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Abstracts

Abstracts are listed by presentation type:
first posters, then symposia followed by paper presentations. Citation posters
are presented first and represent the highest rated posters.

CITATION POSTERS

1) Abstract 1008
GENDER-ROLE IDENTITY, PERSONALITY TRAITS, AND MENTAL HEALTH: CROSSED-TYPE PEOPLE ARE AT HIGHER RISK, DEPENDING ON THEIR PERSONALITY.

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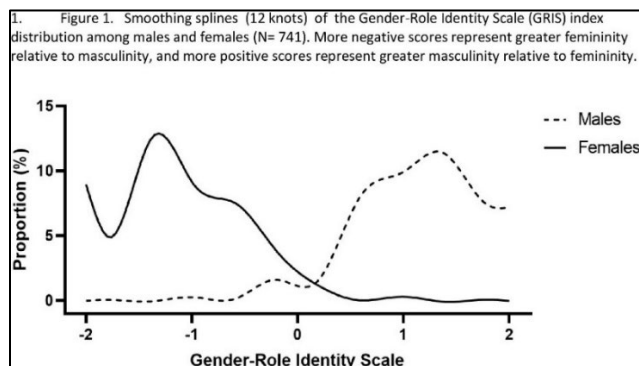
Females demonstrate more psychological distress, depression and engage in more suicide attempts than males, while males complete more suicides. Beyond biological sex-based factors, mental health is also affected by socio-cultural variables related to gender. Gender-roles describe the way a person is, acts, or is perceived as masculine and feminine. Studies suggest that more femininity is associated with more depressive symptoms, and more masculinity is associated with better coping strategies. To date, the role of gender-roles and suicidal ideation and behavior remains unclear. In addition to gender-roles, personality traits have also been linked to mental health.

In the present study, we aimed to investigate how gender-role identity affect mental health in the general population, and if personality traits moderate these relationships.

Using the Nathan Kline Institute – Rockland Sample, 741 adult participants (65.7% females) completed questionnaires to assess their self-identified gender-roles (Storm's shortened version of the Bem Sex Role Inventory), personality traits (NEO Five-Factor Inventory), and their mental health (State Trait Anxiety Inventory, Beck Depression Inventory II, and self-reported suicidal thoughts and behaviors). Data were split by sex. We performed multiple linear regression analysis to investigate the relationship between gender-roles and mental health. Then, we conducted moderation analyses to assess if there is a significant interaction between personality traits and gender-roles in mental health prediction.

Multiple linear regressions revealed that having a gender-role profile contrary to your biological sex was associated with higher anxiety, more depressive symptoms and more suicidal thoughts and behaviors, especially in feminine males. Neuroticism was also highly associated with a poorer mental health. Further analyses underscore a moderation effect of neuroticism and extroversion among males. That is, feminine men reported more suicidal thoughts and behavior only if their neuroticism was high. Moreover, only less extroverted feminine men reported higher levels of anxiety.

Differences in mental health that we generally attribute to sex could actually be more strongly related to how we enact gender. Our results could reflect the impact of gender non-conformity that can be distressing among sub-groups of feminine and neurotic men.

1. Figure 1. Smoothing splines (12 knots) of the Gender-Role Identity Scale (GRIS) index distribution among males and females (N= 741). More negative scores represent greater femininity relative to masculinity, and more positive scores represent greater masculinity relative to femininity.

2. Figure 2. Moderation effect of personality traits on the relationship between gender-roles and mental health among males (N=254).

Graph A. Difference in anxiety scores between feminine and masculine males is only significant for males with low levels of extroversion.

Graph B. Difference in suicide scores between feminine and masculine males is only significant for males with high levels of neuroticism.

Graph C. Difference in anxiety scores between less masculine and more masculine males is only significant for males with low levels of extroversion.
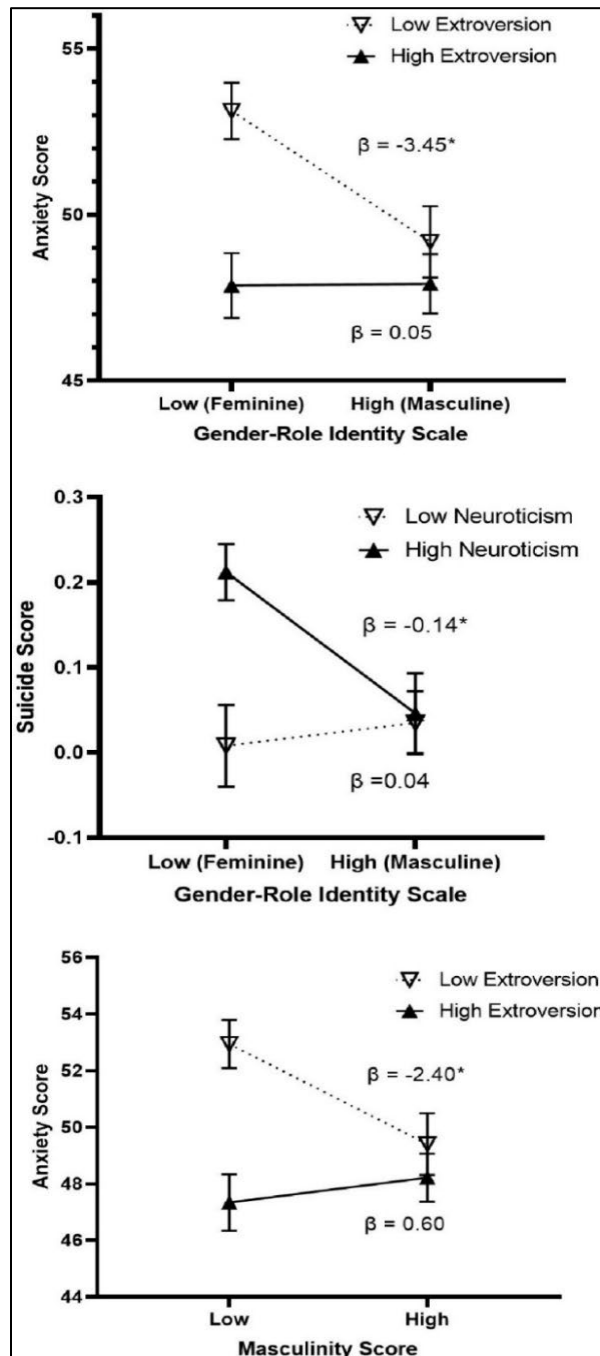
2) Abstract 1034
SUPERWOMAN SCHEMA: NOT JUST THE &LDQUO;FEMALE&RDQUO; VERSION OF JOHN HENRYISM

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Superwoman Schema (SWS) is a multidimensional framework developed to operationalize the phenomenon of the "strong Black woman"and facilitate investigation of its impact on the health and wellbeing of African American (AA) women. SWS consists of five subscales: obligation to manifest strength, obligation to suppress emotions, resistance to being vulnerable, determination to succeed despite limited resources, and an obligation to help others. John Henryism (JH) has long been considered a measure of masculine self-reliance in AA men. JH states that the constant striving to succeed despite inequality, lower economic resources, and racial discrimination has adverse impacts on health. Given the conceptual overlap between SWS and JH we tested whether: 1) the constructs measure the same phenomenon or if they are each capturing something unique and 2) the constructs could differentially predict two common stress-related health outcomes: psychological distress and hypertension. Our data are from the AA Women's Heart & Health Study, a community sample of 208 midlife AA women residing in five San Francisco Bay Area counties. We conducted a series of analyses designed to examine the structure of JH and the SWS subscales: correlation analysis, exploratory factor analysis, principal component analysis, and cluster analysis. Analyses confirmed our hypothesis that SWS and JH are distinct constructs. Our results showed that JH scale items clustered together and were generally distinct from the SWS subscale items. One exception was that the SWS subscale items for an obligation to manifest strength at times clustered with JH, indicating strong conceptual overlap. Further, for SWS, feeling an obligation to manifest strength and an obligation to help others was positively associated with hypertension ($p = 0.03$ and $p = 0.01$, respectively), whereas having an intense motivation to succeed predicted lower hypertension ($p = 0.045$). JH did not predict hypertension in our sample of AA women ($p = 0.47$). Conversely, feeling an obligation to help others and an obligation to suppress emotions predicted lower levels of psychological distress ($p = 0.02$ and $p = 0.02$, respectively) whereas JH predicted higher psychological distress ($p = 0.001$). We discuss the implications of these findings for measurement of culturally specific phenomena and their utility in the prediction of health outcomes.

3) Abstract 1170
ALTERATION OF THE ENDOCANNABINOID SYSTEM AFTER EXPOSURE TO TRAUMATIC EVENTS- A SYSTEMATIC REVIEW AND META-ANALYSIS

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A large body of research documents a link between the exposure to traumatic events (trauma exposure, TE) and negative mental health outcomes (i.e., depression, anxiety, or post-traumatic stress disorder). The development of such trauma-related disorders has been linked with maladaptive stress-responses and behavioral changes following TE, while the potential underlying neurobiological mechanisms are not yet well-understood. The endocannabinoid system (ECS) is an important neuromodulatory system which encompasses the two cannabinoid receptors (CB-1 receptor and CB-2 receptor) and their endogenous ligands (endocannabinoids) with their metabolizing enzymes (e.g., fatty acid amide hydrolase, FAAH). Based on its prominent role in both emotion and the regulation of the stress response, alterations of ECS signaling have been hypothesized to contribute to the development of trauma-related disorders; yet, existing studies provide inconclusive results.

In order to clarify upon the role of the ECS in the development of trauma-related disorders, we conducted the first systematic review and meta-analysis to synthesize existing evidence on ECS signaling after TE. We assumed that markers of the ECS would be altered in individuals with TE compared to individuals without TE, and that more severe TE would be linked with stronger alterations of ECS markers. We conducted a systematic review and meta-analysis pre-registered on PROSPERO and following PRISMA guidelines. A broad search term was employed to include all existing case-control and correlational studies that assessed TE and either endocannabinoid levels or data on genetics of the CB receptors or the metabolizing enzyme FAAH.

