 5 dyads, with the expectation of at least 10 dyads and CFI results by March, 2016. Cortisol secretion in the form of Area Under the Curve (AUC) analyses and slope of rise and recovery were compared between the first 5 participants (study 2) and a group of 5 age, race and gender matched participants who participated in the standard TSST as part of an earlier study (study 1). The partner support TSST reliably elicited a sharp, substantial rise in cortisol secretion similar to that seen in the earlier study (study 1: Mrise = 0.14, Mrecovery = -0.15, MAUCg = 557.32, MAUCi = 151.17; study 2: Mrise = 0.18, Mrecovery = -0.17, MAUCg = 660.04, MAUCi = 255.30). Mean peak (M = 11.19: baseline to highest level of secretion) was nearly double the mean baseline value (M = 6.07) for study 1.

These results are a preliminary indication that the first goal of the study, to validate a partner support TSST methodology, may have been successful. EE results will be reported in the future, in addition to results for more participants.
256) Abstract 1652
THE AUTONOMIC AND HEMODYNAMIC EFFECTS OF A HYDRATION INTERVENTION DURING A PHLEBOTOMY PROCEDURE
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Background: Many medical problems are treated with donated blood. Thus, it is important to retain blood donors. Donors who experience vasovagal reactions (fainting, dizziness, etc.) to blood donation are less likely to donate again.

Consuming water before phlebotomy has been shown to reduce these symptoms, but no study has investigated the potential physiological mechanisms supporting this intervention. The present study investigated hydration-induced changes in autonomic and hemodynamic variables before, during, and after phlebotomy.

Methods: Participants were randomized to either a Predonation Hydration Intervention (PHI) (n=14) or a Control group (n=15). Unlike Controls, the PHI consumed 500 mL of water 20 mins prior to a 498 mL phlebotomy. The following variables were continuously measured during the baseline, phlebotomy, and recovery periods (6-min supine, 1-min seated, 1-min walking, and 10-min seated): mean arterial blood pressure (MAP), systolic blood pressure (SBP), diastolic blood pressure (DBP), pulse pressure (PP), heart rate (HR), heart rate variability, baroreflex sensitivity (BRS), stroke volume, cardiac output (CO), systemic vascular resistance (SVR), and cerebral oxygenation (rSO2%). Plasma osmolality (POSM) was assessed at the start and end of the phlebotomy. Epinephrine (E) was measured at the start of the phlebotomy and after 150, 300, and 450 mL of blood loss. Results: The PHI had lower MAP, DBP, PP and BRS than the Controls across the phlebotomy periods exclusively.

There was a marginal Time x Group interaction for rSO2% with a trend for lower rSO2% in the PHI than in the Controls during the supine recovery period. The PHI had higher E across the phlebotomy periods than the Controls (p<.05).

There was also an interaction between Group and Time for POSM (p<.05) such that POSM decreased more from start to end of the phlebotomy in the PHI as compared to the Controls. Analyses of the orthostatic changes during recovery showed that the PHI exhibited lower MAP, SBP, DBP, and SVR (p<.01) and marginally lower PP and HR. There was a Time x Group interaction for CO (p<.05) such that the PHI had higher CO when walking and sitting down. Overall, the current study found that water consumption decreases BP during phlebotomy, supine recovery periods and orthostatic challenges, possibly because of reductions in PP, BRS, and SVR. Conclusion: The physiological responses to a PHI for phlebotomy observed in this study would not be expected to protect against the pathophysiology of the vasovagal response. Nonetheless, the present study was the first to assess these effects and as such more research is needed to confirm and extend these findings.

257) Abstract 1363
A POSITIVE PSYCHOLOGICAL INTERVENTION FOR PATIENTS WITH TYPE 2 DIABETES
Jeff Huffman, MD, Christina DuBois, B.A., Rachel Millstein, PhD, Chris Celano, MD, Psychiatry, Deborah Wexler, MD, Internal Medicine, Massachusetts General Hospital, Boston, Massachusetts
Objective: Positive psychological attributes (e.g., optimism) have been associated with healthier lifestyle and superior medical outcomes in patients with type 2 diabetes (T2D); however, there has been minimal study of behavioral interventions that target positive psychological constructs in this population. Accordingly, we developed a novel, telephone-based, 12-week positive psychology intervention and assessed its feasibility and short-term impact among adults with T2D and suboptimal health behavior adherence.

Methods: Participants received a positive psychology manual, completed up to seven exercises (e.g., writing a gratitude letter, performing acts of kindness), and reviewed each exercise at study calls with study staff. Participants were randomized to either the Controls who had lower MAP, SBP, DBP, and SVR (p<.01) and marginally lower PP and HR. There was a Time x Group interaction for CO (p<.05) such that the PHI had higher CO when walking and sitting down. Overall, the current study found that water consumption decreases BP during phlebotomy, supine recovery periods and orthostatic challenges, possibly because of reductions in PP, BRS, and SVR. Conclusion: The physiological responses to a PHI for phlebotomy observed in this study would not be expected to protect against the pathophysiology of the vasovagal response. Nonetheless, the present study was the first to assess these effects and as such more research is needed to confirm and extend these findings.

258) Abstract 1423
SLEEPING OXYGEN SATURATION, RAPID EYE MOVEMENT SLEEP, AND POSTPRANDIAL METABOLIC FUNCTION IN NONDIABETIC INSULIN SENSITIVE AND INSULIN RESISTANT INDIVIDUALS
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Altered sleep in disorders of breathing and sleep stages have been linked with subclinical metabolic dysfunction and Type 2 diabetes (T2D). Although studies have reported that decreased slow wave sleep following acute sleep deprivation may be associated with poorer short-term glycemic control, we previously found that diminished insulin sensitivity and greater total insulin secretion to the 3-hr glucose tolerance test were associated with reduced rapid eye movement (REM) sleep. The objective of the current study was to examine whether REM duration mediates the sleeping O2-sat -- metabolic function relationship. To do this, we evaluated postprandial function over 2 successive days during 14hr serial mixed-meal challenges, wherein the carbohydrate content per meal was manipulated to compare low and high carbohydrate load (300 vs. 600 kcal) meal challenge days. This long-term challenge was used in an attempt to exacerbate any prevailing metabolic dysregulation that may not be evinced by fasting measures or short-term meal challenges. The sample included 22 healthy non-diabetic adult men and women (1855 yr) with mild to no OSA (apnea/hypopnea index <15). Measures of sleep architecture and oxygen saturation were obtained using polysomnography. Measures of pancreatic b-cell (glucose sensitivity (GS) and early-secretion rate sensitivity (ESRS)) were derived using quantitative modeling, in addition to other metabolic function measures (fasting insulin and glucose, total glycemia/day, and total insulinemia/day). Using regression methods, mediation was tested on both days separately by calculating bias-corrected 95% CIs using bootstrapping. Relevant covariates included age, sex, and visceral adipose tissue volume. Of the cohort, 32% were women, 36% had mild OSA, and 50% exhibited insulin resistance. Results showed that lower sleeping O2-sat was directly associated with poorer b-cell function and elevated fasting insulin. However, analyses indicated that this relationship was mediated by REM duration. Specifically, in those with less REM duration, lower O2-sat was associated with poorer fasting and postprandial insulin metabolic function, but also with an upregulation of b-cell function. These findings suggest that REM sleep biomarkers may be influencing compensatory pancreatic b-cell adjustments in persons with pricelinal insulin metabolic dysfunction.

259) Abstract 1466
OCCUPATIONAL STATUS MODERATES THE ASSOCIATION BETWEEN CURRENT PERCEIVED STRESS AND INCIDENT DIABETES: EVIDENCE FROM THE IPC COHORT STUDY
Emmanuel Wiernik, MSc, Hermann Nabi, PhD, INSERM, Centre for research in Epidemiology and Population Health, Versailles Saint-Quentin, Villejuif, 94807, France, Erhard in sensitivity and elevated fasting insulin. Additionally, analyses indicated that this relationship was mediated by REM duration. Specifically, in those with less REM duration, lower O2-sat was associated with poorer fasting and postprandial insulin metabolic function, but also with an upregulation of b-cell function. These findings suggest that REM sleep biomarkers may be influencing compensatory pancreatic b-cell adjustments in persons with preclinical insulin metabolic dysfunction.
Day interactions between children and parents may be important for inflammatory processes. In the current study, 123 parents recorded the daily quality and timing of interactions with their adolescent children for two weeks using structured diaries. The amounts of variability in those ratings were extracted, as well as overall quality and frequency of interactions. One year later, blood samples from children were obtained and the production of the pro-inflammatory cytokines interleukin-1 beta, interleukin-6, interleukin-8, and tumour necrosis factor were measured in response to exposure to the bacterial product lipopolysaccharide. Results indicate that greater variability in the quality of the parent-child relationship across the 2-week period was significantly associated with greater stimulated cytokine production in adolescents, but mean-level of relationship quality was not related. Similarly, variability in when parents and adolescents spent leisure time together also predicted greater cytokine production in adolescents and this was not accounted for by the frequency of those interactions. When simultaneously considering variability in timing and quality in the prediction of cytokine production, variability in quality continued to make a significant independent contribution and variability in timing made a trend-level independent contribution. Together, this suggests that variability in parent-child interactions may be more important for inflammatory pathways than the overall quality or frequency of parent-child interactions and that both affective and temporal consistency in family relationships may contribute to pathways important to child health.

262) Abstract 1256

SUBJECTIVE SOCIAL STATUS ASSOCIATED WITH BETTER CONTROL AND MANAGEMENT OF ASTHMA IN CHILDREN
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The purpose of this research was (1) to examine the relationship between subjective social status (i.e., individuals’ perceptions of their social standing relative to others in their environment) and asthma-relevant outcomes in children with asthma and (2) to assess whether subjective measures of status could predict asthma outcomes over and above the contribution of objective measures of status (i.e., family socioeconomic status). 150 children with asthma aged 9-17 (57.3% male) and their parents completed measures of asthma control, asthma impairment (frequency of visits to the emergency department), objective SES (family assets), and subjective social status in relation to their community and school environments (MacArthur Ladder). Children and their parents were also interviewed using the Family Asthma Management System Scale (FAMSS), a clinical interview designed to assess family-based asthma management. Interviewers rated participants along a variety of dimensions including responses to acute asthma flare-ups and overall balanced integration of asthma management into their daily lives. Analyses, which controlled for age, gender, ethnicity, and family savings, revealed that children who perceived their family to have higher social status had a better balance between asthma management and other demands in their life (as rated in a clinical interview) (B = -.12, SE = .05, p = .01), and had fewer visits to the emergency department (parent-report) (B = -.06, SE = .03, p = .04), than children who perceived their family to have lower social status. Furthermore, children who perceived their own social status to be higher relative to others in their school also had better balance between asthma management and other demands (clinical interview) (B = .13, SE = .04, p < .01) and better asthma control (self-report) (B = .43, SE = .16, p = .01). However, these children also had worse responses to asthma flare-ups (clinical interview) (B = -.28, SE = .09, p < .01), in comparison to children who perceived themselves as lower status in their schools. These patterns also held after controlling for asthma severity. These results suggest that how children perceive their social status may be relevant to both how they manage their asthma as well as their clinical profiles of asthma, and that these perceptions may matter more than objective economic circumstances.

263) Abstract 1491

REPORTED HISTORY OF CHILDHOOD TRAUMA AND STRESS-RELATED VULNERABILITY: THE ROLE OF EMOTION REGULATION AND EXECUTIVE FUNCTIONING
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Prior research suggests that a history of childhood trauma is associated with greater stress exposure and poorer sleep in adulthood, each of which confers risk for the development of psychopathology and poor health. Understanding the mechanisms by which childhood trauma is associated with these stress-related vulnerabilities, as well as potential protective factors is a high priority. The current study examined executive functioning (EF) as a potential protective


Objective: The role of stress in the onset of type 2 diabetes is a widespread lay belief but observational studies produced inconsistent results. Here, we aimed to test the hypothesis that the association between perceived stress and incident diabetes might depend upon occupational status (OS).

Methods: The 4-item Perceived Stress Scale was completed at baseline by 22,567 participants in the labor force (16,193 men, mean age: 44.5 ± 9.8 years) who had two health checkups subsidized by the French national health care system. All subjects were free from diabetes at baseline, defined as having a fasting blood glycemia ≥7 mmol/L or using antidiabetic drugs.

Results: After a mean follow-up of 5.3 ± 2.1 years, 527 participants (2.3%) had incident diabetes. Adjusting for socio-demographic, behavioral and biomedical risk factors as well as self-rated health, the association between baseline perceived stress and diabetes at follow-up was non-significant in the whole population. However, perceived stress at baseline was significantly associated with incident diabetes at follow-up in participants of low OS (odds ratio [OR] for a 5-point increment: 1.39; 95% confidence interval [CI]: 1.02–1.90). In contrast, there was a negative association between perceived stress and diabetes among those of high OS (OR: 0.60; 95% CI: 0.41–0.88) and no association among other occupational categories. The interaction between perceived stress and occupational status was significant (p<0.01).

Conclusions: This study suggests that the association between perceived stress and diabetes onset depends upon OS. Furthermore, this association did not seem to be explained by classical risk factors of diabetes.

260) Abstract 1503

LIFESTYLE INTERVENTION COMPONENTS AS PREDICTORS OF WEIGHT LOSS IN LOW INCOME, MINORITY PATIENTS WITH TYPE 2 DIABETES: RESULTS OF THE CALM-D RANDOMIZED CONTROLLED TRIAL
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Although multicomponent lifestyle interventions have been successful in promoting weight loss among patients with type 2 diabetes and elevated depressive symptoms, it is unclear whether all components are advantageous. We previously reported data from 111 participants randomized in the Community Approach to Lifestyle Modification for Diabetes (CALM-D) trial, indicating that intervention components showed an average 1.22 kg decrease in weight compared to usual care participants (d = -.136, 95% CI: -.239 – -.033).

The objective of this study was to determine the relative effectiveness of diet, physical activity, and stress management strategies for weight loss among low income, minority participants enrolled in CALM-D. We analyzed data from the 57 participants [M(SD) age=55(8.3) years, 65% female] randomized to the intervention arm, who received a 12-month structured lifestyle intervention consisting of three components: Dietary goals (reduce caloric intake and fat consumption, increase fruits/vegetables), physical activity goals (150 minutes aerobic activity/week), and stress management strategies (coping skills and relaxation training, cognitive-behavioral approaches to address depressive symptoms). Full information maximum likelihood unstandardized regression coefficients revealed that stress levels post relaxation training (β=0.98, p<.039, 95% CI: 0.05 – 1.91), and average physical activity (β =0.02, p=0.002, 95% CI: -0.03 – 0.01), but not average fruit/vegetable intake (β =-0.76, p=.614, 95% CI: -3.72 – 2.19), predicted weight loss in the first 6 months (active phase), adjusting for age, sex, and number of sessions attended. Only average physical activity (β = 0.02, p<.001, 95% CI: -0.03 – 0.01) predicted weight loss over the 12-month period (active + maintenance phases). In addition to physical activity, our results show that stress management strategies are effective in promoting weight loss among underserved patients with diabetes and elevated depressive symptoms, particularly in the first 6 months. These findings suggest that lifestyle interventions aimed at improving type 2 diabetes management may benefit from the incorporation of psychosocial techniques.