While the present results are preliminary, thus far, the proposed alterations of ECS signaling after TE have been confirmed. The present data revealed altered levels of various circulating and hair endocannabinoids in association with TE. Furthermore respective alterations were found to be linked with psychopathological symptoms following TE. Finally, differences in functional genetic variants in the CB1-receptor- and FAAH-gene in association with TE were revealed, potentially contributing to the development of trauma-related disorders. Our work confirms the potential role of the ECS in the neurobiology of trauma and highlights the importance of further research considering the ECS both as a possible biomarker and a target for pharmacological interventions in trauma-related disorders.

4) Abstract 1182
TRANSCRANIAL MAGNETIC STIMULATION IN THE TREATMENT OF ADOLESCENT DEPRESSION - A SYSTEMATIC REVIEW AND META-ANALYSIS OF AGGREGATED AND INDIVIDUAL PATIENT DATA

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Major depressive disorder (MDD) is among the leading causes of disability worldwide. About 5.6% of adolescents fulfill diagnostic criteria for MDD. Critically, 40% of patients with MDD do not benefit from currently available first-line treatments. Transcranial magnetic stimulation (TMS) has gained increasing popularity as a potential alternative treatment option in the last few years. A pulsed magnetic field penetrates the scalp and skull and induces electrical currents in the superficial areas of the brain. TMS offers a possibility to treat MDD with a non-invasive procedure and little undesirable effects. In the present meta-analytic study, we synthesized existing evidence on the efficacy of TMS treatment in adolescent MDD and examined potential moderators of treatment effects. A systematic literature search was conducted, and aggregated data of suitable studies were synthesized using random-effect-models. We also accessed individual patient data (IPD) as available and investigated treatment-covariate interactions. Ten studies out of 1'264 hits were included for the synthesis of aggregated data. In addition, 5 studies were available for IPD. Quantitative synthesis of aggregated data

revealed a statistically significant negative overall standardized mean change (pooled SMCC = 2.04, 95 % CI [1.46; 2.61], SE = .29, p < .001), as well as a significant overall treatment response rate (Transformed Proportion = 41.30%, 95 % CI [31.03; 51.57], SE = 0.05; $p < 0.001$), considering data from baseline to post-treatment. In moderator analyses using IPD, a higher number of TMS sessions as well as a longer overall treatment duration were linked with higher treatment efficacy. Unilateral and not bilateral stimulation, and standard repetitive TMS instead of theta burst stimulation, were furthermore linked with higher efficacy. Considering patient characteristics, more severe depression and younger age were linked with a higher efficacy of TMS treatment. Small-study effects and lack of control group, blinding, and randomization are methodological shortcomings limiting the validity of the present results. Future larger-scale, randomized, and sham-controlled studies are warranted. In the absence of better evidence, the present results may inform clinical practice in the application of TMS in youth with MDD.

5) Abstract 1203
DIFFERENTIATING PRAYERS FOR SELF, KNOWN OTHERS, AND UNKNOWN OTHERS, PREDICTING SURVIVAL OVER 17 YEARS IN PEOPLE LIVING WITH HIV

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Individuals often turn to prayer in times of crises, and those who are more severely ill tend to pray more. The vast majority of studies predicting effects on health have examined intercessory prayer (prayers by others who often don't know you, for the person who is ill), yet that is not the way most people pray. Most people pray for their own health and for others health who they do know. In addition, this literature base does not generally control for disease severity, something that is easily remedied in HIV research as objective markers of disease are available.
Method: Our study of 102 diverse HIV patients initially in the mid-range of illness assessed who participants prayed for via an open-ended question, and followed participants over 17 years to determine whether who they prayed for was associated with survival. Cox regressions were calculated predicting to survival controlling for biomedical (CD4, age, antiretroviral medications) and sociodemographic (race, gender, and education) covariates.
Results: Over half of the sample reported praying either daily or more often (37.4% plus 18.2%), with 16% not praying at all. People reported praying for themselves most often (73.5%), for others known (29.4%), and for others unknown (22.5%). Cox regression revealed that prayer for known others was the only prayer significantly associated with survival 17 years later (HR for survival = 2.07, p=.045).
Conclusion: People with HIV who prayed for others' health were twice as likely to survive compared to those who did not. Self-prayer or praying for unknown others did not predict survival. Implications, possible pathways, and future directions are discussed.

6) Abstract 1214
CHILDHOOD TRAUMA AS A MODERATOR OF THE RELATIONSHIP BETWEEN SLEEP RESTRICTION AND INFLAMMATION

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Background: Childhood trauma is linked to increased immune system inflammation. In past work, childhood trauma was positively related to baseline and post-stress levels of markers of inflammation. Chronic inflammation increases risk for chronic disease and premature death, and inflammation is linked to sleep and sleep restriction. Childhood trauma is also linked to poor sleep in adulthood. Purpose: To investigate whether childhood trauma

enhances the relationship between sleep deprivation and inflammation. Methods: Participants (n=52) completed intake questionnaires and a measure of childhood adversity. Participants were provided with an actigraph and a blood sample kit. Participants wore the actigraph and completed a sleep diary for at least one week prior to the experimental night. During this time, participants were asked to maintain their regular sleep schedule, and on the day of the experimental night they were asked to refrain from napping, altering their sleep schedule or typical caffeine use, and engaging drug/alcohol use. On the morning before the experimental night, they collected their first blood sample. Upon arrival on the experimental night, participants were randomly assigned to the experimental sleep restriction group (n = 24; 4h time in bed opportunity), or a night of typical sleep (n = 21; 8h time in bed opportunity). Participants wore the actigraph for the duration of the lab visit and were monitored by study staff. On the morning after the experimental night, participants completed the second blood sample. Results: A regression model was used to test whether group assignment predicted post-experimental night CRP (controlling for pre-CRP), and the interaction between childhood adversity and group assignment. The overall model was significant (R^2 = .96, p < .001), and a significant interaction emerged between childhood adversity and group assignment on CRP after the experimental night (Beta = -.02, SE = .01, p = .03, 95% CI: -.05, -.002). Simple slopes indicated that at high (+1 SD; Effect = -.57, SE = .15, p < .001; 95% CI: -.87, -.26) levels of childhood adversity, but not low levels of childhood adversity (Effect = -.08, SE = .10, p = .40; 95% CI: -.29, .12), sleep restriction resulted in increased CRP. Conclusion: Childhood trauma may amplify the previously documented effect of sleep deprivation on markers of inflammation.
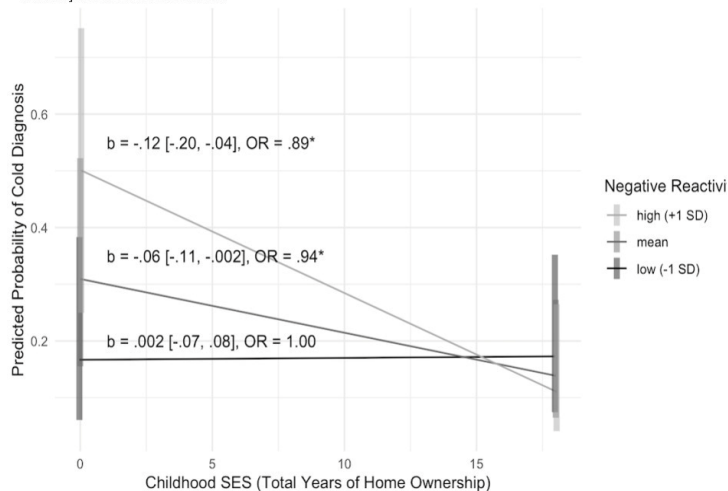
7) Abstract 1217
LOW EARLY-LIFE SOCIOECONOMIC STATUS AND SUSCEPTIBILITY TO THE COMMON COLD IN ADULTHOOD: THE MODERATING ROLE OF NEGATIVE AFFECTIVE REACTIVITY

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Low socioeconomic status (SES) in childhood has been linked to great risk for a myriad of poor health outcomes across the lifespan, ranging from acute infectious diseases to premature mortality. However, not all youth raised in low SES contexts go on to develop health problems, which may in part be due to individual differences in negative affect (NA) responses to stress. A separate literature has shown that NA responsivity increases risk for several of the same health conditions linked to childhood SES. Thus, individuals who grew up in low SES contexts and react more strongly to stress may be especially vulnerable. The present investigation tested this hypothesis, focusing on whether NA responses to a stressor moderated the link between childhood SES and susceptibility to an infectious disease, the common cold. Participants were 212 adults (42% female, aged 18 to 55) who completed measures of childhood SES (home ownership), current SES (education level), and other demographic variables. Participants also completed a standardized laboratory stress task to assess negative emotional responses. Participants were then exposed to a respiratory virus causing the common cold and monitored in quarantine for development of a clinical cold. Logistic regression analyses revealed that adults with lower childhood SES had increased odds for developing a cold (OR = .95, 95% CI [.89, 1.00]). Importantly, this association was moderated by negative reactivity (β = -.09, p = .032). As depicted in Figure 1, low childhood SES was associated with increased odds for developing a cold only among adults who had greater negative reactivity to stress (OR = .89, 95% CI [.82, .96]), but not among those who had lower negative reactivity to stress (OR = 1.00, 95% CI [.93, 1.08]). All results were above and beyond the effects of current SES, and other relevant demographic and psychosocial factors. These

findings suggest that how individuals react to stressors may exacerbate the impact of childhood SES on disease risks, highlighting the importance of examining psychosocial factors that may aggravate the deleterious impact of childhood disadvantage.

Figure 1. *p < .05. Moderating effect of negative affective reactivity on the relationship between childhood SES and common cold status. Simple slopes are presented in unstandardized logistic regression coefficients [95% confidence interval]. OR refers to Odds Ratio.

8) Abstract 1251
HOW LIFETIME STRESSOR EXPOSURE AND REAPPRAISAL AFFECT DEPRESSIVE AND INFLAMMATORY REACTIVITY TO SOCIAL STRESS IN ADOLESCENT GIRLS

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Inadequate emotion regulation may underlie the development of depression, particularly following significant life stress. Reappraisal is typically an adaptive strategy that can help protect against the development of depression by promoting adaptive affective and biological stress reactivity. Women are nearly twice as likely to develop depression and that risk rises sharply following puberty, particularly if exposed to major life stressors. Therefore, it is especially important to understand these processes in girls during adolescence, before depression initially develops. Nonetheless, these processes are not well understood in adolescent girls. To address this issue, we examined the moderating effect of habitual reappraisal on the association between lifetime stress severity and depressive mood changes in response to a laboratory-based social stressor in 44 girls (mean age 14.8 ± 1.4). We also examined if those depressive mood responses contributed to pro-inflammatory cytokine (IL-1β and IL-6) responses (i.e., change from pre- to post-stressor) or rate of recovery, and if reappraisal and lifetime stress severity interacted to predict cytokine response or recovery directly, accounting for depressive mood responses. Controlling for BMI and baseline depressive mood, reappraisal appeared to protect against stress-induced increases in depressive mood in girls with higher lifetime stressor severity (ΔR^2 = .13, p = .005). Neither depressive mood responses nor the interaction predicted pro-inflammatory cytokine responses (ps = .99). However, controlling for initial cytokine response in addition to the aforementioned covariates, the interaction between reappraisal and lifetime stressor severity was related to pro-inflammatory cytokine recovery (ΔR^2 = .09, p = .03), such that reappraisal contributed to greater recovery for girls exposed to more severe lifetime stressors but less recovery for those exposed to less severe stressors. Change in depressive mood was not a significant mediator (p = .16), suggesting that other pathways may exist by which the interaction between reappraisal and stressor severity affect cytokine recovery. Together, the data indicate that reappraisal, a modifiable cognitive process, may help protect against social stress-induced depressive mood and accelerate inflammatory recovery in adolescents exposed to significant lifetime stressors.

9) Abstract 1254
EXAMINATION OF THE SLEEP CYCLE MOBILE SMARTPHONE APP IN MILITARY COUPLES: ASSOCIATIONS WITH ACTIGRAPHY AND SLEEP DIARIES

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The number of consumer apps that track sleep has increased significantly in recent years. Whereas the availability of such technology has many potential benefits to both consumers and sleep researchers, the use of smartphone apps has outpaced the evidence for their validity. The purpose of the current study was to examine the association between the output metrics of a widely-used smartphone app, Sleep Cycle, and both objective (actigraphy) and subjective (sleep diaries) sleep tracking. Active-duty Air Force personnel and their co-sleeping partners (27 couples; n = 54) completed questionnaire batteries and 14 days of Sleep Cycle, wrist actigraphy, and morning Consensus Sleep Diaries. Participants also completed evening ratings of pre-sleep arousal, a vulnerability factor for the development of chronic sleep disturbance. Correlation analyses with 14-day average assessments, as well as multilevel models (MLM) to examine same-day associations were conducted. Results indicated that the Sleep Cycle metrics "Time in Bed" (TIB) and "Sleep Quality" (proprietary algorithm) were strongly intercorrelated (r = .88, p < .001) and significantly associated with actigraphy and diary TIB and total sleep time (TST) in both 14-day averages, .64 < rs < .88, ps < .001, and same-night MLM analyses. Sleep Cycle-Sleep Quality was also significantly though more modestly associated with same-night indicators of sleep efficiency (e.g., duration of wakefulness after sleep onset) via actigraphy and sleep diaries, as well as pre-sleep arousal (B = -0.67, SE = 0.25, t = -2.74, p = .006). In addition, results indicated significant same-night correspondence in Sleep Cycle metrics between co-sleeping partners. Neither the Sleep Cycle metrics nor actigraphy metrics were significantly associated with self-reported global sleep quality, mood, PTSD, combat exposure, or relationship satisfaction. These findings provide preliminary evidence for the correspondence in TIB and TST tracking between the freely-available Sleep Cycle app and actigraphy and sleep diaries. Thus, the Sleep Cycle app may be a viable option for large-scale studies in which actigraphy is cost prohibitive. Future research should examine whether the Sleep Cycle app could be used to augment existing methods for assessing sleep opportunity and associated behavioral health concerns in military personnel and the general population.

10) Abstract 1292
GROUP-BASED TRAJECTORIES AND PREDICTORS OF PSYCHOLOGICAL DISTRESS DURING COVID-19: A LONGITUDINAL STUDY OF OLDER ADULTS IN QUEBEC.

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In response to the COVID-19 pandemic, governments around the world imposed confinement and physical distancing directives for all citizens. Although essential to reduce the spread of the SARS-CoV-2 virus, these measures may have collateral consequences for older adults, such as increased psychological distress. Research suggests, as a population, older adults have been experiencing less psychological distress than younger adults during COVID-19. However, most of these studies examine mean levels of psychological distress and do not capture the heterogeneity of outcomes, like subgroups who may experience increased psychological distress. The goal of this longitudinal study was to use group-based trajectory modelling (GBTM) to identify meaningful subgroups that follow different trajectories of psychological distress among 645 older adults with a mean age of 78.69 (SD = 5.67). Participants were recruited from two research cohorts and newspaper ads. Telephone-based assessments were conducted across four time periods: T1 - Spring 2020-first confinement, T2 - Summer 2020-first deconfinement, T3 - Fall 2020-second confinement, and T4 - Winter/Spring 2021-continued confinement. Participants completed the Kessler 6-item Psychological Distress Scale (K6) to assess psychological distress at each time point and provided information on socioeconomic, medical, and psychosocial factors. Results indicated that the average psychological distress level was stable across the first three time points but slightly increased at the fourth assessment (Fig. 1). Using GBTM, three groups emerged to best characterize the different trajectories of psychological distress: resilient (50.5%), fluctuating (34.9%), and elevated (14.6%) distress groups (Fig. 1). Those in the fluctuating and elevated groups were more likely to have chronic mental health problems, mobility issues, insomnia symptoms, loneliness, COVID-19 related acute stress and general health anxiety than those in the resilient group. Those who lived in poverty, who could not use technology, and who took psychotropic medication had uniquely increased odds of being in the elevated group. These findings identify subgroups of older adults at greater risk of psychological distress with potential intervention targets to alleviate distress during and after the pandemic.
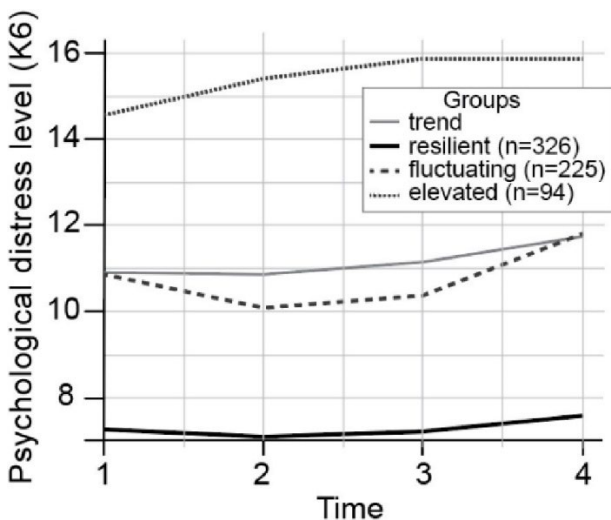

Fig 1. Trajectories of psychological distress

11) Abstract 1300
BIOBEHAVIORAL MECHANISMS UNDERLYING PSYCHOLOGICAL AND PHYSICAL FUNCTION IN CANCER PATIENTS WITH CHRONIC GRAFT-VERSUS-HOST DISEASE

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Chronic graft-versus-host-disease (cGVHD) is a common complication of allogeneic hematopoietic cell transplantation (HCT) that involves allogeneic reactions and autoimmune dysregulation. This study examined the extent to which circadian rest-activity rhythms and inflammation are associated with psychological and physical function in patients with cGVHD. Adults with cGVHD (N=53) wore a wrist actigraph for 7 days, provided a blood sample, and completed measures of depression and anxiety (IDAS), fatigue (FSI), insomnia (ISI), pain (BPI), cognition (PROMIS), and sexual function (PROMIS). Rest-activity indices (mesor, amplitude, acrophase, R-squared) were derived from actigraphy. Cytokine and chemokine levels relevant to cGVHD (IL-6, IL-8, TNFα, MIF, MCP-1, MIP-1 alpha) were measured in peripheral blood plasma using Meso Scale Discovery MULTI-ARRAY panels. Multiple regression was used to evaluate the extent to which rest-activity indices and inflammatory biomarkers predicted psychological and physical function. Results showed few associations between actigraphy indices and outcomes. The exceptions were that participants with less overall activity (mesor) had more depression symptoms (β=-.29, p=.04), and those with a later daily activity peak (acrophase) reported poorer sexual function (β =-.30, p=.044). Higher levels of circulating IL-8 and MIP-1 alpha were associated with more depression symptoms (β=.34, .33) and poorer sexual function (β =-.35, -.37), and MIP-1 alpha was also associated with greater insomnia severity (β=.37), all p values<.05. MIF was associated with greater somatic anxiety (β=.30) and fatigue intensity (β=.35), all p values<.05. Il-6, TNFα, and MCP-1 showed few associations with psychological and physical function. All models were re-run covarying for patient age and cGVHD severity, and a similar pattern of results was seen. Results suggest that inflammation associated with cGVHD may contribute to poorer psychological and physical function, identifying a biobehavioral mechanism that may be an important target for future interventions.

12) Abstract 1305
DIFFERENCES IN COGNITIVE FUNCTIONING, MOOD, AND GUT MICROBIOME IN WOMEN RECEIVING CHEMOTHERAPY FOR BREAST CANCER AND HEALTHY CONTROLS

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Background: Individuals undergoing chemotherapy experience multiple physical, emotional, and cognitive challenges. Chemotherapy agents can impact the diversity and community composition of the gut microbiome, leading to changes in psychological and cognitive functioning[1-3]. The present study examined cognitive deficits, mood, and gut microbiome dysbiosis in two groups of women, those receiving chemotherapy treatment for breast cancer (BC) and cancer-free healthy control (HC).

Methods: Both groups completed demographics, Functional Assessment of Cancer Therapy—cognitive (FACT-Cog), Center for Epidemiologic Studies Depression Scale (CES-D), and provided a fecal sample for 16S rRNA gene-based sequencing of the microbiome. Group differences were identified and significant differences between groups were included in a logistic regression predicting group association.