261) Abstract 1128

CONSISTENCY MATTERS MOST: VARIABILITY IN THE QUALITY AND TIMING OF DAILY PARENT-CHILD INTERACTIONS PREDICT IMMUNE FUNCTIONING IN HEALTHY ADOLESCENTS

Receiving harsh and inconsistent parenting has been associated with heightened proinflammatory profiles in children and, in turn, with poor psychological and health outcomes. However, little is known about whether consistency in day-to-day
factor (moderator) and emotion regulation difficulties as a potential mechanism (mediator) in the association between reported childhood trauma and stress exposure and sleep quality in healthy young adults (N = 79; mean age = 27). EF assessment included the administration of four subtests from the Delis-Kaplan Executive Function System: Trail Making, Design Fluency, Verbal Fluency, and Color Word Interference, from which an EF composite score was calculated. In addition, participants completed the Childhood Trauma Questionnaire (CTQ), a retrospective measure of childhood trauma exposure and the Difficulties in Emotion Regulation Scale (DERS). For two consecutive days, participants rated their pre-sleep cognitive and somatic arousal, a vulnerability factor for development of chronic sleep disturbance. Participants also reported daily stress exposure by completing items from the Hassles & Uplists Scale. Consistent with prior research, participants who reported a trauma history reported significantly higher pre-sleep arousal, \( F(1,65) = 8.6, p = 0.004 \), and greater daily hassles, \( F(1,65) = 6.9, p = 0.011 \), compared to participants who reported no trauma history. Bootstrapping mediation analyses indicated that DERS total score mediated the relationship between total CTQ and pre-sleep arousal (Direct Effect: \( B = 0.1385 \), \( p = 0.0104 \), Indirect Effect: 0.3380) and the association between total CTQ and Hassles (Direct Effect: \( B = 0.0425 \), \( p = 0.0473 \), Indirect Effect: 0.0131). Further, analyses including only participants that reported trauma history (N = 64) indicated that EF moderated the association between childhood trauma and impulse control difficulties (DERS impulse scale) (interaction of total CTQ and EF, \( B = -0.7333, p = 0.0111 \)). Simple slope analyses revealed that childhood trauma was associated with adult impulse control difficulties only among those with poorer EF (\( B = 0.56, p = 0.000 \)); reported trauma was not significantly associated for participants with better EF (Mean EF: \( B = 0.487 \), \( p = 0.24 \), High EF: \( B = 7.642 \), \( p = 0.41 \)). These findings have implications for understanding stress-related vulnerability among individuals with a trauma history and suggest targeted childhood interventions that may mitigate risk for the development of chronic mental and physical health problems.

264) Abstract 1510

THE IMPORTANCE OF THE TRYPPTOPHAN PATHWAY IN ADOLESCENTS LOW-GRADE INFLAMMATION AND STRESS

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Objective. Tryptophan breakdown might be an important pathway explaining the relation between inflammation and emotional health: inflammation might stimulate the tryptophan breakdown towards kynurenine and as such withhold it from the mood-regulating serotonin production. This pathway might suggest pharmacological targets. We will test whether tryptophan and its breakdown are related to inflammatory parameters, perceived stress and salivary cortisol in a community sample of adolescents. Methods. In 120 European adolescents (12.5-17.5y), tryptophan and its metabolites kynurenine and kynurenic acid were measured in serum by high performance liquid chromatography and the kynurenine/tryptophan and kynurenic acid/kynurenine ratios were calculated. Inflammatory parameters in fasting status included pro-inflammatory cytokines (TNFAlpha, IL1, IL2, IL6, IFNgamma), anti-inflammatory cytokines (IL4, IL5, IL10, TGFbeta1), cytokine-stimulated monocyte cell adhesion molecules (sICAM1, sEselectin), lymphocyte subtypes (CD4%, CD4/CD8, CD3/CD19, Thelper1/Thelper2) and the general acute phase proteins c-reactive protein (CRP) and alpha-1-acid glycoprotein (AGP). Perceived stressors were reported via a 56-item questionnaire containing 10 components and saliva was collected for 7 days immediately after awakening to measure cortisol. Participants with fever in the 24h before blood sampling were excluded. Regression analyses were adjusted for age, sex and country. Results. A high kynurenine/tryptophan ratio (reflecting tryptophan breakdown) was positively related to AGP (\( B = 0.548 \)) and Thelper1/Thelper2 ratio (\( B = 0.505 \)). Low tryptophan levels were related to CD4/CD8 ratio (\( B = 0.318 \), CD4% (\( B = 0.337 \)) and Eselectin levels (\( B = 0.287 \)). High kynurenine levels were related to sICAM1 (\( B = 0.350 \)). The anti- or pro-inflammatory cytokines, CRP, CD3/CD19, stress report and salivary cortisol were not associated with tryptophan and its breakdown. Discussion. Tryptophan breakdown is not associated with specific cytokine levels but with an overall higher level of Thelper cells, especially Thelper1, and consequently with higher sICAM1 and AGP. Although the current results confirm tryptophan breakdown in relation to low-grade inflammation, no associations with stress were found. Similar hypothesis will be tested in primary school children and its relation with gut bacteria composition.

265) Abstract 1544

COPEING STRATEGIES IN MIDDLE CHILDHOOD: ASSOCIATIONS WITH STRESS HORMONE AND ANXIETY

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Background: Coping strategies represent the specific actions individuals take in order to deal with a given stressor. Little or no elevation in basal cortisol levels typically indicates that an individual has effectively coped with a stressor, yet little is known about how specific coping strategies children utilize to cope with stress are associated with cortisol regulation and anxiety symptoms particularly in children in middle childhood. Thus, this study examined the associations between coping strategies, cortisol levels, and anxiety in children. Methods: Children aged 7 to 10 years (n=66; 25 females) completed questionnaires and provided six salivary samples between 4pm and 7pm. Anxiety was measured by the Screen for Child Anxiety Related Disorders (SCARED), a 41 item questionnaire designed to help diagnose anxiety disorders. Coping was measured using the Response to Stress Questionnaire (RSQ) on Child Family Stress, a 57 item questionnaire yielding three types of coping strategies and two types of involuntary stress responses. Analyses included Pearson correlations and multiple linear regressions. Results: Children who reported more anxiety used less primary control coping (e.g., emotion expression, emotion regulation) compared to other coping strategies when income, age, and sex were kept constant (\( b = -0.003, p < 0.005 \)). The greater reliance on primary control coping over other coping strategies was further associated with lower basal cortisol levels (\( r = -0.031, p < 0.05 \)). Moreover, children who reported more problem solving, one of the primary control coping strategies, had lower total cortisol secretion as measured by area under the curve (AUC) (\( b = 2.135, p = 0.05 \)), when controlling for age and sex. In addition, we found that children who reported more involuntary disengagement (e.g., inaction, emotional numbing, escape) exhibited higher levels of anxiety symptoms (\( r = 0.334, p < 0.05 \)), controlling for age and sex. Conclusion: Our findings suggest that children using less adaptive coping strategies (e.g., problem solving, emotion expression) exhibited cortisol dysregulation and higher anxiety symptoms. Children using more maladaptive coping strategies may further perpetuate their symptoms as disengagement is typically less effective in regulating negative emotions. Future studies should investigate interventions to document the importance of teaching adaptive coping skills in the prevention and treatment of psychopathology in children.

Figure 1: Scatterplot of the correlation between self-reported problem solving measured using the Response to Stress Questionnaire (RSQ) and total cortisol secretion (nmol/L).

266) Abstract 1073

BINGE EATING IN EUROPEAN AMERICAN AND LATINA EMERGING ADULT WOMEN

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Binge eating is characterized by a subjective feeling of losing control when overeating. Binge eating, even infrequently (e.g., 1x/month), predicts the development of depression, obesity, and obesity-related health comorbidities including metabolic syndrome and type 2 diabetes. Yet, limited data have investigated binge eating and its adverse correlates in racial/ethnic minorities, despite major health disparities in obesity and cardiometabolic disease. In the present study, we therefore compared binge eating and its association with body

A-135
mass index (BMI), disordered eating attitudes (dieting, food preoccupation, and eating restraint), and depression in 142 Latina and 510 European American women during emerging adulthood (Age 18.7±1.1y), an important agespan for the onset or exacerbation of binge eating. Participants self-reported binge eating (absence v. presence), disordered eating attitudes (dieting, food preoccupation, and eating restraint), and history of a diagnosed depressive disorder on validated questionnaires. BMI (kg/m2) was derived from self-reported weight and height. Latinas had a higher BMI than European Americans (23.4±3.6 v. 22.1±3.0, p<0.01), and a greater percentage of Latinas endorsed binge eating (13% v. 8%, p<0.05). Latinas and European Americans reported similar levels of dieting and food preoccupation (p>0.24), but Latinas reported higher levels of eating restraint than European Americans (p<0.05). Both ethnic groups had the same rate of a depression history (17% vs. 17%), (p=1). Controlling for BMI, females with binge eating reported more dieting and food preoccupation (p<0.01), and these effects were not moderated by ethnicity (p>0.34). Findings suggest that binge eating in emerging adulthood may be associated with higher BMI, disordered eating attitudes, and depression in Latinas, as well as European American women. Latina women may be particularly at-risk, given a greater prevalence of binge eating and higher BMI than their European American counterparts. Given few investigations to date have investigated binge eating in Latinas, these findings underscore the importance of culturally-informed prevention efforts for binge eating in emerging adult women.

267) Abstract 1264

INTERACTIVE RELATIONS OF AGE, SEX, RACE, AND POVERTY STATUS TO PHYSICAL FUNCTIONING IN AN URBAN-DWELLING SAMPLE OF ADULTS

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Objective: Examine potential interactive relations of age, sex, race, and poverty status with physical functioning in a predominantly young to middle-aged, diverse sample.

Participants and Methods: Participants were 1,301 African-American (AA) and White, urban-dwelling adults between the ages of 30 and 64 years (mean age = 46.07 years; 52% female; 55% AA; 34% below 125% of federal poverty line) from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study who completed a physical performance battery assessing handgrip strength, balance (tandem and single-leg stands), and lower extremity function (tied chair stand). Exclusion criteria included a history of stroke, dementia, HIV/AIDS, or other neurological disorder. Multiple regression analyses examined interactive relations of age, sex, race, and poverty status and their main effects while controlling for body mass index, literacy, and handedness. Data analysis utilized backwards elimination of non-significant higher-level interaction terms.

Results: A final model was retained that contained two significant three-way interactions of age, sex, and race (β = 1.9, p = .047) and sex, race, and poverty status (β = 0.01, p = .05) to right-handgrip strength. For White men only, greater age was associated with significantly poorer right-handgrip strength (β = -2.7, p < .001). Furthermore, white men living in poverty had significantly greater right-handgrip strength than AA men (β = -7.88, p = .018), suggesting that poverty disproportionately influences right-handgrip strength in AA men. In a second model, there was a significant two-way interaction of race and poverty status to lower extremity function (β = 2.47, p = .009) such that, for those living in poverty, AA performed significantly slower on the timed chair stand than Whites (β = 2.25, p = .004). White participants were protected against the adverse effects of poverty on lower extremity function, whereas AA were not.

Conclusions: Older men and AA living in poverty may be vulnerable to poor performance in key aspects of physical functioning. These trends were observed at relatively young ages, which may indicate early signs of physical decline. The present study may inform early screening and intervention strategies targeting specific subgroups at heightened risk for physical disability.

268) Abstract 1195

EXECUTIVE FUNCTIONING AND RESPIRATORY SINUS ARRHYTHMIA INTERACT TO PREDICT DEPRESSION AND INFLAMMATION

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Objectives: Those who are able to utilize the executive function of inhibition effectively when faced with stressors are at decreased risk of experiencing negative health consequences; however, individuals are not always able to utilize inhibition adaptively. We investigated how regulatory strength (i.e., stress induced change in respiratory sinus arrhythmia; RSA) changed the association between inhibition and depression, as well as the association between inhibition and inflammation.

Methods: Data were utilized from the second wave of the Midlife Development in the U.S. study (MIDUS-II). A total of 617 middle aged adults engaged in a neuropsychological measure of inhibition, a stressful task while RSA was measured, and a blood draw. Participants also completed self-report measures of depression and demographic information.

Results: Inhibition and depression were significantly associated at high (B = 6.47, 95% Confidence Interval [CI] = 10.83, -2.12), but not low (B = 0.34, 95% CI = 3.87, 4.56), stress induced change in RSA. Furthermore, the association between inhibition and the proinflammatory cytokine of interleukin-6 was significant at high (B = -2.5, 95% CI = -4.2, -0.7), but not low (B = -0.05, 95% CI = -2.13, 1.99), stress induced change in RSA. Findings were independent of participant age, gender, BMI, highest level of education, heart medication usage, smoking status, menopause status, and resting RSA.

Conclusion: The interaction between inhibition and self-regulatory strength has important consequences for mental and physical health.

269) Abstract 1590

INSULIN SENSITIVITY MODERATES MEAL EFFECTS ON BRAIN RESPONSES TO TASTE

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Background: Feeding behavior is controlled, in part, by complex interactions of hormones and neural activity. The prandial hormones involved in terminating feeding is insulin, which exerts direct effects on the reward networks of the brain. Insulin resistance (IR) is a common comorbidity of obesity, and previous work has linked obesity to suppressed responses in the caudate nucleus—a brain region involved in reward. No work has examined the effects of meal status on caudate reactivity, or how the connections of the caudate nucleus are altered in insulin resistant individuals.

Methods: Subjects included 13 adults (ages 41-57, 6 male) who completed a frequently-sampled intravenous glucose tolerance test and two fMRI scans. One fMRI scan was conducted in the fasting state, and the other followed a mixed meal preload. During scanning, subjects completed a task involving milkshake and a tasteless solution. Whole brain analyses were conducted using multiple regression to examine the interaction between IR and prandial state. A generalized psychophysiological interaction analysis using a caudate seed region was used for identifying the associations between IR and caudate connectivity during milkshake receipt. Body mass index was included as a nuisance covariate in all analyses.

Results: Preliminary results indicate an interaction between IR and prandial state in the caudate nucleus (x,y,z = 2,16,6; Fpeak(1,21) = 7.73). During fasting, individuals with higher IR had greater connectivity between the caudate and perigenual anterior cingulate during milkshake receipt. However, in the fed state, higher IR was associated with reduced connectivity of the caudate and numerous regions including orbitofrontal cortex, insula and posterior cingulate cortex.

Conclusions: These data suggest that the effects of prandial state on brain reactions to palatable taste differ based on insulin sensitivity, independent of body mass index. Previous work has suggested a “blunting” of the reward network in obese individuals. These data support such a model, and expand it to include reductions of task-evoked changes in caudate functional connectivity that are dependent on the prandial state of the individual.

270) Abstract 1613

STRESSOR-EVOKED VENTROMEDIAL PREFRONTAL CORTEX CONNECTIVITY AND AUTONOMIC REGULATION

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The ventromedial prefrontal cortex (VMPFC) is involved in a number of functions, including emotion regulation, fear conditioning, and autonomic regulation. It has been hypothesized that the VMPFC acts as a central network in generating affective meaning and coordinating autonomic function with behavior during stressful experiences. However, there has been scant research examining how network characteristics of the VMPFC (determined by functional connectivity) change in response to acute stress exposures that engage affective and autonomic processes. We examined 1) how VMPFC connectivity changes during psychological stress and 2) explored possible interactions...
between autonomic (e.g., heart rate; HR) changes and VMPFC connectivity changes. Neural activity and HR were concurrently recorded in forty women (M age = 19.58 (0.32) years) during rest and while preparing a speech with social evaluation in an fMRI protocol. A VMPFC seed was created and the CONN functional connectivity toolbox was used to generate functional connectivity maps at rest and during speech preparation. Preparation significantly increased HR by 12.82 beats per minute on average, F(1, 72.46, p < .001), etac2 = .4, indicating the strength of the VMPFC exhibited weaker functional (cross-correlated) connectivity with the posterior cingulate and stronger connectivity with the insula, amygdala, mid cingulate, and periaqueductal gray. There was a significant interaction between HR changes and VMPFC-thalamus connectivity during preparation, such that connectivity strengthened from rest to preparation in association with rises in HR. All findings were observed with FDR correction for multiple statistical testing. Acute psychological stress appears to increase VMPFC functional connectivity with a number of areas implicated in stress processing and responding. Additionally, the interplay between the VMPFC and thalamic may contribute to autonomic regulation during stressful exposures.