Results: A total of 35 participants, 21 BC and 14 HC, completed the study. BC reported greater cognitive impairment than HC, $F(1,34)=21.73$, $p<.001$, partial $\eta2=.40$ and BC reported higher levels of depression than HC, $F(1,34)=4.55$, $p=.046$, partial $\eta2=.12$. The phyla Verrucomicrobia and Tenericutes had lower relative abundance in BC samples compared to HC ($H(32)=5.52$, $p=.02$) and ($H(32)=3.55$, $p=.06$). The regression model predicting group was statistically significant, $\chi2(5)=33.47$, $p<.0005$ when including age, center log-ratio transformed (clr-t) Tenericutes, clr-t Verrucomicrobia, FACT-Cog, and CES-D. Clr-t Verrucomicrobia ($p=.05$) was statistically significant while age ($p=.07$), FACT-Cog ($p=.08$), and CES-D ($p=.06$) were approaching significance.

Conclusions: The BC group reported greater disturbance in cognitive functioning, mood, and differences in community structure of the gut microbiome, relative to HC. Verrucomicrobia is involved in maintaining the integrity of the intestine lining; decreases in its relative abundance may contribute to changes in brain activity via altered nervous, neuroendocrine, and immune signaling. Although the study is limited by the small sample size and cross-sectional design, it supports the idea that disruption of the gut microbiome following chemotherapy may impact mood and cognitive functioning. Future research may lead to interventions to reduce the impact of chemotherapy on the gut microbiome, and thus mitigate chemotherapy-induced cognitive and mood disruptions.

13) Abstract 1307
A DAILY DIARY STUDY OF BEDTIME PROCRASTINATION AND SHORT SLEEP DURATION: EXAMINATION OF SUBJECTIVE EXECUTIVE FUNCTION AND CHRONOTYPE

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Short sleep duration is associated with mental and physical health morbidity, all-cause mortality, and significant economic costs. With 1 in 3 Americans sleeping less than the recommended 7-9 hours, it is important to identify behavioral processes associated with habitual short sleep duration. One such process is bedtime procrastination, which refers to a delay in bedtime that is not warranted by external demands or insomnia processes. Previous studies suggest that bedtime procrastination results in shorter sleep duration by restricting sleep opportunity. Poor self-regulation and late (or evening) chronotype are thought to be vulnerability factors for bedtime procrastination. However, prior studies have largely been cross-sectional, precluding determination of same-day associations. The current study sought to address this limitation by using a daily diary study and multilevel models which disaggregate between- and within-person effects. We examined the associations among bedtime procrastination, sleep duration, and subjective executive functioning (EF), and whether chronotype moderates these associations. 226 young adult participants ($M_{age} = 24.8$, $SD = 7.2$) completed 14 days of self-monitoring, which included daily measures of bedtime procrastination, self-reported EF difficulties, and sleep diaries. Chronotype was derived from sleep diary metrics. Bedtime procrastination was associated with shorter sleep duration ($B_{within} = -0.72$, $p < .001$; $B_{between} = -0.25$, $p = .022$) and later midsleep point ($B_{within} = 0.29$, $p < .001$; $B_{between} = 0.61$, $p < .001$) at both between and within-person levels. Chronotype was a significant cross-level moderator of the effect of bedtime procrastination on sleep duration ($B = -.09$, $p = .003$), indicating that later chronotypes were more likely to have shorter sleep after procrastinating their bedtimes. Reported EF difficulties were associated with increased bedtime

procrastination only at the between-person level of analysis ($B = 0.05$, $p < .001$). Results of the current study confirm that bedtime procrastination is significantly associated with delayed sleep timing and is a behavioral risk factor for short sleep duration, particularly for individuals with late chronotype.

14) Abstract 1325
DISCRIMINATION AND CARDIOVASCULAR HEALTH: EXAMINING DAILY SPIRITUAL EXPERIENCES AS A PROTECTIVE FACTOR

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Among racialized minorities, discrimination is an important risk factor for poor health and may contribute to racial health disparities. Although religion/spirituality (RS) is a coping resource associated with lower cardiovascular morbidities and lower mortality, there is variation in how individuals in stigmatized racial/ethnic groups use RS as a coping resource. Thus, we wanted to identify individual differences that may buffer against the stress of discrimination. We examined whether daily spiritual experiences moderate the association between discrimination and cardiovascular health (CVH). We hypothesized that discrimination would relate with poorer CVH but that this relationship would be weaker among those reporting more daily spiritual experiences.

Self-report and biological data come from the two subsamples of the Midlife in the United States (MIDUS) study (combined N = 2118). Participants had a mean age of 55.4 years (SD = 12.6) and were 54.9% women and 26.9% non-White. The discrimination measure combined Lifetime Discrimination and Daily Discrimination. CVH was measured using Life's Simple 7 from the American Heart Association that includes health behaviors (physical activity, diet, and smoking) and biological factors (BMI, blood pressure, total cholesterol, and fasting glucose). Higher scores reflect better CVH (i.e., lower risk for poor outcomes).

Older adults ($\beta = -0.03$, $p < .001$), those with less education ($\beta = 0.21$, $p < .001$), non-White adults ($\beta = -.49$, $p < .001$) and men ($\beta = -0.58$, $p < .001$) had lower CVH. Non-White adults reported higher discrimination ($\beta = 1.23$, $p < .001$) and higher daily spiritual experiences ($\beta = 0.42$, $p = .009$). Discrimination was inversely associated with CVH ($\beta = -0.28$, $p = .029$) in models controlling for age, gender, race, and education. Higher daily spiritual experiences predicted better CVH ($\beta = 0.04$, $p = .006$), but did not moderate the discrimination/CVH association.

Findings support discrimination as a risk factor for adverse CVH. While daily spiritual experiences did not buffer the association between discrimination and CVH, daily spiritual experiences were higher among non-White adults and were associated with better CVH as a main effect. Further analyses examining specific reasons for discrimination (i.e., age, race, gender, religion), and race-stratified models of discrimination and CVH are forthcoming.

15) Abstract 1332
INFLUENCE OF IMPULSIVITY ON THE CHOOSEWELL 365 WORKPLACE NUDGE INTERVENTION TO IMPROVE DIET AND PREVENT WEIGHT GAIN

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Background: Impulsivity is associated with obesity and unhealthy food choices. Nudge interventions in the food environment, such as traffic light labels, increase healthy food choices. Some studies suggest that nudge interventions may be particularly helpful for individuals with high impulsivity, but findings are mixed. Understanding the impact of impulsivity on nudge interventions to promote healthy eating could improve strategies to slow weight gain and prevent chronic diseases.

Objective: To examine if employees' trait and behavioral impulsivity predicted food choices and modified the effectiveness of a workplace nudge intervention to improve diet and weight.

Methods: This was a planned secondary analysis of 487 participants of ChooseWell 365, a 12-month randomized trial that used behavioral nudges to improve the healthfulness of cafeteria purchases in hospital employees. Trait impulsivity was measured with the Barratt Impulsiveness Scale. Choice and action impulsivity were assessed with delay discounting and response inhibition tasks. Tertiles were generated for each impulsivity score. Multivariable regression models examined effects of impulsivity on cafeteria purchases (Healthy Purchasing Score, HPS), dietary intake (Healthy Eating Index-2015 score, HEI), and body mass index (BMI). Interaction terms tested differences in intervention effect by impulsivity variables.

Results: Participants with higher trait (p=0.02) and choice (p<0.001) impulsivity had lower baseline HPS than those with lower impulsivity. Higher trait impulsivity was associated with smaller increase in HPS at 12 months (ß=-0.09; p=0.03). In the highest action impulsivity tertile, BMI increased less for participants in the intervention vs. control group (0.3 vs. 0.5 kg/m^2) while the opposite occurred in lower tertiles (p-interaction=0.04). There were no interactions for trait or choice impulsivity.

Conclusions: While trait and choice impulsivity were associated with less healthy food purchases at baseline, they did not moderate the efficacy of a workplace nudge intervention. Among employees with high action impulsivity (i.e., poor response inhibition), those who received the intervention had lower weight gain compared to the control group. These findings may inform novel approaches to workplace and other healthy eating interventions, including tailoring for individuals with high impulsivity.

16) Abstract 1334

EFFICACY OF YOGA-BASED BREATHING INTERVENTION IN COVID-19 POSITIVE, POST-COVID AND HEALTH CARE WORKERS: A RANDOMIZED CLINICAL TRIAL

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SARS-CoV-2 is highly infectious and has ability to mutate into newer, more contagious, and lethal strains. Moreover, presence of comorbidities and low immunity increases the COVID-19 susceptibility and severity. Thus, COVID-19 is challenging to treat and eradicate globally. This increase stress and anxiety among the patients, worsening their condition. Even health care workers (HCWs) are distressed and anxious while managing the COVID-19. Mental stress and depression increases risk of COVID-19. Yogic breathing techniques may be beneficial in improving immunity and reducing stress and anxiety.

The present study investigated the effectiveness of short and controlled Yoga-based breathing protocols in COVID-positive, COVID-recovered and HCWs. Study subjects were recruited from Postgraduate Institute of Medical Education and Research, Chandigarh, India from 13th October, 2020 to 7th January 2021. Each group was randomly divided into intervention or yoga group and non-intervention or control group. COVID-positive practiced a 5-min routine and COVID-recovered and HCW practiced 5-min and 18-min routines for 15 days. Pre-post estimation of neuropsychological parameters and heart rate variability and baseline, 7th and 15th day estimation of biochemical parameters, 6-minute walk and 1-minute sit-stand tests were conducted. Based on Ayurveda, Prakriti-type was assessed.

WBC count was elevated in COVID-positive intervention (p<0.001) and control groups (p=0.003). WBC count (p=0.002) and D-dimer (p=0.002) was decreased in COVID-recovered intervention. A non-significant reduction in perceived stress and tension was noted in COVID-positive intervention. Tension was reduced and quality of life improved in HCW intervention (p>0.05). The Kapha Prakriti (48.9 %) was dominant among COVID-19 infected (positive and recovered) subjects. Distance covered in 6-min increased after intervention in COVID-positive (p=0.01) and HCW (p=0.002). The covered distance was more after intervention in all groups than control sub-group. COVID-positive intervention group shows reduced heart rate (p>0.05) and high-frequency power (p=0.01). The interventions were capable of improving exercise capacity in patients and HCW and reduced cardiovascular risk in COVID-19. The studied breathing protocol can be integrated for the management of COVID-19 and is beneficial to HCWs.