271) Abstract 1377
HEART RATE VARIABILITY AND DEPRESSIVE SYMPTOMS: A CROSS-LAUGGED ANALYSIS OVER A 10 YEAR PERIOD IN THE WHITEHALL II STUDY
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Background: People with depression tend to have lower heart rate variability (HRV), but the temporal sequence is poorly understood. In a sample of general population, we prospectively examined whether HRV measures predict subsequent depressive symptoms or whether depressive symptoms predict subsequent levels of HRV.
Method: Data of the fifth (1997-1999) and ninth (2007-2009) calls of the UK Whitehall II longitudinal population-based cohort study were analysed with an average follow-up of 10.5 years. The population size for the prospective analysis depended on the analysis and ranged from 2334 (644 women) to 2276 (602 women). HRV measures during 5 minutes of supine rest were obtained. Depressive symptoms were evaluated by 4 cognitive symptoms of depression from the General Health Questionnaire.
Results: At follow-up assessment, depressive symptoms were inversely associated with HRV measures independently of antidepressant medication use in men but not in women. Prospectively, higher baseline heart rate and higher HRV measures were associated with a lower likelihood of incident depressive symptoms at follow-up in men without depressive symptoms at baseline. Similar but statistically insignificant associations were found in women. Adjustments for known confounders including socio-demographic and lifestyle factors, cardio-metabolic conditions or medication did not change the predictive effect of HRV on incident depressive symptoms at follow-up. Depressive symptoms at baseline were not associated with heart rate or HRV at follow-up in either gender. Conclusions: These findings are consistent with an etiologic role of the autonomic nervous system in the depression onset.

272) Abstract 1571
THE RELATIONSHIP BETWEEN RESTING HEART RATE VARIABILITY AND CONSUMER IMPULSIVITY: A FOCUS ON CONSUMER TEMPTATION
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Consumer impulsivity relates to measures of trait inhibition that can be linked to judgment and decision making (JDM) skills, such that most purchases or urges felt in a store can be attributed to a lack of inhibitory control. Inhibition can be defined as one’s ability to stopping a prepotent response in service of a more desirable one, and is an important imperial of consumer impulsivity, and more generally, decision-making. Consumer impulsivity has two facets: hedonism and prudence. Hedonism can be defined as individuals who, when viewing cost and benefits, value benefits more than cost. Prudence is defined as individuals who, when viewing costs and benefits, place more emphasis on costs and thus are likely to act less impulsively. Resting high frequency heart rate variability (HF-HRV) is widely recognized as a psychophysiological proxy of inhibitory control capabilities and overall health. While it is hypothesized that individuals with lower resting HF-HRV show more difficulties in controlling general impulses, to date, research has yet to examine how resting HF-HRV relates to self-reported consumer impulse behavior, particularly in relation to hedonism and prudence. We aimed to investigate this link in a sample of 97 undergraduate students (62 female, Mean Age = 18.86). Using an electrocardiogram (ECG), continuous heart rate was measure as participants completed a 5-minutes baseline-resting period. HF-HRV was analyzed in accordance with Task Force guidelines. Participants then completed the Consumer Impulsiveness Scale (CIS), which measures an individual’s self-reported significance placed on impulse control, including two subscales designed to assess both hedonism and prudence. Results showed an inverse relationship between total CIS scores and HF-HRV (r = -.310, p < .05), indicating those with lower resting HRV exhibited higher CIS scores. When examining the subscales, results showed a relationship between HF-HRV and prudence scores, such that those with higher HF-HRV show more prudent tendencies (r = .242, p < .05). There was no significant correlation between HF-HRV and hedonism (r = -.054, p > .05). These results support the link between HF-HRV and impulse control, expanding previous research to the domain of consumer behavior, especially as it relates to prudence. Overall, the present investigation highlights the importance of maintaining greater HF-HRV for effective judgments and decisions.

273) Abstract 1603
SELF-REPORTED RUMINATIVE TENDENCIES AND RESTING HEART RATE VARIABILITY: IMPLICATIONS FOR THE PERSEVERATIVE COGNITION HYPOTHESIS
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The perseverative cognition hypothesis (PCH) posits that perseveration, or the repetitive or sustained activation of cognitive representations of a real or imagined stimulator, is a primary mechanism linking stress and disease. Rumination and worry are two core components of the PCH, and both are thought to keep the individual in a vigilant state and are associated with decreased resting vagally mediated heart rate variability (vmHRV), an important indicator of self-regulatory abilities, stress, and overall health. Interestingly, research suggests that rumination is a construct containing (at least) three facets: (i) brooding (maladaptive – wallowing and sulking); (ii) depressive (maladaptive – sadness and despair); and (iii) reflective (adaptive – problem solving and analytical thinking) ruminative tendencies. However to date, research has not yet directly examined how the relationship between resting vmHRV may differ between the three facets of rumination – with implications for the PCH. The following study attempts to rectify this in a sample of 98 female participants (age 19.34; SD = 2.19) who were first attached to a three-lead electrocardiogram (ECG) and underwent a 5-minute resting-baseline. Then, participants answered a number of self-report questionnaires, including the rumination response scale (RRS), a 22-item scale to measure self-reported ruminative tendencies. The RRS includes three subscales that index the aforementioned rumination facets. High Frequency heart rate variability was measured in accordance with Task Force guidelines and was regarded as the measure of vmHRV. Correlational analysis revealed a significant negative relationship between vmHRV and total RRS scores (r = -.183, p = .013). Subscale analyses show vmHRV to be related to the depressive rumination subscale (r = -.192, p = .009) and brooding rumination subscale (r = -.143 p = .053), but not the reflective (r = .096, p = .196) rumination subscale. While reflective rumination does not show adaptive qualities in relation to vmHRV (a positive correlation), these results do suggest that reflective perseveration may not carry similar physiological burdens as the more maladaptive forms of perseveration. These results begin to shed light on understanding the complex relationship between stress and health, and suggest that research is needed on reflective rumination, specifically examined through the lens of the PCH.

274) Abstract 1624
I'LL BE THERE FOR YOU: NEGATIVE CORRELATIONS IN ROMANTIC PARTNERS' HEART RATE VARIABILITY DURING DISCUSSION OF A RELATIONSHIP ISSUE
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Resting vagally mediated heart rate variability (vmHRV) is widely known as a psychophysiological index of prefrontal inhibitory control and thus, is a proxy of emotion regulation capabilities. Resting vmHRV is often examined as an individual difference measure related to self-regulation. However, resting vmHRV also plays an important role in dyadic interactions. Smith et al. (2011) found that greater resting vmHRV in husbands was associated with higher resting vmHRV in wives, suggesting that greater tonic vmHRV is important to maintaining healthy marital relationships. However to date, the association between relationship partners’ vmHRV has not been examined in the context of a dating relationship (not married), where the experiences of such a relationship may be different. Thus, the current investigation examines the relationship between dating partners’ vmHRV in both a resting and a reactive state. Continuous heart rate data were recorded as 72 college-aged couples (142 individuals, mean age = 19.08 (SD = 1.26), 90% Caucasian) first completed a 5-minute baseline-resting period, and later were instructed to discuss a relationship issue for 10 minutes. Participants then completed a number of self-report questionnaires. High frequency HRV was analyzed in accordance with Task Force (1996) guidelines, and was used as the measure of vmHRV both at rest and during the issue discussion (reactivity). Partners’ vmHRV did not correlate at baseline (r = .03, p = .830). During the conflict discussion, couples’ vmHRV was negatively correlated (r = -.313, p = .019), such that lower vmHRV in one individual was associated with higher vmHRV in the other. This association was mediated by how important the issue was to women (β = -11.17 (SE: .07), BootCI: [-303, -405], p < .05), but not to men. The direction of this effect was specific, such that greater vmHRV in the women was associated with greater importance of the issue for the men, whereas the men’s vmHRV was uncorrelated. These results show that in contrast to previous research in married couples, dating partners’ baseline vmHRV was uncorrelated. However, vmHRV reactivity while discussing a relationship issue was related, suggesting that dating partners co-regulate vmHRV; as the male partner releases inhibitions (lower vmHRV), the woman compensates by regulating emotions (higher vmHRV), a relationship carried by how important the issue was for the woman. Implications for dyadic relationships and emotion regulation will be discussed. Research in this area suggests that this pattern of results may influence relationship quality in addition to emotional and psychological well-being in dating couples.

275) Abstract 1633

HEART RATE VARIABILITY MODERATES THE RELATION BETWEEN DEPRESSIVE SYMPTOMS AND AUTOBIOGRAPHICAL MEMORY SPECIFICITY

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Both depression and reduced autobiographical memory specificity (AMS) – a tendency to recall events from the past in an over-general manner – are associated with reduced inhibitory control – the ability to effectively inhibit processing of distracting stimuli with the aim of achieving goals. Resting high frequency heart rate variability (HF-HRV) is widely accepted as a psychophysiological index of inhibitory control, such that higher HF-HRV is associated with greater inhibitory and self-regulatory capabilities. Reduced AMS is often discovered in the context of elevated depressive symptoms. However, while both depression and AMS have relations to inhibitory control capacity, it has not yet been investigated how HF-HRV may influence the relation between elevated depressive symptoms and AMS. The present study investigated how HF-HRV may moderate the link between increased depressive symptoms and reduced AMS in an apparently healthy student population. Participants (n=120) from an undergraduate sample were randomly assigned to either a control condition or a condition of increased cognitive load (holding a six-digit number in memory). Continuous measures of resting HF-HRV were taken via electrocardiogram (ECG) while the participants completed a 5-minute resting baseline condition, followed by measures of AMS using the Autobiographical Memory Test (AMT). Participants then answered a set of questionnaires, including the Beck Depression Inventory (BDI) to assess depressive symptoms. A moderation analysis controlling for gender showed a significant interaction between condition and increased cognitive load (holding a six-digit number in memory) and HF-HRV moderated the relationship between higher BDI scores and reduced AMS on the AMT (R2Δ = .076, β = .507, (standard error = .247), p = .046). Specifically, only in those with lower levels of resting HF-HRV greater depressive symptoms were associated with fewer specific memories on the AMT (β = -1.203, (5.35), p =.029). These are the first findings to indicate that AMS is related to HF-HRV – those lower in HF-HRV are more likely to show a relation between depression and AMS. This effect may be specific to individuals under cognitive load due to stress – a situation common for those prone to depression. As reduced AMS predicts delayed recovery among depressed patients, the examination of resting HF-HRV and its effects on the link between depression symptomatology and AMS might reveal new targets for improving depression treatments.

276) Abstract 1192

BI-DIRECTIONAL LONGITUDINAL ASSOCIATIONS OF METABOLIC SYNDROME WITH DEPRESSION, ANXIETY AND ANTIDEPRESSANT USE

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Background: Metabolic syndrome is a cluster of conditions – abdominal obesity, hypertension, dyslipidemia and hyperglycemia – associated with poor physical and mental health outcomes. Few studies examine longitudinal relationships of metabolic syndrome with depression, anxiety and antidepressant use. Antidepressants may exert independent effects on metabolic syndrome, although the direction of their effect is unclear. This large-scale study examined the cross-sectional and bi-directional prospective relationships between components of metabolic syndrome and the presence of depression or anxiety disorders, symptom severity, and antidepressant use over a 6-year follow-up.

Methods: Participants were from the Netherlands Study of Depression and Anxiety (NESA; N = 2776; 18-65 years; 66% female; 57% current depression or antidepressant medication treatment, an approach that assessments, participants completed diagnostic interviews, depression and anxiety symptom inventories, container inspection for antidepressant use, and physical assessments of five metabolic syndrome components. Analyses controlled for sociodemographic and lifestyle characteristics.

Results: Over the 6-year follow-up, a current or remitted disorder was consistently associated with lower systolic blood pressure (SBP; p = .008, p = .032, respectively). In line with a dose-response relationship, higher depressive symptom and/or anxiety symptom severity was associated with lower SBP and higher high-density lipoprotein cholesterol (HDL-C), waist circumference, triglycerides, glucose and number of metabolic syndrome abnormalities (p ≤ .021). Antidepressant use was independently associated with lower HDL-C and higher waist circumference, triglycerides and number of abnormalities (p ≤ .030). Longitudinally, higher symptom severity and antidepressant use predicted elevated waist circumference, glucose and number of components at the 2-year (p ≤ .039), but not at the 6-year follow-up. Conversely, metabolic syndrome components were not associated with subsequent psychopathology outcomes.

Conclusions: The current study showed that psychopathology and antidepressant use were consistently cross-sectionally associated with metabolic syndrome and had negative consequences on short-term metabolic health. This is of concern given the chronicity of depression and anxiety and high prevalence of antidepressant treatment.

277) Abstract 1010

MINDFULNESS MEDITATION TRAINING INCREASES RESTING STATE FUNCTIONAL CONNECTIVITY BETWEEN DORSOLATERAL PREFRONTAL AND FRONTOPARietal CONTROL REGIONS: A RANDOMIZED CONTROLLED TRIAL

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Mindfulness meditation training, an approach that involves fostering open, receptive attention to one’s experience, has been previously shown to enhance behavioral measures of executive control (e.g. attention, working memory, emotion regulation, cognitive control), but the neural mechanisms underlying these improvements are largely unknown. One potential explanation is that mindfulness training interventions foster greater executive control by strengthening the intrinsic functional connections between dorsolateral prefrontal cortex (dLPPC) – a hub of the executive control network – and dorsal and ventral frontoparietal control regions that coordinate executive function. Here, it was predicted that a randomized controlled trial of 3-day mindfulness meditation training (relative to a well-matched relaxation training program without a mindfulness component) would increase resting state functional connectivity (rsFC) between dLPPC and frontoparietal control network regions.

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in stressed, unemployed community adults. We report that mindfulness training increases rsFC between dIPFC and dorsal network (superior parietal lobule, supplementary eye field, MFG) and ventral network (right IFG, middle temporal/angular gyrus) regions. These findings extend previous work showing increased functional connectivity amongst brain regions associated with attention, interception, and emotional processing during active meditation by identifying specific neural circuits in which resting state functional connectivity is enhanced by a mindfulness training intervention in a high-stress sample.

278) Abstract 1113 INTERPERSONAL CORRELATES OF DISPOSITIONAL MINDFULNESS AND NONATTACHMENT
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The study of dispositional mindfulness and related processes in relation to health and disease has generally focused on individuals’ internal cognitive processes. However, interpersonal processes constitute another mechanism by which dispositional mindfulness may influence health and well-being. The interpersonal tradition (Pincus & Ansell, 2013) provides a well-established framework to examine associations of trait mindfulness features with such social processes. In two studies of undergraduates, we establish the relationship of interpersonal attributes and psychosocial outcomes to dispositional mindfulness and nonattachment. The Buddhist conception of nonattachment refers to freedom from unhealthy cognitive fixations, distortions of reality, and “clinging” to objects and others (Sahdra, Shaver, & Brown, 2009). In Study 1, trait mindfulness (Kentucky Inventory of Mindfulness Skills; Baer, Smith, & Allen, 2004) and nonattachment (Nonattachment Scale; Sahdra et al., 2009) were associated and accounted for interpersonal style (Interpersonal Adjective Scale; Wiggins, 1979) and goals (Circumplex Scales of Interpersonal Values; Locke, 2000). Specifically, nonattachment and mindful accepting of experience without judgment were associated with a warm-dominant interpersonal style and goals (R2 = .052 - .093, p < .05). Similar interpersonal correlates were found for mindful observing and describing of phenomena (R2 = .124 - .208, p < .001). In Study 2, warm-dominant interpersonal behaviors again were significantly related to nonattachment and mindfulness (R2 = .213 - .281, p < .05). Nonsignificant associations of mindful acting with awareness with interpersonal style and goals in Study 1 and Study 2 were an interesting exception to the overall pattern. Across studies, nonattachment and mindfulness attributes were also significantly correlated with higher social support (r = .205 - .393, p < .001), and generally with lower conflict and loneliness (r = -.242 - .312, p < .05). Thus, when examined within the interpersonal framework, dispositional mindfulness and related traits go beyond internal processes and are associated with adaptive interpersonal processes that might contribute to their positive health effects.