17) Abstract 1368

A TALE OF TWO LATENT FACTORS: DOES SLEEP HEALTH RELATE WITH CARDIOMETABOLIC RISK IN A COMMUNITY SAMPLE?

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Poor sleep has long been associated with cardiometabolic risk factors such as hypertension, obesity, and diabetes. However, most of our understanding about sleep and cardiometabolic risk has been largely confined to single dimensions of sleep (e.g., sleep duration, sleep quality), single cardiometabolic risk measures, or in samples with sleep disorders (e.g., sleep apnea). In recent years, sleep health has been proposed as a multidimensional construct consisting of the duration, efficiency, timing, regularity, alertness, and quality of sleep. However, less empirical research has tested whether these six dimensions indeed comprise a unifying sleep health measure. The current work sought to determine whether these six sleep components comprise a single factor of "sleep health" using confirmatory factor analysis and assess the association between sleep health and cardiometabolic risk using structural equation modeling (SEM) in a sample of 350 healthy, community midlife adults (mean age = 52.8 years, 60.9% women, 78.9% White). Seven days of actigraphy were used to assess sleep duration, efficacy, timing, and regularity. Seven days of daily diary-assessed napping were used as a measure of alertness. The PSQI administered on one occasion was used as a measure of sleep quality. Each of the individual indicators covaried

for demographics (sex, age, race, and education). The results of a confirmatory factor analysis were not consistent with a single factor model of sleep health (RMSEA = .11, CFI = .85, TLI = .35). However, a unidimensional model of sleep health did emerge when the sleep regularity indicator was removed (RMSEA = .02, CFI = .99, TLI = .97). Consistent with the literature, a separate CFA showed cardiometabolic risk as a second-order latent variable including insulin resistance, dyslipidemia, hypertension, and obesity (RMSEA = .047, CFI = .99, TLI = .96). However, SEM models showed that this five-dimension sleep health measure was not associated with cardiometabolic risk or any of its four first-order latent variables. These individual sleep indicators were not associated with cardiometabolic risk. These data suggest that in a healthy, midlife sample, sleep regularity may not be an important dimension in quantifying sleep health. Further, the relationship latent constructs of sleep health and cardiometabolic risk may not be evident in this population.

18) Abstract 1373
IMPACT OF STROKE SEVERITY AND PRIOR PSYCHOLOGICAL DISTRESS ON THREAT PERCEPTIONS IN THE EMERGENCY DEPARTMENT AMONG PATIENTS WITH SUSPECTED STROKE/TRANSIENT ISCHEMIC ATTACK

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Background: The emergency department (ED) experience often leaves patients feeling psychologically threatened. Studies suggest that elevated threat perceptions during traumatic life-threatening medical events are strongly predictive of future posttraumatic stress disorder (PTSD), which can lead to maladaptive health behaviors and increased risk of recurrent events. We therefore assessed the association of stroke severity and prior psychological distress with ED threat perceptions in patients presenting with stroke/transient ischemic attack (TIA). **Methods:** We enrolled a cohort of patients presenting to the ED of an urban academic hospital with probable stroke/TIA. Stroke severity was assessed by the treating neurologist using the National Institutes of Health Stroke Scale (NIHSS). Threat perceptions were assessed using the 7-item ED Threat Perceptions questionnaire, which includes items such as *I was afraid* and *I felt helpless*, with higher scores indicating greater threat. Pre-existing PTSD was assessed by the PCL-5 and depression by the PHQ-8. Generalized linear models were used to estimate the association of stroke severity and psychological distress with ED threat perceptions, adjusting for age, sex, race, ethnicity, and primary language. **Results:** Among 515 included patients, mean age was 61.4±15.3 years, 53.8% were women, 49.7% were Hispanic, 21.0% were non-Hispanic white, 20.6% were non-Hispanic Black, and 43.5% were non-English-speakers. Median NIHSS at ED presentation was 2.0 (IQR 1.0-4.0), 22.3% had depression (PHQ-8≥10), and 11.8% had PTSD (PCL-5≥30). In unadjusted models, higher NIHSS score (β 0.02, SE 0.01, 95% CI [0.00, 0.05], p=0.05), depression (β 0.55, SE 0.09, 95% CI [0.36, 0.74], p<0.001), and PTSD (β 0.62, SE 0.12, 95% CI [0.38, 0.86], p<0.001) were each associated with greater ED threat perception. In the fully adjusted model, depression (β 0.28, SE 0.12, 95% CI [0.05, 0.51], p=0.02) and PTSD (β 0.34, SE 0.14, 95% CI [0.06, 0.63], p=0.02) both remained significantly assiciated but NIHSS did not (β 0.03, SE 0.01, 95% CI [-0.001, 0.05], p=0.06). **Conclusion:** Depression and PTSD, but not stroke severity, were significantly associated with ED threat perceptions following acute stroke/TIA. This suggests that psychological factors play an important role in threat perceptions among stroke/TIA patients beyond just physician-assessed stroke severity.

19) Abstract 1392
SEX AND GENDER DIFFERENCES IN PSYCHOSOCIAL RISK PROFILES IN PATIENTS WITH CORONARY ARTERY DISEASE: THE THORESCI STUDY

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Background – Separate psychosocial risk factors tend to cluster together, complicating risk assessment. Additionally, sex differences in within-person psychosocial risk clusters have been established, but gender differences remain rather unexplored. The current study explored the clustering of the psychosocial risk factors as identified by the European Society of Cardiology (ESC) prevention guidelines among patients with coronary artery disease (CAD). Furthermore, we examined how sex and gender differences characterize these within-person psychosocial risk clusters, adjusted for age. **Methods** - 440 CAD patients (M_{age} = 68.48, SD = 9.04; 83.9% male) completed the ESC screening instrument and a validated questionnaire for gender traits (BSRI), one item on gender identity and several demographic variables, used to compose a gender norm score. Latent Class Analysis (LCA) was used to identify psychosocial risk clusters. **Results** – LCA revealed five psychosocial risk clusters: 1. Emotional distress, anger, and Type D Personality (27%), 2. Low levels of general distress, moderate anger and hostility (25%), 3. Low levels of distress (21%), 4. Social and emotional distress (18%) and 5. High overall distress and trauma (9%). Masculine traits and older age were associated with class membership to the lower distress risk profiles and a lowered odds to belong to cluster 5. Additionally, female sex characterized class membership to the emotional and social distress risk profile. Furthermore, the effect of masculine and feminine traits was dependent on sex. **Conclusion** - The results of the current study explain levels of heterogeneity among patients with CAD by considering the joint occurrence of psychosocial risk factors, as well as the role of sex, age, and gender traits within psychosocial risk profiles.

20) Abstract 1401
CHILDHOOD TRAUMA EXPOSURE INCREASES LONG COVID RISK

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Background: While long-term physical and psychological effects of COVID-19 remain unknown, it is clear that a proportion of COVID-19 survivors develop protracted respiratory, cardiovascular, neurologic, dermatologic, and/or gastrointestinal symptoms and complications following acute illness, herein referred to as long COVID (LC) syndrome.Females appear to be at higher risk for LC, and also have higher rates of childhood trauma, which is associated with a heightened inflammatory response to stress. The present study investigated the impact of childhood trauma on COVID-19 illness course and recovery, including mental health outcomes. **Methods:** Participants (N=244), recruited via social media, Prolific.au, and from a post-COVID clinical treatment trial, completed online self-report measures of premorbid health, COVID-19 positivity, symptoms, and recovery, along with measures of depression, anxiety, post-traumatic stress disorder (PTSD), and childhood (CTE) and recent (RTE) traumatic experiences. **Results:** Compared to recovered participants (N=110), the LC group (N=158) was older and predominantly female. Those who reported one or more CTE were nearly 3-fold more likely to develop LC (OR=2.87, CI, 0.95 to 8.60) while those who endorsed

two or more CTE were 4.5 times more likely (OR=4.56, CI, 1.61 to 12.33). A binary logistic regression analysis revealed that chest pain (p<.001), fatigue (p=.031), burning sensation (p=.002), and olfactory hallucinations (p<.001) during acute COVID, along with sex (p=.001) and age (p<.001) predicted LC. Compared to pre-COVID diagnoses, rates of PTSD (p<.001), depression (p<.001), and generalized anxiety (X^2=12.32, p<.001) increased across the entire sample and current PTSD (p=.001, partial η^2=.042), depression (p<.001, partial η^2=.048), and anxiety (p=.017, partial η^2=.022) severity were higher in the LC group. **Discussion:** These findings suggest that childhood trauma or early adversity may prove relevant to the development of long COVID via central nervous system changes and dysfunction in the form of central sensitization, somatosensory disruptions, and/or dysautonomia, resulting from a heightened inflammatory response. Psychiatric outcomes should be assessed following acute COVID-19, and future research is needed to determine the unique contributions of COVID-19 and general pandemic stress to post-illness mental health.