279) Abstract 1244 RELATIONSHIP WELL-BEING PREDICTS DIETARY INTAKE AMONG MEN
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Coronary heart disease (CHD) is more prevalent among men compared with women. Diet composition is related to CHD risk, and thus understanding psychosocial predictors of food intake among men could help identify men at risk for developing cardiovascular problems. The current study examined the link between relationship well-being and dietary intake in the Common Cold Project (Cohen, 2011). Participants (67 women, 143 men) completed the Positive Relationship Subscale of the Psychological Well-being Scale. They also completed the Food Frequency Questionnaire assessing foods and beverages people reported consuming over the past 12 months. All analyses adjusted for age, BMI, sleep quality, and years of education, based on prior research linking these variables to diet quality. Men with higher relationship quality reported consuming more calories, total fat, saturated fat, cholesterol, sodium, variety of vegetables, and amount of solid food compared with men who had lower relationship quality. On the other hand, relationship quality and nutrient intake were unrelated among women. We followed up on these analyses by examining the role of daily social interactions among men because consumption of food is frequently done in social settings. As expected, after adding frequency of social interaction to each model, the link between men’s relationship well-being and carbohydrates, fiber, variety of vegetables, and total amount of solid food changed to significance. Thus, monitoring and acceptance of affective frequency of daily social interactions may partially explain the link between relationship well-being and nutrient intake among men. Taken together, the results of the current study suggest that men who report higher levels of relationship quality engage in more frequent daily social interaction and report consuming more food than those with lower levels of relationship quality. These results may shed light on the prevalence of CHD among men.

280) Abstract 1465 IS THE MEDIAL PREFRONTAL CORTEX NECESSARY FOR THEORY OF MIND?
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Successful social interaction relies on the ability to attribute mental states to other people. Previous functional neuroimaging studies have shown that this process, described as Theory of Mind (ToM) or mentalization, is reliably associated with activation of the medial prefrontal cortex (mPFC). However, this study presents a novel and surprising finding that provides new insight into the role of the mPFC in mentalization tasks.

Twenty healthy individuals were recruited from a wide range of ages and social backgrounds. Participants underwent functional magnetic resonance imaging (fMRI) while viewing a well-established ToM visual paradigm involving moving triangles. Functional MRI data were analyzed using a classical general linear model. No activation was detected in the medial prefrontal cortex (mPFC) during movement patterns that typically elicit ToM. However, increased activity was observed in the right middle occipital gyrus, right temporoparietal junction (TPJ), left middle occipital gyrus and right inferior frontal gyrus. No correlation was found between participants’ age and BOLD response. In contrast with previous neuroimaging research, our findings support the notion that mPFC function is not critical for reasoning about the mental states of others; furthermore, our data indicate that the right TPJ and right inferior frontal gyrus are able to perform mentalization without any contributions from the mPFC.


281) Abstract 1474 MECHANISMS OF MINDFULNESS TRAINING: MONITOR AND ACCEPTANCE THEORY (MAT)
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Despite a growing body of evidence linking mindfulness training interventions with a broad range of effects, still little is known about the active mechanisms underlying mindfulness training. Mindfulness is commonly defined as (1) the ongoing monitoring of present-moment experience (2) with an orientation of acceptance. Building on conceptual foundations of mindfulness, clinical mindfulness interventions that train attention monitoring and acceptance practices, and a new body of evidence testing the interactions of attention monitoring and acceptance, we describe a testable theoretical account to help explain mindfulness training effects on cognitive, affective, stress, and health outcomes. Specifically, Monitor and Acceptance Theory (MAT) posits that (1), by enhancing awareness of one’s experiences, the skill of attention monitoring explains how mindfulness improves cognitive functioning outcomes, yet this same skill of attention monitoring (without acceptance) can increase affective reactivity. Second (2), by modifying the way one relates to monitored experience, acceptance is a necessary component for reducing affective reactivity, such that attention monitoring and high acceptance skills in combination explain how mindfulness training reduces negative affectivity and stress reactivity, and improves stress-related health outcomes. MAT’s organizing framework offers specific predictions to guide future research and may be useful for informing clinical interventions.

282) Abstract 1526 DISPOSITIONAL MINDFULNESS AND STRESS RESILIENCE: SELF-REGULATORY CAPACITY, AFFECTIVE STABILITY, AND PRESLEEP AROUSAL IN DAILY LIFE
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Mindfulness training appears to promote healthy and adaptive functioning by enhancing self-regulatory capacity and stress resilience. Less is known about whether dispositional mindfulness (DM) is similarly associated with self-regulatory capacity and stress resilience. Fifty-six healthy adults (mean age = 27.45) completed a self-report DM questionnaire and performance-based measures of executive function (EF) prior to daily life experience sampling of
283) Abstract 1683
A RANDOMIZED CONTROLLED TRIAL OF A MINDFUL EATING INTERVENTION FOR POST-MENOPAUSAL OBESE WOMEN
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This study examined the effects of a mindful eating intervention on health-related outcomes. Thirty-six obese, postmenopausal women were randomized to a six-week mindful eating and living (MEAL) intervention or an active control group (CONT) consisting of nutritional counseling, goal setting, and group support. Weight, body mass index (BMI), waist-to-hip ratio (WHR), binge eating, interleukin-6 (IL-6) and C-reactive protein (CRP) were assessed at baseline, 6 weeks, 4 months, 9 months, and 1 year. Using multilevel analysis across time, there were significant reductions in all six categories for the MEAL group (weight: Est = -4.39, p<.001; BMI: Est = -1.37, p<.001; WHR: Est = -0.12, p=.015; binge eating: Est = -0.52, p<.001; IL-6: Est = -0.48, p=.034; CRP: Est = -3.98, p=.005). For the CONT group, there were significant reductions in three categories (weight: Est = -5.12, p<.001; BMI: Est = -1.63, p<.001; binge eating: Est = -0.24, p<.001). Finally, there were significantly greater reductions for the MEAL group compared to the CONT group for three categories (binge eating: Est = -0.27, p=.007; IL-6: Est = -0.76, p=.006; CRP: Est = -3.84, p=.006). In conclusion, the MEAL intervention was associated with significant beneficial changes in all outcomes, with three being significantly greater than the active control group. Future research should continue to examine similar mindfulness interventions that address eating and weight concerns.

284) Abstract 1286
UNDERSTANDING THE TRAJECTORY OF POST-TRAUMATIC HEADACHES OVER THE FIRST 14 DAYS AFTER INJURY USING DAILY ASSESSMENTS AND MULTILEVEL MODELS
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Headaches are the most common symptom after head injury, and impact both short-term and long-term quality of life. Little is known about the acute trajectory of post-traumatic headaches (PTH). Also, prior research suggests that PTH may not be directly related to the severity of the head injury itself (D’Onofrio et al., 2014) or specific to those with mTBI (Meares et al., 2008; McLean et al., 2009). As such, it is critical to further elucidate the acute trajectory of PTH and determine the pre-injury and injury-related factors that may influence its course. The current study sought to determine whether acute headache severity—measured daily between 1 and 14 days post-trauma -- differed for those who sustained various traumatic injuries (general trauma, head injury, & mTBI). Participants (N = 106; 59% female; 77% Caucasian; Mean age = 33.4; range: 18-55) were recruited from the emergency department (ED) of a Level 1 trauma center and were categorized by injury type: trauma controls (TC) with no presence of head injury (n = 56), head injury (HI; n = 16), or mTBI (n = 39). The most frequent mechanisms of injury were falls (n = 43) and motor vehicle accidents (n = 35). During their ED visit, participants completed the Rivermead Post Concussion Scale (RMPCS), PTSD Checklist (Weathers et al., 1993) and the PHQ-2 (Kroenke et al., 2003) for pre-injury levels of PTSD and depression, respectively. They also reported on their history of being treated or hospitalized for prior head injury. Participants were then sent daily text messages starting on Day 1 –the day after ED discharge–through Day-14 prompting them to respond about their current levels of headache severity. Overall adherence to daily assessments was 74%, with completion decreasing from 79%-74% over 14 days. The mTBI group had higher mean headache scores than HI or TC as well as more days with any headache. Controlling for sex, baseline depression and pre-injury symptom severity (RMPCS), hierarchical linear analyses revealed that the TC group reported an initial PTH score of 1 (on a 0-4 scale), whereas mTBI and HI groups reported a significantly higher initial PTH score (mTBI=1.89; HI= 1.73). Over the 14 days after injury, TC group reported no decrease in PTH, whereas the HI and mTBI group reported a PTH score decrease of 0.5. In summary, we found a high prevalence of PTH immediately after head injury and improvements over the first 14 days after injury. Patterns of PTH were no different if mTBI criteria were met. Further studies should use diary methods and mobile technology to uncover associations between PTHs and contextual factors (i.e. sleep, medications, stress) after injury to identify novel targets for interventions.

285) Abstract 1289
WORK ANGER REGULATION STYLES AND FLUCTUATIONS IN ANGER, PAIN AND PAIN-RELATED FUNCTION IN CHRONIC LOW BACK PAIN
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Background: Chest pain is one of the most common reasons for consultation in emergency departments. About 50% of chest pain is of non-cardiac origin. Findings suggest that daily activities are hindered by chest pain in up to 63% of patients with non-cardiac chest pain (NCCP). Indeed, NCCP is a well-recognized source of disability and work absenteeism. Studies reveal that work absenteeism rises to 29% with an average of 23 days of absence per year amongst these patients. In Europe, the individual financial burden associated with loss of work productivity due to NCCP reaches $1600 annually. Purpose: This study aims to investigate the association between family, social and physical activity impairment and work productivity loss amongst patients with NCCP.

Methods: This cross-sectional study includes 449 emergency department patients with NCCP. The impact of NCCP on family, social and physical activity domains, work productivity and work absenteeism was assessed with a structured phone interview. Main findings: Nearly 53% of the patients reported a diminution in work productivity. The study reveals that patients reporting family impairment are 2.68 (95% CI = 1.79-4.03) times more likely to report reduction in work productivity. Patients reporting social impairment are also 3.02 (95% CI = 1.97-4.64) times more likely to notice loss in work productivity than NCCP patients with no social impairment. Finally, inactivity caused by chest pain was not associated with a reduction in work productivity. Conclusion: These findings illustrate the association between work impairment and family, social and physical activity, and work productivity loss in NCCP patients. Health care professionals should be aware that impairment in family or social domains are associated with decreased work productivity.
anger in significantly interacted to predict within subject variability in
downtime, activity, and pain interference (ps < .05), such that variability was
highest among those with both high anger out and high anger in. Overall results
suggest that when either anger out or anger in is very high and the other is very
low patients experience higher fluctuations in their anger. When anger out and
anger in are both high patients experience greater fluctuations in their pain-
related function. Implications for further research are discussed.

287) Abstract 1165
SERUM BDNF AND CORTISOL DURING PREGNANCY AND
POSTPARTUM: ASSOCIATIONS WITH RACE AND DEPRESSIVE
SYMPTOMS
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Objectives: Data support a bidirectional relationship between low serum brain-
derived neurotrophic factor (BDNF) and chronic depression. Black pregnant
women are disproportionately affected by depressive symptoms; however, data are
lacking with regard to potential racial differences in serum BDNF levels. The
current study extended the literature by examining associations among race,
depressive symptoms, and serum BDNF across pregnancy and postpartum. The
role of cortisol was also examined, given prior evidence for an inverse
relationship with serum BDNF and substantial increases during pregnancy.
Method: Participants (n=139) provided a blood sample and completed the
Center for Epidemiological Studies Depression Scale (CES-D) at each trimester
of pregnancy and 4-11 weeks postpartum. Serum levels of BDNF and cortisol
were assessed utilizing an enzyme immunoassay technique and study was to
assess alterations in resting state functional connectivity over time in both
chemiluminescence enzyme immunoassay technique, respectively. For the purposes
of analyses, women were classified as “vulnerable to depression” if they reported a
CES-D score ≥ 16 at any visit. Results: A linear mixed model revealed that
serum BDNF declined between 1st and 3rd trimesters (p < .001) and increased from
3rd trimester to postpartum (p < .001). A main effect of race was observed (p < .01), with Black women exhibiting higher serum BDNF levels than White
women. However, there was no main effect of vulnerability to depression (p = .29) or interaction between vulnerability and race (p = .21). A linear mixed
demonstrated a quadratic pattern in cortisol, with increases observed across
1st, 2nd, and 3rd trimesters (ps < .001) followed by a decline from 3rd trimester
to postpartum (p < .001). A main effect of race emerged, with Black women
exhibiting lower cortisol levels than Whites (p < .01). The observed
relationships remained after controlling for age and BMI. Conclusion: Consistent with prior data showing poorer cortisol adaption among Black
women during pregnancy. Black women in this cohort exhibited lower cortisol
and correspondingly higher serum BDNF levels. Such effects may be attributable to chronic stress associated with racial minority status. Contrary to
prediction, no associations between BDNF and vulnerability to depression were
observed. Physiological adaptations during pregnancy may obscure such
relationships. In sum, these data suggest complex and dynamic relationships
among race, cortisol, and serum BDNF across pregnancy and postpartum. Moderating effects of race and the role of racial discrimination should be
considered in future perinatal investigations with serum BDNF.

288) Abstract 1626
ALPHA-AMYLASE AS A BIOMARKER FOR STRESS IN PREGNANT
WOMEN OF LOW-INCOME STATUS
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Alpha-amylase is a protein enzyme that begins the process of starch digestion.
Salivary alpha-amylase can be used as a biomarker for stress. However, few
studies have examined whether alpha-amylase levels change in response to a
stress management intervention. In women, alpha-amylase has been found to
reduce chances of pregnancy and high levels may indicate high stress, which has
negative impacts on fetal development. The purpose of the current study was to
examine whether a cognitive-behavioral stress management intervention (CBSM)
intervention was effective in improving positive and negative mood states and in
reducing salivary alpha-amylase levels. Our sample consisted of 55 low-income
pregnant women from Long Beach, California, who participated in an 8-week
CBSM intervention. A total of 80% of these women earned less than $20,000, and
the sample consisted primarily of Latinas and African American women.
CBSM classes were aimed at teaching women about an array of skills, including:
learning different skills, such as stress awareness, thought modification, coping
skills, and social support, to reduce stress. Participants completed a measure of
positive and negative mood states (PANAS) and provided saliva samples (to
measure alpha-amylase) before and after these classes. Paired samples t-test
analyses showed a significant increase in positive mood, t(50)=5.85, p<.05, and
a significant decrease in negative mood, t(51)=3.588, p<.05, from the beginning
to the end of each class. However, no significant class changes were found for alpha-amylase. Class changes in positive and negative mood were also not found to be associated with changes in alpha-amylase. These
results suggest that although stress management interventions may be effective
in improving mood states during pregnancy, further studies are needed to
evaluate intervention components that may have an impact on alpha-amylase
levels.