21) Abstract 1416
SUPPORT-GIVING AND HEALTH: GIVING SUPPORT TO OTHERS RELATES TO BETTER SELF-RATED HEALTH AND LOWER INFLAMMATION

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Previous studies suggest there are physical health benefits to support-giving, such as providing emotional, physical, or financial assistance. However, the potential mechanisms and boundary conditions by which support-giving and health relate remain open questions. Systemic inflammation, a potential biological mechanism linking psychosocial experience with health, may also underlie support-giving-health associations such that more support-giving is associated with lower systemic inflammation. Therefore, the current studies hypothesize that support-giving will be uniquely related to better health (Study 1) and lower systemic inflammation (Studies 2 and 3). To test hypotheses, a longitudinal survey assessed whether relationship predictors at Time 1 (support-giving, support-receipt, relationship strain) were related to self-rated health at Time 2 in a sample of young adults (*n* = 545, *M age* = 31.61, Study 1). Cross-sectional associations of support-giving and markers of systemic inflammation (i.e., interleukin-6 [IL-6], C-reactive protein) were also assessed in two separate samples of midlife adults (Study 2 *n* = 746, *M age* = 51.62: MIDUS; Study 3 *n* = 350, *M age* = 43.46: AHAB-II). Results indicated that support-giving to a cohabiting partner, but not support-receipt nor relationship strain, was associated with better self-rated health over time. In midlife adults, support-giving towards a greater number of social targets, but not receiving support, was associated with lower IL-6. Finally, in conceptual replication and extension using a different measure of support-giving showed that higher frequency of support-giving behavior was associated with lower IL-6, even after adjusting for social network size and individual differences in social desirability. Support-giving was not related to CRP in either Study 2 or 3. Future studies will need to establish causal direction, but together the current studies reaffirm the health-relevance of support-giving behavior and shed light on a promising mechanism for these effects.

22) Abstract 1420

DO PLASMA PROTEIN SIGNATURES DIFFERENTIATE WOMEN WITH PERINATAL MOOD AND ANXIETY DISORDERS (PMAD) SYMPTOMS FROM CONTROLS?

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Perinatal mood and anxiety disorders (PMADs) encompass a range of mental health disorders that occur during pregnancy and up to one year postpartum. Approximately 20% of women experience PMADs. Despite this high prevalence, there are no diagnostic biomarkers for PMADs. Traditional risk factors, such as history of depression and being non-white, are known. Their predictive utility, however, is not specific or sensitive enough to inform clinical decision making or prevention strategies. Better diagnostic and prognostic models are needed for early identification and referral to treatment. Therefore, our objective was to determine if a panel of novel pre-diagnostic protein biomarkers in pregnant women can predict who is predisposed for high risk for PMADs within 3 months postpartum. Mental health screening was conducted at two time-points, in the third trimester and again at 3 months post-delivery. Plasma samples from 52 pregnant women (N=34 with PMAD risk and N=18 controls) were collected in the third trimester. They were Aptamer-based scanned to identify protein signatures with SOMAscan® (SomaLogic, Boulder, CO), a highly multiplexed, sensitive and quantitative immuno-like proteomic tool for biomarker discovery. Elevated PMAD risk was defined by screening above validated cutoffs for depression (Edinburgh Postnatal Depression Scale, EPDS ≥ 12), anxiety (Overall Anxiety Severity and Impairment Scale, OASIS ≥ 7) and/or PTSD (Impact of Events Scale, IES >26) at either time-point. A unique 22 protein signature differentiated PMAD cases from controls. ELISA assay for 1 analyte, NTRK3 was found to significantly differ between a subset of women at high PMAD risk (N=10, mean=249.05 ± 195.45 pg/ml) and healthy controls (N=11 mean=962.85 ± 1888.53 pg/ml), Figure 1. Our results suggest that NTRK3, a receptor for neuorotropin3 (NT-3) known for regulating the development, plasticity, and survival of neurons, is associated with increased risk for PMADs. This supports the biological plausibility that specific proteins patterns could be predictors of PMADs. Next, we will use pathway analysis to focus on other novel biomarkers in the inflammatory, metabolic and vascular pathways involved. This project is highly innovative by identifying novel and modifiable risk factors for the development of PMADs which could lead to early detection of PMADs and intervention trials.

23) Abstract 1461
SLEEP QUALITY HAS THE POTENTIAL TO MEDIATE EFFECTS OF CHILDHOOD ADVERSITY ON DEPRESSIVE SYMPTOMS IN A COHORT OF NURSING STUDENTS.

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Background: Exposure to psychosocial stressors in childhood increases the risk for many negative health outcomes in adulthood including depression. What remains undetermined are the modifiable factors that could buffer the impact that childhood adversity has on lifelong health. Although, evidence indicates that sleep may be one of these modifiable factors. However, the buffering effect of sleep quality or duration on the impact of childhood adversity on depressive symptoms is poorly understood. To address this issue, we tested the mediating potential of sleep in the relationship between childhood adversity and depressive symptoms in a longitudinal paradigm.

Methods: We used data from the Nurse Engagement & Wellness Study (NEWS), a prospective cohort study of undergraduate nursing students from Texas (N = 540; age 25.0 ± 6.1; female 79.8%). At time 1, participants completed the Adverse Childhood Experiences

(ACEs) questionnaire, a sleep duration and quality assessment, and a demographics survey. One year later, the participants answered the Patient Health Questionnaire-9 (PHQ-9) at time 2. The potential mediating effects of sleep (duration, quality, and a composite index) were assessed with multiple regression models adjusted by age, sex, race, ethnicity, socioeconomic status, physical activity, and body mass index.

Results: Increased exposure to ACEs predicted higher levels of depressive symptoms ($\beta = 0.165$, $p < .01$) with additional effects indicative of mediation through the path of sleep problems ($\beta = 0.033$, 95% CI [0.009, 0.063]) which represented 16.7% of the total effect of ACEs on depressive symptoms. Sleep quality ($\beta = 0.036$, 95% CI [0.009, 0.070]) and not duration ($\beta = 0.008$, 95% CI [-0.005, 0.025]) drove this indicated mediation effect and represented a larger proportion of the total effect of ACEs on depressive symptoms (18.0%) when considered separately.

Discussion: The results indicated potential mediation implicating that sleep quality could play an important role as a buffer in the robust link between childhood adversity and adult mental health outcomes. Hence, improvement of sleep quality could be an effective intervention target to counter the risk of depressive symptoms among individuals exposed to childhood adversity. More research is needed with robust measures of sleep to further understand these relationships and their temporal nature.

24) Abstract 1530
ASSOCIATIONS BETWEEN FATIGUE AND ENDOCRINE FUNCTIONING IN CHRONICALLY STRESSED INDIVIDUALS

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Background: Individuals suffering from chronic fatigue have been found to experience significantly more stress compared to healthy individuals. However, not everyone experiencing chronic levels of stress becomes fatigued, indicating that inherent individual differences exist in stress sensitivity, and risk for fatigue. While both chronically stressed and fatigued patients show hypoactivity of the hypothalamic-pituitary- adrenal (HPA) axis, it is not known whether differential patterns of HPA axis dysfunction exist in chronically stressed individuals with varying levels of fatigue.

Methods: 61 chronically stressed (CS; 38.31±14 years) and 55 low-stress (LS; 37.90±14.37 years) women, were exposed to a psychosocial laboratory stressor. Salivary cortisol measures were assessed throughout the study. Fatigue was assessed using the Multidimensional Fatigue Inventory.

Results: The results revealed that CS had overall significantly lower cortisol levels and higher fatigue, compared to LS (ps <.05). Within the CS group, increasing levels of fatigue were not associated with changes in cortisol. In the LS group, however, there was an inverse relationship between fatigue and cortisol, with increasing levels of fatigue associated with lower cortisol (p <.05).

Conclusion: Our findings indicate that in CS, stress-related hypoactivity of the HPA axis may have resulted in a floor effect for cortisol, such that increasing levels of fatigue, in addition to existing chronic stress, do not have cumulative effects on the already blunted HPA axis. This was in contrast to the LS group in which fatigue had important effects on the HPA axis functioning, such that decreases in cortisol were observed as fatigue levels increased.

25) Abstract 1532
DIURNAL CORTISOL PROFILES AMONG PEOPLE WITH CHRONIC PAIN AND THE ASSOCIATIONS WITH WORK, FAMILY, AND WORK-FAMILY SPILLOVER

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Objective: The deleterious impacts of chronic pain (CP) can increase one's work-, family-, and health-related stress. Persistent stress resulting from work and family domains may cause dysregulation of the stress system, putting individuals at risk for various negative physical and mental health outcomes. Previous researchers have identified healthy, elevated, and flattened trajectories of cortisol, a biomarker of stress, in studying stress responses; however, no studies have examined these profiles among individuals with CP. Thus, the present study examined differences between diurnal cortisol profiles in adults with and without CP, as well as their correlates to work, family, and work-family spillover. **Methods:** Participants were drawn from the second wave of the National Survey of Midlife Development in the United States (MIDUS II; $n= 1,842$) and the Milwaukee sample ($n=180$). Positive work-to-family spillover (PWFS), negative work-to-family spillover (NWFS), work and home stress, and pain interference were assessed. Salivatory samples were collected over four days to measure cortisol levels. Researchers matched healthy adults to those with CP, then predicted classification into either healthy, flattened, or elevated cortisol profiles. **Results:** Diurnal cortisol trajectories remained robust across health status, as no differences in profiles were detected between adults with and without CP. Within the CP group, health-related variables (i.e., older age, poorer reported health, cigarette use, greater pain medication use, and stressful life experiences) significantly predicted unhealthy cortisol profiles. Surprisingly, work-family variables did not predict cortisol profiles for the CP group, despite those with CP endorsing significantly higher levels of NWFS than the healthy group. Within the non-CP group, work stress predicted unhealthy cortisol profiles. **Conclusion:** Taken together, results suggest that diurnal cortisol profiles remain stable, regardless of CP status. Health-related factors were more relevant in identifying unhealthy diurnal cortisol trajectories than work-family variables within the CP group. Although work, family, and work-family spillover play a role in individuals' psychosocial functioning, tailored interventions to address health-related variables may be more effective in changing cortisol profiles over time in adults with CP.

26) Abstract 1536
MINDFULNESS MODERATES THE ASSOCIATION BETWEEN STIGMA AND PSYCHOLOGICAL DISTRESS IN WOMEN WITH LUNG CANCER

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Purpose of study: Given the smoking-related etiology, lung cancer patients, particularly women, are vulnerable to experience actual or perceived stigma. The experience of stigma in chronic health conditions is linked to greater psychological and somatic distress, as well as worsening treatment adherence and outcomes. To inform future stigma-resilience interventions for women, we examined if mindfulness, self-kindness and social support buffer the association between lung cancer stigma and psychological symptoms.

Methods: In this cross-sectional, secondary analysis, recently diagnosed women with non-small cell lung cancer undergoing cancer treatment completed measures of lung cancer stigma (CLCSS), depressive (CES-D) and cancer-related distress (IES) symptoms, mindfulness (MAAS), self-kindness (SCS), and social support (SPS).