289) Abstract 1324
CHANGES IN HEART RATE VARIABILITY MIRROR ALTERATIONS
IN RESTING STATE FUNCTIONAL CONNECTIVITY IN
GENERALIZED ANXIETY: A 1 YEAR FOLLOW-UP STUDY
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Introduction: Excessive worry and automatic dysregulation are core symptoms of
Generalized Anxiety Disorder (GAD) and are supposed to be strongly interconnected. Functional magnetic resonance imaging studies have linked worry
to aberrant functional connectivity between amygdala and prefrontal cortex.
Methods: Given that such frontolimbic circuitry is implicated in the regulation of
autonomic arousal, the aim of the present study was to longitudinally examine the
relationship between diminished cardiac vagal control and aberrant amygdala-prefrontal cortex (PFC) connectivity in a group of GAD patients (n = 16) and healthy controls (n = 16), matched for age and gender. At two time points (time 0: 1 year follow up), resting-state fMRI, alongside the measurement of parasympathetic (vagal-mediated) autonomic function (heart rate variability; HRV) were obtained from each participant.
Results: At time 0, these measures were acquired before and after a worry
induction. State and trait measures of worry tendencies were also assessed. In
both groups, a greater worry response after the worry induction at time 0 was
associated with a stronger reduction in resting state connectivity at follow-up.
Moreover, HRV at time 0 inversely predicted amygdala-PFC connectivity after
1 year. As to group differences, a deeper decrease in HRV from time 0 to follow
up was associated with a stronger decoupling between right amygdala and left
insula in GAD; whereas the opposite pattern emerged in controls. Lastly, the
change in HRV over time was positively correlated with the functional
connectivity between right amygdala and areas implicated in memory retrieval
and attention, such as the right middle temporal gyrus and angular gyrus.
Conclusion: Results link the functional brain mechanisms underlying worry to
autonomic dyscontrol, highlighting how changes in heart rate variability mirror
alterations in resting state functional connectivity over time in both psychopathological and healthy individuals. The present data suggests the
potential utility of therapeutic interventions aimed at enhancing connectivity in
gAD. Longitudinal follow-up of HRV along with other biomarkers may be
needed to consolidate the role of amygdala-PFC connectivity as a predictive or
modifiable biomarker in GAD.

290) Abstract 1407
DAILY POSITIVE EVENTS, DAILY STRESSORS, AND DIURNAL
CORTISOL RHYTHMS: EXAMINATION OF BETWEEN-PERSON EFFECTS
AND WITHIN-PERSON VARIATION
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Background: Growing evidence from field studies has linked daily stressful
events to dysregulated patterns of diurnal cortisol. However, no studies have
examined whether naturally-occurring positive events in everyday life are
associated with diurnal cortisol.
Objective: To evaluate daily positive events as predictors of between-person
differences and within-person (day-to-day) variations in diurnal cortisol
parameters, as well as whether daily positive events buffer against the effects of
daily stressors on cortisol parameters per person.
Method: Data came from 1646 adults aged 33-84 (56% female) from the
National Study of Daily Experiences. Participants completed interviews on 8
consecutive evenings, during which they reported positive and stressful events
over the past day. Saliva samples were collected 4 times per day on 4 interview
days (upon waking, 30 minutes post-waking, before lunch, and before bed) and

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assayed for cortisol, totaling 20,812 cortisol samples. Multilevel models were used to estimate within- and between-person associations of daily positive events with diurnal cortisol parameters: cortisol awakening response (CAR), diurnal cortisol slope (DCS), rate of deceleration (DCS2), and total cortisol output (area under the curve [AUC]). Analyses controlled for demographics, self-rated health, medications, health behaviors, depression, and optimism.

Results: On average, participants reported positive events on 71% (SD = 27%) of interview days. At the between-person level, people who experienced more frequent positive events were relatively more likely to exhibit adaptive cortisol profiles, as characterized by a steeper DCS (Est. = −0.323 pmol/L, SE = 0.114, p < 0.01) and a faster rate of deceleration (Est. = 0.017, SE = 0.006, p < 0.01); these effects persisted after covariate adjustment. Daily positive events did not predict CAR. At the within-person level, there were no main effects of daily positive events with cortisol parameters. However, positive events interacted with stressors to predict AUC, such that stressor-related increases in AUC were mitigated when a positive event occurred on the same day as the stressor (p < 0.05).

Conclusions: Minor positive experiences in daily life are associated with healthy cortisol patterns and may protect against stress-induced physiological dysregulation.

291) Abstract 1521
CONSIDERING A STRESS, UTEROPLACENTAL BLOOD FLOW PATHWAY TO FETAL GROWTH
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The United States continues to have one of the highest rates of infant mortality among the world’s industrialized countries. Preterm delivery (PTD) and compromised fetal growth are primary determinants of low birth weight (LBW; <2500g or 5.5lbs), which is associated with the majority of neonatal deaths worldwide. Efforts to reduce rates of LBW in the U.S. have had little impact over the last 15 years. Although progress has been made in understanding how psychosocial factors influence PTD, much less progress has been made in understanding how psychosocial factors influence fetal growth. In the present research we sought to determine if psychosocial stress is associated with fetal growth and, ultimately, if uteroplacental blood flow is mediating stress effects on infant birth weight. If stress is associated with a decrease in blood flow to the uterus, this could reduce the amount of nutrients reaching the fetus thereby decreasing fetal growth. To test this hypothesis, 252 pregnant participants were interviewed at 18–20 weeks gestation with a structured interview containing measures of perceived stress, anxiety, and pregnancy specific anxiety. In addition, at 18–20 weeks gestation an obstetrician and member of the research team recorded Doppler ultrasound measures of right and left uterine artery blood flow. Doppler ultrasound provides measures of blood flow velocity over time revealing the highest, peak systolic velocity (PSV) and lowest, end diastolic velocity (EDV). From these measures proportional indices of blood flow can be derived, including a PSV/EDV ratio (S/D) and a pulsatility index [PI = (PSV-EDV)/Total Avg. Velocity]]. In analyses we averaged left and right uterine artery blood flow indices, and controlled for participant age and socioeconomic status. Results of regression analyses show that high stress interacted with a high S/D and a high PI to predict lower gestational-age adjusted birth weight as compared to other combinations of these variables. This suggests that when EDV is low and the difference between PSV and EDV is large, high stress at 18–20 weeks gestation is associated with lower birth weight. It is not clear how stress may be a psychosocial context in which this uteroplacental blood flow profile influences fetal growth, or if this blood flow profile is a context in which stress influences fetal growth through additional factors. However, it is clear in these findings and others on blood pressure that this combination of stress and a particular cardiovascular profile increase risk of having a lower birth weight infant.

292) Abstract 1389
AWAKENING ALDOSTERONE RESPONSE AND SYMPATHETIC NERVOUS SYSTEM ACTIVATION DIFFER BETWEEN LEAN AND OVERWEIGHT/OBESE INDIVIDUALS
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Objective. Obesity is intertwined with hypertension. Also, obese hypertensive patients have higher levels of aldosterone compared to lean hypertensive counterparts. This is due to sympathetic nervous system induced activation of renin angiotensin aldosterone system (RAAS) together with local adipocyt production RAAS components. We hypothesize that awakening aldosterone responses differ between lean and overweight/obese normotensive. Accordingly we contrast lean-overweight/obese salivary aldosterone of young adults at risk of hypertension due to genetics and geography (stroke-belt). Methods. Participants were sixteen individuals from a subgroup of the stress and heart cohort at the Georgia Prevention Institute (mean age 27 years, 8 obese) which is a longitudinal cohort for stress related mechanisms of cardiovascular disease development. Saliva samples were collected at bedtime, awakening, and 30 minutes after awakening. Heart rate variability was recorded at rest and during videogame challenge. Anthropometrics and resting hemodynamics were recorded as well. Results. Lean and obese had similar BP, HR and HRV variability at rest. In contrast, videogame challenge unveiled higher Low frequency (63.4±9.6 Hz vs. 39.7±17.0 Hz, p<0.02) and ratio of Low to higher frequency (1.91±0.87 Hz vs. 0.45±0.12 Hz, p<0.03). As for the salivary aldosterone, both groups had similar salivary levels of aldosterone at bedtime (42.3± 38.4 ±25.6 pmol/L, ns). Awakening induced a steady increase of aldosterone in overweight/obese while just a slight variation was observed in lean (figure). Conclusions. Obese compared to lean have behavioral stress induced greater sympathic nervous system arousal. Additionally, awakening induces a steady increase of salivary aldosterone. These changes could be early fingerprints of hypertension development in obesity.

293) Abstract 1401
CORTISOL REACTIVITY AND SUICIDAL BEHAVIOR: INVESTIGATING THE ROLE OF HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS RESPONSES TO STRESS IN SUICIDE ATTEMPTERS AND IDEATORS
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Background. Suicide is a major cause of death worldwide, responsible for 1.5% of all mortality. The causes of suicidal behaviour are not fully understood. Dysregulated hypothalamic-pituitary-adrenal (HPA) axis activity, as measured by cortisol levels, is one potential risk factor. Recent evidence has indicated that cortisol reactivity to stress may be associated with suicidal behavior. The current study aimed to investigate whether cortisol reactivity to a laboratory stress task differed between individuals who had previously made a suicide attempt compared to suicide ideators and control participants.

Methods: One hundred and fifty participants were recruited to a previous attempt (n=50), suicidal ideation (n=50) and a control group (n=50) based upon established measures of suicidal behavior. Participants completed background questionnaires (e.g., Beck Depression Inventory, Childhood Trauma Questionnaire) before completing a psychologically and physiologically challenging task known as the Maastricht Acute Stress Test (MAST). Cortisol, proinflammatory cytokines (interleukin 1 & interleukin 6), blood pressure and heart rate were assessed throughout. Measures of suicide ideation, suicide attempt and depression were measured at 1 month and 6 month follow-up.

Results: Participants who had made a previous suicide attempt exhibited significantly lower levels of cortisol in response to the MAST compared to...
participants in the ideator and control groups. Moreover, participants who made an attempt within the past year exhibited significantly lower levels of cortisol compared to participants with a lifetime history of attempt. In addition, lower levels of cortisol in response to the MAST were associated with higher levels of suicidal ideation at 1-month follow-up. Suicide attempters also scored significantly higher on all scales of the Childhood Trauma Questionnaire compared to matched controls.

Conclusion: These findings confirm that HPA axis activity is associated with suicidal behavior. Moreover, cortisol reactivity may represent an important biomarker of a trait-diathesis following serious stressful and traumatic events and it may be an additional useful predictor of suicide risk.

294) Abstract 1479

EPISODEIC MEMORY MEASURED UNDER STRESS PREDICTS BETTER CORTISOL HABITUATION


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. Good episodic memory has been shown to buffer the harmful biological effects of stress; however no study has tested the protective effects of cognition while directly under stress. We set out to determine whether this finding of memory buffering stress would remain true if the cognitive assessment was done during the stressor.

Methods: We recruited 18 Brandeis University undergraduates (44.4% male, mean age 19.2 years). Participants were exposed to the Trier Social Stress Test (TSST) twice on the same day in an hour gap between the two stress tests. Cortisol was measured in saliva at time points -1, +1, 10, 30, 45, and 60 minutes relative to each TSST exposure. Cognitive function was measured through an episodic memory task where assessment focused on items and tasks present during the TSST procedure.

Results: We found a significant correlation of cortisol habituation with episodic memory under stress (r=0.53; p=0.024). When controlling for waist-hip ratio, gender, and baseline cognitive function in a linear regression model, we further found a significant association of episodic memory under stress with peak cortisol after the second TSST (beta=0.58, p=0.021), and with cortisol habituation (beta=0.666, p=0.002).

Discussion: Results of this study revealed a significant negative correlation between a participant’s episodic memory under stress and their cortisol response, and habituation, to repeated stress. This could mean that a person, whose cognitive abilities remained fluid under stress, might be able to show a more adaptive stress response pattern, i.e. habituation and lower response to repeated stress. Future work will focus on understanding the mechanisms between cognitive abilities and habituation of cortisol response.

295) Abstract 1688

HIGHER SALIVARY ALPHA-AMYLASE IN POLICE OFFICERS IS LINKED TO LOWER SUBJECTIVE STATUS IN THE POLICE AND MORE PHYSICAL HEALTH COMPLAINTS

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Police work is linked to a wide variety of negative health outcomes including depression, PTSD, and physical health problems, emphasizing the need to identify psychosocial risk factors and thus prevention targets. One promising target is subjective social status (SSS), which across professions is a strong predictor of health. The current study sought to examine the health-relevance of subjective status in police officers by differentiating traditionally assessed broad social reference groups (e.g., the U.S.) and closer social networks, such as friends and colleagues.

Participants were 68 police officers from a state police department in Switzerland (mean age: 40.3 yrs ± 8.3, n = 57 men). Participants rated their SSS on four, 10-rung ladders relative to the country, community, friends, and the police. Health was assessed by circadian salivary alpha-amylase (sAA) activity in saliva samples collected six times per day on two consecutive days and by self-report (depressive, PTSD, and physical health symptoms). Hierarchical linear models controlling for BMI, smoking, and police division were computed to 1) examine the effect of SSS on sAA activity and 2) examine the association between sAA and health-related symptoms.

Model 1 included all 4 SSS measures and revealed that lower subjective social status compared to the police was associated with higher sAA throughout the day (β = -7.89; p = .044), while SSS relative to the country, community and friends were unrelated. Model 2 showed that higher SAA was associated with worse physical health symptoms (β = 2.25; p = .026), however, depressive and PTSD symptoms were not linked to sAA activity.

The current study revealed specific relationships between perceived social standing among the police and higher sAA output across the day, emphasizing the health-relevance of perceived social status within one’s workplace over status compared to traditional groups (country, community). Furthermore, higher sAA was associated with severity of physical but not mental health symptoms, indicating that individuals who perceive that they have lower standing relative to their colleagues may specifically be at risk for poorer physical health. In high-work stress populations such as police officers, these findings may inform interventions to improve subjective status and thereby help individuals to stay in the work force.

296) Abstract 1513

GENDER DIFFERENCES IN THE ASSOCIATION BETWEEN CHRONIC STRESS PERCEPTION AND SERUM C-REACTIVE PROTEIN. RESULTS FROM THE NATIONAL HEALTH INTERVIEW AND EXAMINATION SURVEY FOR ADULTS IN GERMANY

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Objective: Views on the association between chronic stress and inflammatory makers remain controversial. Using data from the population-based, nationwide German Health Interview and Examination Survey for Adults (DEGS1), we examined the association between serum levels of high-sensitivity C-reactive protein (hs-CRP) and self-perceived chronic stress. Methods: The study sample comprised n=4,824 participants aged ≥64 years (females 49.4%, mean age 42.2 year, standard error [SE] = 0.2) assessed for their stress burden, health-related quality of life (HRQoL) and hs-CRP. The Screening Scale of the Trier Inventory for the Assessment of Chronic Stress (TICS-SSCS) was used to measure stress burden, and the SF-36V2 questionnaire was used to assess HRQoL. Multiple linear regression analyses were performed adjusted for potential confounders. Results: Adjusted for age, sex, and body-mass index, hs-CRP was significantly and inversely related to the mean SF-36 physical component summary (PCS) score (E = -1.97, SE = 0.30, p < 0.001), but not to the SF-36 mental component summary (MCS) (p = 0.099). A significant and inverse association existed between hs-CRP and the TICS-SSCS (estimate [E] = -0.75, SE = 0.31, p = 0.015). The inverse association between TICS-SSCS and CRP was observed in females (p = 0.036) but not in males (p = 0.238). When sporting activities, alcohol consumption, smoking, overall job index, socio-economic status, social support, physical activity, care giving, living with a partner and residential traffic intensity were additionally added to the models as potential confounders, SF-36 PCS (E = -1.82, SE = 0.34, p <0.01) and TICS-SSCS (E = -1.11, SE = 0.35, p = 0.002) remained inversely related to hs-CRP. In contrast, SF-36 MCS was positively associated with hs-CRP (E = 1.00, SE = 0.40, p = 0.014).

Conclusions: Data from the nationally representative DEGS1 survey of German adults confirm that lower physical HRQoL is associated with higher levels of the inflammatory marker hs-CRP. Unexpectedly, higher hs-CRP levels are also linked to both lower perceived stress and a better mental HRQoL. These results suggest that inflammation is differentially related to gender-specific stress perception and distinct dimensions of HRQoL.

297) Abstract 1156

SITE-DIRECTED MUTAGENESIS OF STAT1 TRANSSCRIPTION FACTOR IN THE STUDY OF INTERFERON-INDUCED DEPRESSION

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Treatment of viral infections and autoimmune diseases with cytokines such as interferons is often associated with profound changes in mental status and can cause behavioral symptoms that overlap with those found in major depression. Interferon influences brain function through the activation of STAT1 (signal transducer and activator of transcription 1) which becomes phosphorylated on a single tyrosine residue and enters the nucleus as a transcriptionally active transducer and activator of transcription 1) which becomes phosphorylated on a single tyrosine residue and enters the nucleus as a transcriptionally active transducer and activator of transcription 1) which becomes phosphorylated on a single tyrosine residue and enters the nucleus as a transcriptionally active transcription factor.
298) Abstract 1040

SERTRALINE AND BUPROPION: SYNERGISTIC BRUXISM RESULTING IN DENTAL FRACTURE

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Introduction: Selective serotonin reuptake inhibitors (SSRIs) and rarely bupropion can cause sleep bruxism (SB). This is a case of severe SB resulting in dental injuries induced by sertraline and bupropion, persisting over 12 years, which was overlooked by multiple dental and psychiatric providers. A possible mechanism of SSR1 and bupropion-induced SB is described, highlighting gaps in current research.

Case Presentation: A 34-year-old female with generalized anxiety disorder, unspecified depression, and tension headaches presents to the ED for evaluation of a headache. She visited her dentist 2 weeks prior for a checkup, at which imaging revealed a fracture of the mandibular left second molar, as well as buccocervical caries in multiple mandibular teeth. She reported a 12-year history of SB that began shortly after starting sertraline and bupropion, both 300mg PO daily. After 7 years, doses were reduced to the current regimen of sertraline 100 mg and bupropion 150 mg, with continued remission of psychiatric symptoms. The patient's vital signs, CBC, CMP and thyroid function tests were normal. Substance history consisted of 1-2 alcoholic drinks per month, with no tobacco or illicit drug use. In 12 years on this regimen, she saw a total of 4 psychiatric and 4 dental healthcare providers. None connected the SB to the patient's medications. Her tension headache was treated with ketorolac and she was discharged to follow up with her psychiatrist and dentist.

Discussion: SSRIs increase SB via depletion of dopaminergic transmission in the mesocortical tract, where dopamine maintains an inhibitory tone on muscles. Dopaminergic neurons in the ventral tegmental area contain 5-HT2 receptors which, when occupied by serotonin, inhibit dopaminergic neuron firing. This results in disinhibition of spontaneous movement, causing SB. Given this mechanism, bupropion should improve bruxism via increased dopamine transmission, but the opposite is observed. Of relevance to bupropion, little is known regarding norepinephrine’s role in SB.

Conclusions: In this case, multiple psychiatric and dental healthcare providers overlooked the connection of antidepressant therapy to SB, demonstrating a compartmentalization between the dental and psychiatric fields and highlighting the importance of screening patients on antidepressants for bruxism. The severity of the injury in this case, which was refractory to decreases in dosage, may indicate a possible synergistic effect of bupropion and sertraline on bruxism.

299) Abstract 1045

SYMPTOMS AND BEHAVIORS AS SIGNS OF STRESS OVERLOAD

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A number of visible symptoms and behaviors are said to be indicative of stress, in both the popular media and professional literatures. Yet there is little empirical evidence as to which are most indicative of stress overload, the pathogenic state linked theoretically and empirically to disease. Moreover, the few relevant studies have methodological limitations related to their choice of

300) Abstract 1066

A LATENT CONSTELLATION OF SELF-REGULATION AND ITS ASSOCIATION TO CHRONIC DISEASE IN OLDER ADULTS

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Background: Self-regulation is a complex construct which reflects one’s control over one’s emotions, thoughts, choices, and behaviors, can be framed as including subjective, executive functions, and physiological domains that interact to facilitate adaptive functioning. Single associations among these indices have been reported, however, self-regulation has not been examined as a latent construct encompassing all of these domains. Moreover, self-regulation has important implications for physically healthy aging, yet research has been limited by operationalizing self-regulation with single indicators. The purpose of the current study is twofold: to evaluate a model of self-regulation as a latent construct, and use this construct to predict concurrent chronic disease in older adults.

Method: A second-order confirmatory factor analysis (CFA) was used to model a higher-order factor (self-regulation) and three lower-order factors (subjective, executive function, and physiology) in older adults (N = 142; Mage = 78.4 ± 5.4). Lower-order factors were manifested by the following measured variables: (1) self-reported responses on nine sub-scales of the Behavior Rating Inventory of Executive Functioning; (2) performance on neuropsychological evaluations, including the Trail Making Test (cognitive flexibility), Controlled Word Association (verbal fluency), and Letter Number Sequencing (working memory); and (3) resting heart rate variability, which was calculated from a ten-minute resting ECG reading and operationalized as spectral power in the high-frequency (HF) 0.15-0.40 Hz range. Chronic disease scores were coded from participants’ prescription medications and represent the chronic diseases for which a participant was being treated, weighted by the likelihood that the disease would result in hospitalization or death. Structural equation modeling was used to regress chronic disease scores onto self-regulation, controlling for relevant covariates.

Results: The second-order CFA fit the data well (χ2(61) = 70.0, p = .201, CFI = .99, RMSEA=0.032, CI 0.0.0-0.06), and significantly better than alternative models. The structural equation model also showed adequate fit (χ2 (99) = 121.4, p = .063, CFI = .97, RMSEA=0.040, CI 0.0.0-0.06), and revealed that higher self-regulation was associated with lower chronic disease (B= -0.49, p=.002).

Conclusion: These findings support the multidimensional nature of self-regulation and the health relevance of its higher-order model. Greater self-regulation may be beneficial for older adults’ chronic disease outcomes, and strengthening self-regulation by targeting its multiple domains may have the most robust health implications. Importantly, reverse causality and bidirectionality are also possible: poorer health may also compromise self-regulatory capacity.

301) Abstract 1081

LIFE EVENTS AND FUNCTIONAL SOMATIC SYMPTOMS: A POPULATION STUDY IN OLDER ADOLESCENTS

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Background: It has been shown that adolescents who experience specific negative life events also experience more functional somatic symptoms (FSSs). However, previous findings were vulnerable to report bias and not adjusted for potential confounders. We hypothesized that: 1) the severity of negative life events influences the level of FSSs in adolescents, even when adjusted for pre-event FSSs, anxiety, depressive symptoms, and socioeconomic status; 2) life events related to illness are stronger predictors of FSSs than other life events; and 3) female sex, exposure to childhood adversities, and family malfunctioning increase the effect of life events on FSSs.

Methods: The study was based on data from 957 participants (55% female) of the longitudinal population-based survey TRAILS. Life events experienced between age 16 (M=16.2, SD=0.7) and age 19 (M=19.0, SD=0.6) were assessed with the Kendler’s Life Stress interview. FSSs at age 19 were measured with the Adult Self-Report. The hypotheses were tested by use of multiple regression models.

Results: Life events predicted FSSs (B=0.05, 95% CI [0.02, 0.08]), even when adjusted for pre-event levels of FSSs, symptoms of anxiety and depression, and socioeconomic status (B=-0.03, 95% CI [0.001, 0.06]). Whereas illness-related life events did not predict FSSs independently (B=0.01, 95% CI [-0.01, 0.03]), non-illness-related life events did (B=0.05, 95% CI [0.03, 0.08]). None of the potential moderators was of significant influence on the association between life events and FSSs.

Conclusion: FSSs are associated with negative life events in older adolescents. We did not find evidence for stronger effects of illness-related events.

302) Abstract 1104
GLUCOREGULATORY FUNCTION IS ASSOCIATED WITH POSTPRANDIAL INHIBITORY CONTROL AMONG YOUNG ADULTS INGESTING MILK, JUICE, AND WATER
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Fasting glucose and acute blood glucose changes can affect cognitive function, even among healthy individuals. Dairy protein may help regulate metabolic functions (e.g., blood glucose), and greater lowfat dairy intake is prospectively linked to better cognition. Despite this evidence, the impact of dairy intake on cognitive function is rarely examined in an acute experimental setting. The objective of this study was to determine the impact of beverage ingestion on neurocognitive inhibitory control among adults with better or poorer glucoregulatory function.

Changes in neurocognitive inhibitory control and glucose were examined pre- and post-beverage ingestion in healthy young adults (N=70) categorized as better or poorer glucoregulators using the previously established cut-off of 90 mg/dL for fasting glucose. Participants attended three counterbalanced sessions (water, apple juice, 1% milk). Postprandial inhibitory control was examined at 30 and 120 min using the validated Go/No-Go Task (GNG). Glucose was taken via fingerstick at baseline, and subsequently every 30 minutes. A beverage x time interaction was observed for inhibitory cognitive control among better glucoregulators who demonstrated more rapid reaction time with a trend toward lower accuracy (see Figure 1). Specifically, the overall interaction for GNG reaction time (RT) was significant [F(2,135)=3.27; p=.04] with RT in the water condition becoming more rapid over time relative to milk (p<.01). A trend toward significant interaction was observed for GNG accuracy [F(2,135)=2.14; p=.12] with a tendency toward fewer correct responses (hits) in the water condition over time relative to milk (p<.01). Thus, relative to milk, the fasting water condition elicited a more impulsive response style (faster, less accurate), while milk yielded a more careful approach on a task of inhibition. Ingesting juice did not offer significant benefit to cognitive inhibitory control relative to fasting. Such findings indicate thatIndividuals’ dietary choices may have a transient impact on inhibitory control. Further work is much needed to clarify the role of glucoregulation on prandial cognitive function.

303) Abstract 1108
BAROREFLEX ACTIVATION THERAPY: DO YOU NEED TO SUFFER TO IMPROVE YOUR CARDIOVASCULAR RISK PROFILE?
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Baroreflex activation therapy (BAT) is an effective tool to reduce blood pressure (BP) in patients with drug-resistant hypertension. In BAT electrical stimulation of the carotid baroreceptor area is supposed to suppress sympathetic and to enhance vagal activation, thereby lowering BP. In the present study, N = 30 patients (Mage 63.4 +/- 8.8 yrs; MBMI 31.2 +/- 6.4) with resistant hypertension were prospectively included to evaluate long-term BAT effects on 1) the sympathetic and parasympathetic nervous system, 2) endothelial function and 3) psychosocial functioning (e.g., well-being, pain). All measures were obtained before device implantation and 6 months after initiating of BAT. While following a paced breathing protocol, systolic blood pressure (SBP), baroreflex sensitivity (BRS), pre-ejection period (PEP), total peripheral resistance (TPR) and the high frequency component of heart rate variability (HF-RRi) were registered. Reactive hyperemia index (RHI) served to indicate endothelial function. Patients completed the SF12, the Hospital Depression and Anxiety scale and a 10-point visual analog pain scale measuring physical and mental quality of life (QoL), Depression, Anxiety and subjective pain intensity. As expected, BAT decreased SBP, Mto =151 vs. Mf1=111 mmHg, d=2.38, p<.001. Whereas the vagal markers increased with large effects sizes, dHFRRI=1.71, dBRS=1.03, p<.001, the effects on sympathetic markers were smaller, dTPPL=0.8, p<.01, dPEP=0.3, p=.12. Furthermore BAT augmented RHI, Mto =1.85 vs. Mf1=2.16, d=0.68, p<.01. However, on the subjective level, patients reported more intense pain, Mto=1.4 vs. Mf1=2.5, d=0.48, p<.05, and tended towards more depressive mood, d= 0.33, p=.11, and less mental QoL, d=0.44, p=.12. The present data support BAT as a useful tool to optimize BP in resistant hypertension. Regarding the hypothesized mechanisms, our study point to
stronger vagal than sympathetic effects of chronic BAT. More importantly, it objectively improves atherosclerotic processes and CV risk as seen in endothelial function. Although increasing baroreceptor discharge in the lab typically reduces subjective pain, our data hint to a medium increase with concomitantly lower mental QoL. Maybe chronic BAT levels hypertension-associated hypoalgesia out, resulting in more intense pain ratings.

304) Abstract 1112

FACTOR STRUCTURE OF THE PERCEIVED STRESS SCALE-10 (PSS) ACROSS ENGLISH AND SPANISH LANGUAGE RESPONDERS IN THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL) SOCIOCULTURAL ANCILLARY STUDY

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The Perceived Stress Scale-10 (PSS) is a robust predictor of health and disease. U.S. Hispanics/Latinos (H/Ls) are an at-risk population for cardiovascular diseases (diabetes, coronary heart disease, etc.), and many U.S. H/Ls report that they are not proficient in English. Combined use of original English and Spanish-translated PSS permits the study of perceived stress and disease in a more representative sample of U.S. H/Ls rather than English-proficient H/Ls only. Translated measures assume factorial invariance, or that the same construct of perceived stress is measured across English and Spanish versions. Invariance violations can result in misleading interpretations of stress scores and related disease risk findings. The present study investigated factorial invariance in interviewer-administered English (n = 1006) and Spanish (n = 4170) versions of the PSS in U.S. H/Ls by (1) examining PSS factor structure by comparing one-, two-, and bi-factor models in the full sample and English and Spanish language groups; (2) testing for configural, metric, and scalar invariance across language groups; (3) examining the internal consistency of all PSS items in the full sample and English and Spanish language groups; (4) establishing the convergent validity of the PSS with measures of depressive symptoms, trait anxiety, and trait anger using data from 5,176 Hispanic/Latinos aged 18-74 (M = 46.49) who participated in the Hispanic Community Health Study/Study of Latinos Sociocultural Ancillary Study. A bi-factor model with all 10 PSS items loading on a general perceived stress factor, and the four reverse worded items also loading on a reverse wording factor was supported. The model displayed metric and scalar invariance (equal factor loadings and item intercepts) across language groups. There was good internal consistency for English (α = .86) and Spanish responders (α = .84). Linear regressions indicated that both the general perceived stress score (β = .677 s.e. = .009, .648 s.e. = .010, and .541 s.e. = .012) and the reverse worded score (β = -.206 s.e. = .013, -.301 s.e. = .013, and -.057 s.e. = .015) were related to scores on depressive symptoms, anxiety, and anger respectively (all ps < .001). Including the reverse wording factor in addition to the general perceived stress factor improved factorial and convergent validity. Therefore, measuring perceived stress with the PSS to study cardiovascular disease in U.S. H/Ls should consider the reverse wording factor when a single computed score of the English or Spanish PSS is used. These findings are relevant for psychological research and clinical medical settings where the PSS is used to assess disease outcomes.