Results: Seventy women consented to participate (mean age=65 yrs, range 32-92; 79% non-Hispanic White; 50% college educated; 74% advanced stage). Most had smoking history (70%) and moderate levels of stigma (M=36.28, SD=10.51). The highest scored subscale of the CLCSS was isolation (M=13.81, SD=5.85), followed closely by shame (M=12.80, SD=4.19), and discrimination (M=9.67, SD=3.35). 31% of women endorsed clinical levels of depressive symptoms, and 57% revealed cancer-related distress.

Bivariate correlation analyses showed significant associations between stigma and depressive symptoms (r=.38 P<.01) and cancer-related distress (r=.43 P=.001). Importantly, the association between stigma and cancer-related distress was significantly moderated by mindfulness (β=-.245, p<.05), so that only for women scoring low in mindfulness, the association between stigma and cancer-related distress was significant (β=.51, p=.017). For those scoring high in mindfulness, the association between stigma and cancer-related distress was not significant (β=.001, p=.97) supporting a buffering effect. Self-kindness and social support did not moderate stigma and psychological symptom associations.

Conclusions: This analysis suggests that a higher level of mindfulness may help to protect women from distress typically associated with the stigmatizing experience of a lung cancer diagnosis. This knowledge may be helpful in future development of interventions targeting this underserved population.

27) Abstract 1545
WHAT MATTERS TO YOU? - THE DEVELOPMENT OF A PERSONALIZED INSTRUMENT FOR USE IN HEALTHCARE AND CLINICAL TRIALS

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Background. Chronic kidney disease (CKD) and dialysis treatment have a large impact on all areas of life. A great deal of patients find themselves struggling with the necessary lifestyle changes that highly depend on self-management skills. Additionally, patients can experience a large amount of physical, mental, and social symptoms, which makes it difficult for clinicians to detect the symptoms most troubling to patients. Moreover, this heterogeneity within the CKD population highlights a need for patient-centered care, with special attention to patient priorities and routine screenings as vital elements to timely recognize symptoms.

Methods. We developed and validated a new personalized instrument to identify, prioritize, and monitor individual problems over time, the Personalized Priority and Progress Questionnaire (PPPQ). The instrument was developed based on literature on personalized assessment and patient priorities and 6 cognitive interviews with CKD patients. The psychometric properties of the PPPQ were evaluated in two multicenter RCTs–one focusing on CKD patients (N = 121) and one focusing on kidney failure patients treated with dialysis (N = 60). The construct validity of the PPPQ was assessed using validated questionnaires measuring similar constructs.

Results. The PPPQ contains 8 items on several domains of functioning (physical, mental, social functioning, daily activities) and 5 items on self-management behavior (medication adherence, diet, exercise, smoking, weight maintenance). The final item evaluates patients' priorities for improvement. By calculating a progress score, the PPPQ allows monitoring of specific domains of functioning or self-management that are prioritized by individual patients. With regard of the construct validity, small to moderate correlations were found. Patients allocated to the intervention condition, showed a larger progress score compared to patients allocated to the control condition, meaning that intervention patients improved more on the domains they prioritized for improvement.

Conclusions and implications. A personalized approach is needed to treat the various problems patients with CKD face. The PPPQ could be a useful tool to assess these problems and to evaluate individual changes over time, both in standard care and in clinical trials.

28) Abstract 1549

PROSPECTIVE ASSOCIATION OF PSYCHOSOCIAL WORK STRESS WITH RISK OF DIABETES: A COHORT STUDY IN U.S. WORKERS

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Background: Psychosocial stress has been shown to have major effects on metabolic activity. Increased risk of developing diabetes by high psychosocial stress has been observed in prospective epidemiological studies. However, the role of psychosocial stress in the workplace and its contribution to development of diabetes is not well investigated. Our objective was to examine prospective associations of psychosocial work stress with risk of diabetes in a national sample of workers.

Methods: Using data from the nationally representative and population-based Mid-life in the United States (MIDUS) study with a prospective cohort design and a 9-year follow-up period, the effects of psychosocial work stress measured by the effort-reward-imbalance model at baseline on risk of diabetes at the follow-up were examined in 1499 workers who were free from diabetes at the baseline survey, by multivariate Poisson regression analysis.

Results: The analyses demonstrated a significant association between continuous psychosocial work stress (increase per SD) and risk of diabetes (RR and 95% CI = 1.24 [1.04, 1.48]), after adjustment for age, sex, race, marital status, education, household income, smoking, alcohol consumption, and physical exercise at baseline; further adjustment for depression at baseline did not attenuate the association. Though effect was stronger in women (RR and 95% CI = 1.32 [1.02, 1.70]) than men (RR and 95% CI = 1.15 [0.91, 1.46]), interaction between work stress and sex was not significant. When using quartiles of work stress, a clear dose-response relationship was observed (p for trend < 0.05).

Conclusion: In the U.S. workers, psychosocial work stress was significantly associated with elevated risk of diabetes nine years later. We need to adapt the risk profiles of diabetes and conceptualize prevention programs of chronic non-communicable diseases in consideration of psychosocial work environment.

29) Abstract 1568
THE MODERATING ROLE OF DEPRESSION IN THE RELATIONSHIP BETWEEN INTERPERSONAL STRESS SEVERITY AND INFLAMMATION

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The social signal transduction theory of depression emphasizes the integral role that interpersonal stress has on physical and psychological health. Interpersonal stress affects several biological processes, including inflammation. This study examined how the number and severity of interpersonal stressors on the day prior to a laboratory-based visit influenced baseline inflammation. Analyses include depressive symptoms as a potential moderator in the link between interpersonal stress and inflammation. Participants (n = 138) were community-dwelling adults (M_{age} = 51.13, SD = 7.89). They completed the Center for Epidemiological Studies – Depression (CESD) scale and a Daily Inventory of Stressful Events (DISE) interview during laboratory visits at five timepoints. Blood samples at each visit measured inflammation. All analyses controlled for age, gender, body mass index (BMI), visit, physical comorbidities, post-menopausal status, and serum levels of omega-3s. Depressive symptoms interacted with interpersonal stress severity to predict both TNF-α (b = -.002, SE = .001, p = .02) and IL-6 (b = -.001, SE = .001, p = .02). When interpersonal stress severity was low, depressive

symptoms significantly heightened inflammation. However, the influence of depressive symptoms on the relationship between interpersonal stress severity and inflammation was weakened when interpersonal stress severity was high. In contrast, the number of interpersonal stressors that someone experienced did not relate to inflammation ($ps > .31$). Findings emphasize the importance of examining not only how often people experience interpersonal stress, but also how severe they perceive these stressors to be in understanding daily stressors' influence on inflammation. Further, results emphasize how depression might heighten interpersonal stress' health impact, highlighting important avenues for future research.

30) Abstract 1571
REEXAMINING RESTING HEART RATE VARIABILITY AND PERCEIVED ETHNIC DISCRIMINATION IN BLACK AMERICANS

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Perceived ethnic discrimination (PED) largely determines the negative health outcomes of discriminatory experiences. In two independent studies, our group showed lower resting high frequency heart rate variability (HF-HRV), which marks poorer cardiovascular function and emotion regulation, to be associated with higher PED. However, another study showed PED to explain the association between darker-skin tone and higher resting HF-HRV. Taken together, these reports suggest PED might explain both higher *and* lower HF-HRV in Black individuals. The following study investigated this potential non-linear association between HF-HRV and PED in 127 Black individuals (74 females; mean age = 19.8 years). Resting HF-HRV was assessed during a 5-minute baseline, period followed by PED and trait rumination questionnaires. Zero-order correlations did not show a significant negative association as in our prior studies ($r = .050$, $p = .670$). Curve estimates showed a significant quadratic relationship between resting HRV and PED ($F (2, 123) = 4.40$, $p = .014$), such that lower *and* higher resting HRV was associated with higher PED. Results also showed both resting HF-HRV ($B = 5.32$, SE = 1.70, 95% CI [1.946, 8.690], p = .002) and trait rumination ($B = -0.31$, SE = .08, 95% CI [-.468, -.154], p < .001) to be significant moderations. Conditional analyses showed that Black individuals who scored higher in trait rumination ($B = -14.185$, SE = 3.492, $p < .001$) and/or had lower resting HRV ($B = -4.52$, SE = 2.65, $p = .05$) showed significant *negative* associations between resting HRV and PED. A *positive* association between resting HRV and PED was observed among Black individuals who scored lower in trait rumination ($B = 4.78$, SE = 1.71, $p = .006$) or had higher resting HRV ($B = 6.89$, SE = 3.28, $p = .038$). These data are the first to show a non-linear association between HRV and PED within Black individuals; resting HRV can be negatively *and* positively associated with PED, and this association appears dependent on relative levels of resting HRV and trait rumination. We propose that when navigating the status quo in an environment where discrimination is often present (e.g., America), it is imperative that Black individuals remain low in ruminative tendencies and/or higher in resting HRV, as the opposite may be especially detrimental in combating discrimination.