305) Abstract 1116

A NOVEL APPROACH TO INVESTIGATING THE TIME-VARYING EFFECTS OF MOMENTARY AFFECT ON WILLINGNESS AND INTENTIONS TO DRINK IN FIRST-SEMESTER COLLEGE WOMEN


College students engage in heavy drinking for a variety of complex reasons, including enhancing positive affect and reducing negative affect. Some evidence suggests that particular subsets of individuals, such as women and those with pre-existing mental health vulnerability, may be more likely to engage in alcohol usage for emotion regulation. To inform prevention work, it is important to understand factors that influence students’ decisions to drink (i.e., willingness and intentions). However, little work has examined how these decisions are made in the moment, and how affect might influence those decisions over time. Thus, the current study investigated: 1) the time-varying effects of momentary affect on momentary willingness and intentions to drink leading up to and following a heavy drinking occasion, and 2) whether baseline levels of depressed mood and anxiety moderated these associations. Participants (N = 62 female undergraduates) completed baseline assessments of depressed-mood and trait anxiety. Additionally, they completed a 14-day ecological momentary assessment that included three measurements per day of positive affect (PA), negative affect (NA), and willingness and intentions to drink, as well as a waking recall survey to measure previous day drinking behaviors. Time-varying effect models were used to examine momentary covariation between affect and drinking decision-making factors leading up to and after participants’ heaviest drinking events. Results indicated that 1) PA was positively associated with willingness to drink the five days leading up to the heaviest drinking event. 2) NA was not significantly associated with willingness or intentions to drink at any point during the study, and 3) baseline anxiety, but not depressed mood, moderated the PA-willingness relationship, such that the two days prior to and after the heaviest drinking event, PA had a significant positive effect on willingness to drink for those with low anxiety, but not for those with high anxiety. These results warrant further investigation of the link between anxiety and affect on drinking behaviors (e.g. does experimentally increasing anxiety around fear of consequences weaken the relationship between PA and willingness to drink?), and can inform the development of interventions that provide alternatives for enhancing positive affect.
306) Abstract 1141
THE INTERPLAY BETWEEN AFFECT AND SUBJECTIVE AND PHYSIOLOGICAL MEASURES OF SLEEP
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Introduction. Major depressive disorder (MDD) is known to be characterized by changes in affect, energy, and sleep, and levels of the sleep-related hormone melatonin are found to be altered in MDD patients. How these factors interact over time has never been studied. The aim of the present study was to examine their interplay over time in major depressed versus non-depressed people. Method. Fifteen depressed patients and fifteen pair-matched healthy controls sampled melatonin in saliva and completed sleep and affect measures three times a day for 30 consecutive days in their natural environment (N=30, T=90). Group Iterative Multiple Model Estimation (GIMME) was applied to examine the dynamic interplay between affect, fatigue, and melatonin, and to investigate how this interplay was moderated by alterations in individuals’ sleep patterns. The use of GIMME enabled us to estimate contemporaneous and lagged changes in these relationships. Results. Preliminary results showed interesting associations between affect and subjective and physiological sleep measurements within individuals. Substantial heterogeneity, meaningful patterns at the group level can still be identified with this approach.

307) Abstract 1158
ILLNESS PERCEPTIONS IN CYSTIC FIBROSIS: ASSOCIATIONS WITH DISEASE-SPECIFIC QUALITY-OF-LIFE AT ONE YEAR FOLLOW-UP
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Cystic fibrosis (CF) confronts patients with respiratory and infectious complications, taxing treatments, and a foreshortened future. Many experience significant disruption in quality-of-life (QOL). Personal interpretations of illness are thought to have a significant impact on QOL, but as yet these relationships have been little studied among adults with CF. This longitudinal study examined associations between illness perceptions and subsequent disease-specific QOL outcomes one year later. Participants were evaluated at a regional CF center. Mean age was 27.6 (9.92), median income was quite modest, and mean FEV1% was 65.8 (24.4). Illness perceptions at baseline were assessed with selected scales from the Illness Perception Questionnaire-Revised. Disease-specific role, social, and emotional functioning were evaluated with scales from the Cystic Fibrosis Questionnaire-Revised. It was anticipated that improved QOL outcomes at one year 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-lapse beliefs (brief vs. chronic), given the protracted course of the disease. In regression models that accounted for significant clinical and demographic covariates, baseline illness coherence significantly predicted all 3 outcomes one year later: role functioning (β = .24, p =.04), social functioning (β = .35, p =.003), and emotional functioning (β = .32, p =.009). Additionally, baseline treatment control was significantly associated with role functioning at one year (β = .38, p =.009). Illness coherence remained significantly predictive of social functioning (β = .20, p =.048) after additional adjustment for baseline values of the outcome (i.e., predicting change in functioning).

Results address a gap in the literature by examining illness perceptions in an understudied, highly burdened population. Findings suggest that patients who perceive a greater understanding of their illness (coherence) experience improvements in social functioning over time. These results seem particularly salient, because CF patients are confronted by enormous complexity as they grapple with a difficult illness and its treatments. Moreover, illness coherence was related to more favorable long-term outcomes in role and emotional functioning as well, though it did not predict changes in these additional outcomes, underscoring the need for further research regarding temporal changes in these relationships.
as listening to music as well as the perceived respect as health determinants is more anecdotal than conclusive. The aim of this work was to evaluate the above mentioned determinants on subjective and objective wellbeing among young to middle-aged adults using a micro-longitudinal approach of high ecological validity.

Methods: In an ambulatory assessment study, 75 young to middle-aged healthy adults (38 women, 23±9±4.5 years, 22±2±2.8 kg/m², 31 vegetarians) completed mood, stress, and fatigue, items five times/day for four consecutive days to examine subjective wellbeing. With each data entry, a saliva sample (SalCaps®) was collected for the later assessment of cortisol, alpha-amylase and flow rate as markers of neuroendocrine, sympathetic and parasympathetic activity, respectively. As determinants, physical activity was assessed along with items on wellbeing, and daily mean scores were created. At the end of each day, subjects provided information on their daily coffee, alcohol and vegetable/fruit consumption. Perceived respect was assessed at each data entry, while daily music listening behavior was assessed at the end of the day.

Results: Controlling for gender and eating habits (vegetarians vs. non-vegetarians), we identified mean daily perceived respect and listening to music as major predictors of subjective wellbeing. Effects of daily coffee and vegetable/fruit consumption on subjective wellbeing appeared rather minor, without any effects of mean self-reported physical activity and alcohol consumption. Mean respect scores predicted lower daily cortisol output while coffee consumption was positively related to daily alpha-amylase activity. No other association was significant.

Discussion: These findings provide important insights regarding potential resources of wellbeing. The effects of music on subjective wellbeing; and perceived respect on subjective as well as biological markers of wellbeing are promising and possible long-term consequences need to be investigated further.

309) Abstract 1303
A BRIEF MOTIVATIONAL INTERVIEW WITH ACTION AND COPING PLANNING COMPONENTS ENHANCES MOTIVATIONAL AUTONOMY AMONG VOLUNTEER BLOOD DONORS
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Background: Both novice and experienced blood donors can be difficult to retain in the donor pool due to a variety of psychological and non-psychological barriers to repeat donation. In addition to enormous ongoing recruitment costs, failure to retain blood donors has important health implications as repeat donors are less likely to be deferred for poor health and to transmit infections such as HIV and hepatitis. Because each donor experiences a unique set of retention deterrents, we developed a post-donation telephone interview based on motivational interview principles to address individual barriers. We hypothesized that, compared to controls, donors who received the telephone interview would show enhanced responses on key predictors of donation behavior as described by Self Determination Theory (i.e., motivation and autonomy) and the Theory of Planned Behavior (i.e., attitude, self-efficacy, and intention).

Methods: In this randomized controlled trial, 484 blood donors [63% Female; Mean Age = 30.0 (SD = 11.7) years; Mean Number of Prior Donations = 2.4 (SD = 1.7)] were randomly assigned to receive either a telephone-delivered motivational interview with action and coping planning components or a control call approximately six weeks after the telephone contact. Results: A series of ANOVAs revealed that, relative to controls, donors in the interview group reported larger increases in donation autonomy, F (1, 483) = 10.6, p = 0.001, d = 0.29, self-efficacy, F (1, 483) = 4.5, p = 0.03, d = 0.19, and intention, F (1, 483) = 13.4, p < 0.001, d = 0.33, and marginally larger increases in donation attitude, F (1, 483) = 3.6, p = 0.06, d = 0.17. Discussion: This study provides initial support for the use of “nonadaptive” cognitive emotion regulation strategies (CERS) and their association to psychological health.

METHODS: A community sample of 259 healthy participants were divided into three age groups: Young (20-44 yrs) n=101 (52 males); Middle-aged (45-59 yrs), n=77 (17 males); Old (60-75 yrs), n=81 (36 males). Participants were asked to assess life-satisfaction, well-being, symptoms of anxiety and depression, and their use of a subset of CERS: Self-blame, Rumination, Catastrophizing, and Blaming others in questionnaires.

RESULTS: Age effects were confirmed for life-satisfaction, well-being, and symptoms of anxiety and depression (F: 6.121, p: .000; 0.207, p: .002), with the oldest group reporting the highest levels of life-satisfaction, well-being and the lowest symptoms of anxiety and depression and higher life-satisfaction and well-being (p: .000-0.39). Also the level of applied “nonadaptive” CERS differed significantly across age groups (F: 2.949-7.596, p: .001-0.54), with least application in the oldest group. In all age groups Self-blame was associated with symptoms of depression and anxiety (r: 0.247-0.451, p: .000-0.026) and lower well-being (r: 0.192-0.340, p: .004-0.054); and Catastrophizing correlated inversely with well-being (r: 0.346-0.207, p: 0.02-0.032) and life-satisfaction (r: 0.278-0.335, p: 0.001-0.015).

However, significant age differences in the associations between “nonadaptive” CERS and psychological health were also found. Blaming others correlated significantly with life-satisfaction (r: -0.256-0.332, p: 0.003-0.011), and symptoms of depression and anxiety (r: 0.320-0.440, p: 0.000-0.04), in the Middle-aged and Old age group only, while Rumination correlated significantly

310) Abstract 1313
DOES A SMILE A DAY KEEP THE DOCTOR AWAY? THE CONNECTIONS BETWEEN FACIAL EXPRESSIONS IN STUDENT IDENTIFICATION PHOTOGRAPHS AND HEALTH CARE CENTER VISITATION
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Most studies investigating the relationship between positive emotions and health rely on self-reported emotions, which may be influenced by social desirability. In order to circumvent self-presentation considerations, some studies have used smiling in photographs as an alternative method of measuring positive emotion. Little work, however, has investigated the connections between smiling in photographs and health. We were interested in whether smiling in photographs was connected to current health-relevant information, specifically how many times participants visited a health care center in the past year. The purpose of Study 1 was to determine initial connections between smile presence and intensity in student ID photographs and visits to a health care center over the past year for any reason. The purpose of Study 2 was to further investigate this association by distinguishing the purpose of past health care visits and whether positive emotion or personality traits mediated these relationships. Participants completed a short online survey with multiple questionnaires. Participants also reported on how many times they had visited a health care center in the last year in general (Study 1) and for four different reasons: illness, injury, mood-related, and preventive (Study 2). The photographs on their student identification cards were coded on a trichotomous scale: no smile, standard smile, and genuine (“Duchenne”) smile. Surprisingly, smiling subjects were more likely to have visited a health care center in the past year than participants with no smile. In Study 2, this counterintuitive finding was explained as smilers were significantly more likely to visit a health care center due to health-related reasons than illness, injury, or mood-related concerns. These studies demonstrate that coding photographs of a young, healthy sample can reveal important health-relevant information and that further sophistication is warranted when examining the standard outcome of health care center visits. Furthermore, researchers should continue to investigate methods other than self-report, because objective methods such as language coding or facial expression coding may circumvent many of the issues associated with relying solely on self-report.

311) Abstract 1378
AGE EFFECTS IN THE APPLICATION OF NONADAPTIVE COGNITIVE EMOTION REGULATION STRATEGIES AND THEIR ASSOCIATION WITH PSYCHOLOGICAL HEALTH
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OBJECTIVE: Despite a decrease in physiological health, there seem to be contrary little evidence that older people sustain or experience an increase in psychological health. Somehow older people seem to manage losses and poor health better than younger generations. One potential reason for this may be adaptive changes in emotion regulation strategies throughout the lifespan. The aim of this study was therefore to investigate possible age differences in the use of “nonadaptive” cognitive emotion regulation strategies (CERS) and their association to psychological health.

METHODS: A community sample of 259 healthy participants were divided into three age groups: Young (20-44 yrs) n=101 (52 males); Middle-aged (45-59 yrs), n=77 (17 males); Old (60-75 yrs), n=81 (36 males). Participants were asked to assess life-satisfaction, well-being, symptoms of anxiety and depression, and their use of a subset of CERS: Self-blame, Rumination, Catastrophizing, and Blaming others in questionnaires.

RESULTS: Age effects were confirmed for life-satisfaction, well-being, and symptoms of anxiety and depression (F: 6.121-10.061, p: 0.000-0.03), with the oldest group reporting the highest levels of life-satisfaction, well-being and the lowest symptoms of anxiety and depression and higher life-satisfaction and well-being (p: .000-0.39). Also the level of applied “nonadaptive” CERS differed significantly across age groups (F: 2.949-7.596, p: .001-0.54), with least application in the oldest group. In all age groups Self-blame was associated with symptoms of depression and anxiety (r: 0.247-0.451, p: .000-0.026) and lower well-being (r: 0.192-0.340, p: .004-0.054); and Catastrophizing correlated inversely with well-being (r: 0.346-0.207, p: 0.02-0.032) and life-satisfaction (r: 0.278-0.335, p: 0.001-0.015).

However, significant age differences in the associations between “nonadaptive” CERS and psychological health were also found. Blaming others correlated significantly with life-satisfaction (r: -0.256-0.332, p: 0.003-0.011), and symptoms of depression and anxiety (r: 0.320-0.440, p: 0.000-0.04), in the Middle-aged and Old age group only, while Rumination correlated significantly
with well-being (r = -0.360, p <.001) and symptoms of depression (r=0.453, p=.000) for the old age group, but none of the two younger populations.

CONCLUSION: The investigated CERS were inversely associated with psychological health. The older participants reported less use of “nonadaptive” CERS and this may partly explain their better psychological health.

IMPLICATIONS: Knowledge of life-long development in emotion regulation and its associations to psychological health adds to the understanding of healthy adaptability. This understanding may in turn be useful in the treatment of psychopathology.

312) Abstract 1381
ASSOCIATIONS OF EMOTIONAL STATES AND STRESS WITH HUNGER IN LONG-SMOKERS AND NON-SMOKERS
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Background and aims. Associations of psychological distress and smoking behaviors are well established, smokers being more likely to report negative affects. On the other side, nicotine reduces hunger and food intake. Both psychological distress and weight gain tend to increase risk for smoking relapse. To our knowledge, the investigation of the connection between hunger and psychological distress among smokers has not been conducted.

This study examined this relationship in non-smokers and smokers during cessation (abstainers and relapers). Methods. Smokers were recruited in quitting (n=98) and non-smokers (n=37) were enrolled in the study. Success or failure of the quit attempt at seven days was recorded for smokers. Emotional states were collected at the beginning of the study using the Subjective State Scale (SSS), the Profile of Mood States (POMS), and the Perceived Stress Scale (PSS). Hunger was measured using the Minnesota Nicotine Withdrawal Scale.

Results. Overall, negative affects (PSS, POMS, SSS) were higher for smokers that for non-smokers (p<.044), and abstainers reported greater hunger than relapers (p<.05). Hunger was not significantly correlated with emotional states for non-smokers (except for confusion, r=444, p=.006). In contrast, hunger was significantly related to negative affects for smokers (r=247 ≤ r < 651, p<.040). The correlations with positive emotional states were not significant, except for vigor in abstainers (r=360, p=.039). PSS was significantly associated with hunger in relapers only (r=375, p=.001).

Conclusions. The primary findings of this study are: 1) confirmation of enhanced negative affects among smokers; 2) abstainers reported greater hunger levels, indicating the possibility of a greater appetite-suppressant; and 3) reported hunger was associated with negative affects in smokers. These results indicate the potential role of negative affect in mediating appetite changes in smokers, and this connection seems to be related to the risk for smoking relapse.

313) Abstract 1386
POSITIVE AFFECT MORE IMPORTANT FOR METABOLIC HEALTH STATUS THAN NEGATIVE AFFECT
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Positive and negative affect states (PA/NA) can have a protective and deteriorating role in the etiology of disease. An important reflection of somatic disease is metabolic health status, since abnormalities in biological markers of metabolic health status are associated with increased risk for stroke, diabetes, and cardiovascular disease. However, it is unknown if affect is linked to metabolic health status. The purpose of this study is to test whether PA and NA associate with metabolic health status.

Data were derived from the multi-disciplinary population-based cohort study LifeLines (n=82,048, mean age=44.8y, SD=12.2y, 58% women). Affect was measured with the Positive and Negative Affect Schedule (PANAS) with 20 items answered on a 5-point-Likert scale. Fasting blood samples were collected for the analyses of metabolic markers. Metabolic health status was composed of the sum scores of the z-values of Body Mass Index (BMI), systolic (SBP), diastolic blood pressure (DBP), glucose, triglycerides, and High-Density Lipoprotein (HDL). HDL concentrations were recoded such that higher values reflected a poor metabolic health status. Linear regression analyses were performed with PA, NA, and their interaction as predictors, and metabolic health status as outcome. All analyses were adjusted for age, sex, and physical activity.

PA was inversely associated with metabolic health status (β=-.015; SE=.003; p<.001). The effect of PA was dependent on the level of NA (PA*NA; β=-.014; SE=.000; p<.001), especially in persons with high levels of NA. NA was not independently associated with metabolic health status.

Our study suggests that PA is more relevant for metabolic health status than NA, particularly in people who report high NA. Future research could investigate whether this association between PA and metabolic health is also present in specific subsamples, e.g. patients with chronic somatic diseases or mental disorders.

314) Abstract 1396
SOCIAL JETLAG PARTIALLY MEDIATES THE ASSOCIATION BETWEEN HOSTILITY AND ADIPOSY
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Circadian disturbances heighten risk for obesity and, therefore, might partly mediate associations between obesity and behavioral factors that are themselves related to circadian disruptions. Among the latter, high trait hostility associates with common metrics of adiposity and, while limited so far to a single study of adolescents, with an indicator of habitual circadian misalignment, termed social jetlag (SJL). SJL reflects discrepancy between individuals' endogenous circadian rhythms and their actual sleep schedules, as imposed by social obligations. Here, we further examined SJL as a correlate of trait hostility and tested its potential to mediate an association between hostility and adiposity. Participants were 448 healthy adults (aged 30-54; 53% female; 17% nonwhite) from the Adult Health and Behavior (AHAB) Phase II project. Hostility was measured with the Cook-Medley Hostility Inventory, and a composite adiposity index was constructed from the standardized distributions of body mass index, waist circumference, and impedance-derived total body fat. Participants wore an actiwatch for 7 nights, and SJL was calculated as the difference in minutes between average mid-sleep on free days and weekdays. A path model estimating the direct and, via SJL, indirect effects of hostility on adiposity (adjusted for age, sex and race) showed good fit to the data (X2(3) =27.8, p =.426). Higher hostility covaried positively with SJL (β =1.4, p<.002), and both hostility (total β =1.2, p =.008) and SJL (β =1.2, p =.007) associated with greater adiposity. In addition, variation in SJL accounted for 17% of the relationship between hostility and adiposity. In contrast, an alternative model positing cross-sectional mediation of the relationship between SJL and adiposity via hostility yielded poor fit (X2(3) =27.99, p <.001). These findings show hostility related to SJL in healthy adults and suggest that circadian disruptions may contribute to hostility-associated health risks.

315) Abstract 1463
SECOND-HAND STRESS: PHYSIOLOGICAL AND PSYCHOSOCIAL CONSEQUENCES ASSOCIATED WITH DIETING IN PAIRS
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Dieting is a multi-billion dollar industry, but its effectiveness for weight management is limited. While dieting is not associated with successful long-term weight loss, it is associated with many negative psychosomatic consequences, including cortisol increases, psychological stress, depression, and eating disorder symptomatology. There is a gap in the dieting literature, however, when it comes to how dieting affects the dieter’s close others, although there is empirical evidence to suggest that we are susceptible to both the greater hormonal fluctuations and the psychosocial states of those around us. While dieting with a “buddy” has been recommended to improve weight loss outcomes, there is, as of yet, no empirical evidence to suggest that this is effective. More importantly, there is no evidence as to whether dieting with a partner might buffer the negative consequences of dieting, or, conversely, exacerbate them. To fill this gap, this study recruited 67 pairs (Ntotal = 134) of non-romantic cohabiting female dyads (roommates) and randomly assigned them to one of three 3-week conditions: control (participants ate normally), transfer (one roommate randomly assigned to a low-calorie diet), and both diet. Pre- and post-manipulation diurnal cortisol was collected (4 days total) as well as psychosocial measures assessing eating disorder symptomatology, depression, anxiety, perceived stress, irritability, and self-esteem. Regression analyses revealed that one participant’s cortisol change could be predicted based on her partner’s cortisol change, but only in the control and both diet conditions. To assess potential psychosocial consequences of this finding, structural equation models were constructed. These revealed that dieting in pairs might exacerbate a propensity for stress to predict anxiety and depression, and for these in turn to predict eating disorder symptomatology. These consequences emerged on top of the fact that dieting with a partner did not seem to have any
benefit for weight loss. These findings contribute to a scientific understanding of the biopsychosocial consequences of dieting. This is of marked importance given that low-calorie dieting is currently the most common physician-recommended weight loss intervention. Therefore, these findings have important implications for weight management and healthcare policy.

316 Abstract 1508
THE EFFECTS OF STRESS AND RESILIENCE ON SEXUAL PROBLEMS IN A GENERAL POPULATION SAMPLE
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Background: Stress is thought to play a role in the development and maintenance of sexual problems, but little is known about the underlying mechanisms. Previous studies examined the effect of single stress factors on sexual function. In this study, we tested a multidimensional stress model. We assumed that childhood trauma leads to reduced resilience and increases chronic or current psychosocial stress in adulthood, which in turn serve as risk factors for sexual problems. Via these pathways, childhood trauma increases the probability for the development and manifestation of sexual problems.

Methods: To enable both cross-sectional and prospective analyses, we conducted an online study with two time points. Our sample consisted of 1819 subjects at the first time point. A sub-set of 184 subjects was followed-up 6 months later. The model was tested via path analysis.

Results: The proposed model, without a direct effect of childhood trauma on sexual problems, demonstrated good fit statistics in the cross-sectional (X²/df = 1.782, p = .182, CFI = .999, RMSEA = .022, 90% CI [.000, .070]) and the prospective analysis (X²/df = .731, p = .393, CFI = 1.000, RMSEA = .000, 90% CI [.000, .018]). All the indirect effects of childhood trauma on sexual problems (e.g. via elevated stress levels in adulthood) were significant.

Discussion: Our results suggest that childhood trauma is associated with higher levels of both chronic and current psychosocial stress, which in turn are associated with sexual problems. These heightened stress levels may influence the development and manifestation of sexual problems, most likely via biological systems and cognitive processes. Further studies should explore these relations.

317 Abstract 1525
CARDIOVASCULAR EMOTIONAL DAMPENING, THREAT APPRAISAL AND RISK BEHAVIOR: RESTING BLOOD PRESSURE PREDICTS RISKY DRIVING IN WOMEN
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Elevated resting blood pressure (BP) is associated with dampened responses to aversive stimuli. For example, higher resting BP predicts subsequent reduced pain assessments, reduced emotional reactions to evocative photographic scenes, and reduced accuracy of emotion recognition in facial expressions and written narratives. This cardiovascular emotional dampening may also influence threat appraisal and, hence, motivation to avoid risk. There is some preliminary support for this in our findings of correlations between BP and self-reported risk behavior. The present study was designed to determine if resting BP is associated with risky driving behavior assessed in a high fidelity driving simulator.

Fifty one healthy women (n=20, age=28.6 years) and men (n=31, age=29.3 years) rested for systematic BP determination both before and after a simulated driving scenario in a DriveSafety automotive simulator with six visual channels, single-axis motion, and functioning controls and instrumentation. Five minutes by minute resting systolic and diastolic BPs were obtained both before and after the simulation with a calibrated Dinamap V100 oscillometric device. Averages of the three intermediate BP values were used for analysis. Risky driving was assessed by speed relative to the posted speed limit, and a time-to-collision index of tailgating.

Multiple regression in women indicates that a weighted combination of speed and time-to-collision were associated with pre-driving diastolic BP [F(2,17)=5.097, p=.018], and marginally associated with pre-driving systolic BP [F(2,17)=2.888, p=.083]. In contrast, post-driving BP was unrelated to risk measures in women. In men, risk measures were unrelated to BP. These data suggest that higher resting diastolic, and to a lesser degree, systolic BP measured prior to a simulated driving task is associated with more risky driving in women. These results are consistent with the notion that cardiovascular emotional dampening can reduce threat appraisal and thereby decrease motivation for risk avoidance. In this particular context, the results are confined to women. Other psychophysiological and social mechanisms may obscure the relationship between BP and risky driving in men.

BP obtained after the driving simulation has no significant relationship with driving risk, suggesting that prior risk-taking behavior does not directly produce BP elevations. We suggest that interacting central nervous system mechanisms controlling cardiovascular function and emotional responsiveness mediate the relationship between BP and risk appraisal. Future research should further explore the neural systems controlling both cardiovascular function, emotional responsiveness, threat appraisal, and risk behaviors.

318 Abstract 1593
DYNAMIC ASSOCIATIONS AMONG DIMENSIONS OF MAJOR DEPRESSIVE DISORDER AND INDICES OF OBJECTIVE SLEEP
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Major Depressive Disorder (MDD) and poor sleep independently confer risk for adverse health outcomes. Although the prevailing view suggests that these risk factors are reciprocally related, the nature and direction of these associations remain unclear. Limitations of previous work linking sleep and depression include (1) limited characterization of the complex presentation of MDD, (2) reliance on cross-sectional data, and (3) the use of sleep as a unitary construct. We addressed these issues by categorizing MDD across four dimensions of recurrence, chronicity, acuity, and remission status, using prospective data to test the predictive utility of sleep with and without MDD, and employing a multidimensional approach to sleep measurement.

Polysomnographically (PSG)-assessed sleep data were collected in 150 physically healthy participants at Time 1 (T1; Mean age=41.16±9.15y, 67%F) and again on average 18.89±4.57y later (T2). Detailed MDD history was assessed by structured clinical interview at both visits. MDD dimensions included; recurrence (single, recurrent, no history of MDD); chronicity (criteria met at T1 only, T2 only, T1 and T2, no history); acuity (in current major depressive episode (MDE) at T1 and/or T2, not current at either visit, no history); and remission status at T2 (full, partial, no history). Group differences in MDD dimensions were tested using ANCOVA for sleep duration (total sleep time; TST), timing (sleep midpoint), continuity [sleep latency (SL), wake after sleep onset (WASO)], architecture [%NREM stage 1, %NREM stage 2, %NREM stage 3, %REM], and clinical sleep parameters (REM latency (RL), number of REM periods (REMP)); outcomes included averages and variability (s.d.). T2 sleep was averaged across both nights. Covariates were sex, T1 sleep, and age, body mass index, and apnea symptoms at T2.

Recurrence, chronicity, and acuity of MDD were significantly associated with greater variability in sleep continuity (p's<.05) and later sleep timing (p's<.05). Chronicity and acuity were associated with sleep architecture, including greater percentage and variability of %NREM1 and 2, respectively (p's<.05). All four MDD dimensions were marginally associated with MDD, including longer RL, lower REM periods, and more variability in %REM and RL (p's<.05).

Our study provides compelling prospective evidence of the predictive utility of clinical dimensions of depression for sleep, including greater variability in sleep continuity, later sleep timing, and alterations in sleep architecture. Subsequent analyses will (1) utilize cross-lagged analyses to test causal associations between MDD and sleep and (2) relate the findings of these cross-lagged analyses to adverse health outcomes.

319 Abstract 1600
SEX MODERATES THE RELATIONSHIP BETWEEN VAGAL TONE AND SELF-REPORTED EMOTION REGULATION DIFFICULTIES
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Resting high-frequency heart rate variability (HF-HRV) is widely accepted as a psychophysiological index of vagal tone and emotion regulation capabilities, such that both higher and higher HF-HRV are beneficial to emotional function. Among sexes, men and women differ in resting HF-HRV such that women typically exhibit higher vmHRV in comparison to men. With respect to emotion regulation, women typically show better awareness of negative emotions and find more difficulty accomplishing goals in when faced with negative emotions in comparison to men. However, no research has examined the relationship
between vmHRV and emotion regulation difficulties among sexes. In the current study, we examined this relationship in 183 (98 female, mean age = 19.34) individuals. First participants completed a 5-minute resting-baseline period where resting HF-HRV was assessed, and then completed the 36-item Difficulties in Emotion Regulation Scale, designed to assess participants’ daily difficulties in emotion regulation. Results found that after controlling for BMI, respiration, ethnicity, trait rumination, and trait anxiety, gender significantly moderated the relationship between HF-HRV and DERS scores (R2change = 0.011, β = -3.50 (1.71 ), p = .043). In women, results showed a significant negative relationship between vmHRV and DERS scores (β = -4.05 (1.35), p = 0.003), whereas a much weaker negative relationship existed in men (β = -0.55 (1.24), p = .66). These results are particularly strong when using two of the six subscales of the DERS; (i) difficulties in goal oriented behavior and (ii) non-acceptance of negative emotions. These results suggest that sex differences may underlie the relationship between HF-HRV, a biomarker of emotion regulation capabilities, and perceptions of one’s own emotion regulation difficulties. While future research is needed, sex differences in both resting HF-HRV and emotion regulation will be discussed as possible mechanisms underlying this phenomenon.

320) Abstract 1644
ANXIETY SENSITIVITY MODERATES THE PAINFUL EFFECTS OF FEELING BURDENSOME TO OTHERS
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Perceived burdensomeness (PB), the perception of being a burden to others, is associated with pain and severe psychological consequences (e.g., suicide) making it an important construct to investigate. Anxiety sensitivity (AS), the fear of arousal-related sensations, arising from beliefs that the sensations may have adverse personal consequences (physical, cognitive, and social), may increase risk for pain responding, particularly in anxiety-provoking (e.g., socially threatening) contexts. Accordingly, individuals high in AS may have a stronger pain response when experiencing PB than those low in AS. Undergraduate participants (n = 262) completed the Anxiety Sensitivity Index (ASI-3), and then, were randomly assigned to re-live an experience when they were either burdensome to others (burdensome condition) or contributed equally to a group (control condition). Using general linear modelling, we conducted a one-way between subjects ANOVA to test the effectiveness of the reliving manipulation on the outcomes of interest. To test our moderation hypotheses, we used the approach recommended by Aiken, West, and Reno (1991). Condition and AS Global (grand mean centered) were entered as predictors. Condition was entered into the model as a dummy coded variable, and is consistently coded (0= Control condition, 1= Burdensome condition) throughout the analyses. A product term was entered into a multiple regression model to test the interaction hypotheses. For significant interactions, we ran simple slopes analyses to examine conditional effects. Verifying that the manipulation functioned as intended, participants who relived an experience in which they were burdensome to others reported more PB than participants in the control condition (p<.001). In support of our Hypothesis, PB was positively related to participant’s scores on the Numerical Rating Scale (NRS), a standardized pain measure, such that those in the burdensome condition reported experiencing significantly more pain than those in the control condition (p=.002). PB was also positively associated with social pain (p<.001). In contrast to our hypotheses, PB was not associated with physical pain (p=0.67). In support of our hypothesis, we found a significant Condition by AS interaction for the NRS (p=0.01) and for social pain (p=.056). The Condition by AS interaction was not significant for physical pain (p=.224). Interestingly, however, when we entered a Condition by Physical concerns interaction (an AS lower order factor) into the model post-hoc, the interaction term was significant. Thus, being fearful of the physical repercussions of anxiety (AS physical concerns) while also being burdensome to others was associated with greater physical pain. These findings suggest that AS may exacerbate the already painful effects of feeling burdensome to others, and may have important implications for the development of future suicide- and pain-related interventions.

How to Cite your Abstract

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