31) Abstract 1576

CHANGES IN HEART RATE, SLEEP, AND PHYSICAL ACTIVITY BEHAVIOR FROM PRE- TO POST-COVID

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Background:
When the WHO declared COVID-19 a global pandemic on March 11, 2020, stay-at-home orders and business closures were imposed to contain viral spread. Accumulating evidence suggests that these societal disruptions caused abrupt changes in important health behaviors such as physical activity, but most work to date has used self-report measures. Longitudinal studies collecting objective measures of activity and sleep behavior and heart rate before and after the pandemic could shed light on potential health implications of the ongoing pandemic and associated social distancing measures.
Objective:
To determine whether significant within-person changes in objective heart rate, sleep, and physical activity occurred from pre- to post-COVID pandemic.
Methods:
Adult smartphone users were recruited from an online registry. 22 participants (M 47 years old, range 20-72; 76% female; 91% White; 55% with at least one chronic medical condition) provided access to their Fitbit data and had at least one week of pre-COVID (March 11, 2019 to March 10, 2020; M = 256 days of data, range 25-366 days) and post-COVID (March 11, 2020 to December 31, 2020; M = 231 days of data, range 107-294 days) Fitbit data.
Results: Paired t-tests revealed significant *decreases* in mean heart rate (77 to 75 bpm; t(18) = 2.91, p < .01), step counts (7946 to 6969 steps/day; t(21) = 2.72, p = .01), and total active time (185 to 165 minutes/day; t(21) = 3.02, p < .001) and significant *increases* in total sedentary time (766 to 781 minutes/day; t(21) = -2.88, p < .01) from pre- to post-COVID but no significant changes in Fitbit-assessed sleep time, latency, or efficiency.
Conclusions: These prospective sensor data captured before and after the pandemic contribute to our understanding of how COVID-19 has affected physical activity and heart rate. Findings suggest that adults became less physically active and more sedentary after the pandemic relative to the year prior to COVID-19 but that sleep behaviors remained relatively stable. Although this is a small nonrepresentative sample, these longitudinal objective behavioral data corroborate larger self-report studies. Future analyses will examine trajectories of activity change over the course of the pandemic and characteristics of participants who maintained or increased activity levels despite social distancing mandates.

POSTER SESSION 1

1) Abstract 1023
THE ASSOCIATION BETWEEN LONELINESS AND INFLAMMATION: FINDINGS FROM AN OLDER ADULT SAMPLE

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Loneliness has been linked to poor mental and physical health outcomes. Past research suggests that inflammation is a potential pathway linking loneliness and health, but little is known about how loneliness assessed in daily life links with inflammation, or about linkages between loneliness and inflammation among older adults specifically. As part of a larger investigation, we examined the cross-sectional associations between loneliness and a panel of both basal

and lipopolysaccharide (LPS)-stimulated inflammatory markers. Participants were 222 socioeconomically and racially diverse older adults (aged 70-90 years; 37% Black; 13% Hispanic) systematically recruited from the Bronx, NY. Loneliness was measured in two ways, with a retrospective trait measure (Three Item Loneliness Scale) and an aggregated momentary measure assessed via ecological momentary assessment (EMA) across 14 days. Inflammatory markers included both basal levels of C-reactive protein (CRP) and cytokines (IL-1β, IL-4, IL-6, IL-8, IL-10, TNF-α) and LPS-stimulated levels of the same cytokines. Multiple regression analyses controlled for age, body-mass index, race, and depressive symptoms. Moderation by gender and race were also explored. Both higher trait loneliness and aggregated momentary measures of loneliness were associated with higher levels of CRP (β=0.16, p=.02; β=0.15, p=.03, respectively). There were no significant associations between loneliness and basal or stimulated cytokines, and neither gender nor race were significant moderators. Results extend prior research linking loneliness with systemic inflammation in several ways, including by examining this connection among a sample of older adults and using a measure of aggregated momentary loneliness.

2) Abstract 1025
TESTING THE UNIQUE EFFECT OF EDUCATIONAL QUALITY ON BMI AND CENTRAL ADIPOSITY IN ADULTHOOD AND HYPOTHESIZED MEDIATORS

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Objective. To examine whether an objective measure of educational quality is more closely associated with BMI and central adiposity than a widely used measure of educational quantity (highest level of education completed). We also examine multiple hypothesized mediators of the relationship between educational quality and cardiometabolic health including perceived control, executive functioning, and health literacy. **Method.** 98 racially and socioeconomically diverse participants were recruited from the Birmingham, Alabama community. Educational quality was objectively indexed by the word reading subtest of the WRAT-4. The outcomes of BMI, visceral fat, and abdominal circumference were objectively assessed consistent with medical standards. Perceived control was self-reported using the locus of control questionnaire, executive functioning was assessed using the Trail Making Test - part B and Attention Network Test, and health literacy was assessed using the Health and Financial Literacy Assessment. **Results.** Educational quality was associated with BMI and central adiposity above and beyond educational quantity, and other demographic factors (age, race, sex). Neither perceived control, executive function, nor health literacy significantly mediated the association between educational quality and the three outcomes assessed here. **Conclusion.** This study adds to the growing body of literature suggesting that educational quality may be a closer correlate of cardiovascular risk than more widely used measures of educational quantity, but did not find support for three well-measured commonly hypothesized mediators of this association.

3) Abstract 1026
DO INDIVIDUAL AND NEIGHBORHOOD SOCIOECONOMIC STATUS MATTER TO HEALTH EQUALLY BETWEEN WHITES AND BLACKS? EVIDENCE FROM THE MIDLIFE IN THE UNITED STATES STUDY

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Background: Individual and neighborhood socioeconomic status (SES) have non-overlapping monotonic relationships with health, such that those higher on the SES ladder and those living in higher SES neighborhoods have lower risks of biological risk factors, morbidity, and mortality. However, the diminishing health return hypothesis suggests that African Americans receive fewer health benefits of high SES than Whites. Therefore, this study aimed to examine the potentially different effects of individual and neighborhood SES on the hypothalamic-pituitary-adrenal axis functioning assessed by diurnal cortisol secretion between Whites and African Americans.
Methods: Data came from 1,455 non-Hispanic Whites (55.5% female, ages 34-84 years) and 128 African Americans (68.0% female, ages 34-80 years) from the second wave of the Midlife in the United States Daily Diary Project (2004-2009). Individual SES was assessed using education and household adjusted family income. Neighborhood SES was derived from the 2000 US Census tract-level data. Participants also provided four salivary samples each day for four days to calculate the diurnal cortisol slope.
Results: African American participants exhibited a more blunted ("less healthy") diurnal cortisol slope (i.e., less change in cortisol secretion from morning to evening) than their White counterparts. Higher individual and neighborhood SES were associated with a steeper ("healthier") diurnal cortisol slope (b = -0.003, p = .026; b = 0.002, p = .044; respectively) among Whites, but not African Americans. Individual SES interacted with neighborhood SES to predict diurnal cortisol slope among African Americans (but not Whites), showing that higher individual SES was associated with a more blunted diurnal cortisol slope among those living in a more socioeconomically disadvantaged neighborhood (b = 0.005, p = .010). These results were robust to the inclusion of key demographic, behavioral, and health covariates.
Conclusion: Our findings suggest that compared to Whites, African Americans may experience diminished health return of high SES. Moreover, living in socioeconomically disadvantaged neighborhoods may be particularly harmful to high-SES African Americans. These findings, however, may need to interpret with caution due to a small sample size of African American participants relative to White participants in this study.

4) Abstract 1045
SENSE OF PURPOSE IN LIFE AS A CONTRIBUTOR TO INFLAMMATION IN OLDER ADULTS: A LONGITUDINAL STUDY

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Background: A higher sense of purpose in life has been linked with reduced risk of age-related chronic health conditions that share elevated inflammation as a key risk factor (e.g., neurodegenerative diseases, heart disease, and diabetes). While prior research has documented cross-sectional associations between higher sense of purpose and lower inflammation, few studies have examined the association between purpose and changes in inflammation over time. **Objective:** We tested if a higher sense of purpose at the study's baseline was prospectively associated with lower likelihood of developing unhealthy C-reactive protein (CRP) levels over the follow-up in older adults who initially had healthy CRP levels (i.e., ≤3 ug/mL). **Methods:** Participants were 6,925 men and women aged >50 in the Health and Retirement Study, and were followed for 8 years. At study baseline in 2006/2008, participants completed the purpose in life subscale of the Ryff Psychological Well-being Scales. CRP was obtained from blood spots collected at baseline and again after 4 and 8 years of follow-up. We ran pooled logistic regressions and also considered potential effect modification by sex. **Results:** Across all time points, higher purpose was associated with lower CRP levels. We observed no strong evidence of an association between baseline levels of purpose, scored continuously,

and onset of unhealthy CRP levels over time in the overall analytic sample. Evidence for effect modification by sex was limited (p-value for interaction between continuous purpose scores and sex = 0.15). However, in sex-stratified models, higher purpose was associated with lower hazards of developing unhealthy CRP levels among men, while associations were null in women (e.g., in sociodemographics-adjusted model, men: HR=0.89, 95% CI: 0.79-0.99; women: HR=0.96, 95% CI: 0.85-1.08). **Conclusions:** Findings suggest a trend in older men with a higher sense of purpose at baseline associated with lower hazards of developing unhealthy CRP over time. In some populations, the relationship between purpose and inflammation might help us understand why purpose has been linked with better health outcomes.

5) Abstract 1046
FRUCTOSE MALABSORPTION AND SEROTONIN-ASSOCIATED PSYCHOLOGICAL SYMPTOMS IN CHILDREN AND ADOLESCENTS

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Background: Due to an inhibited tryptophan resorption, patients with fructose malabsorption are expected to experience decreased serotonin synthesis (Velten & Bayerl, 2007).
Concerns: The present work deals with the question of whether an untreated dietary fructose intolerance can promote serotonin-associated psychological symptoms in addition to the known gastroenterological complaints. It also investigates whether a fruit sugar- related eating- behavior may have an influence on the expression of accompanying psychological symptoms.
Methods: 24 children and adolescents with currently diagnosed fructose malabsorption aged 4;00-13;02 years ($M = 8.10$, $SD = 2.05$) and 12 children and adolescents with a currently confirmed combination of fructose and lactose malabsorption aged 4;00- 12;11 years ($M = 8.07$, $SD = 2.11$) were examined. A healthy comparative sample consisted of 19 grown- ups aged 5;00 to 17;07 years ($M = 9.06$, $SD = 3.04$).
Results: Within the group of children and adolescents with fructose malabsorption, findings confirmed a significantly higher level on the scale *Screening Depression* compared to the scales *Screening Attention- Deficit/Hyperactivity Disorders (ADHD)* and *Screening Conduct Disorders (CD)*. Compared to a healthy control sample, patients with fructose malabsorption showed a significantly higher symptom expression on the superordinate scale *Screening Internal* and on its two subordinated scales *Depression* and *Anxiety* as well.
With regard to eating behavior and within the group of patients with a combination of lactose and fructose malabsorption, we found a strong positive association ($r > .5$) between an increased fruit sugar (fructose) consumption and higher scores on the scales *Screening Anxiety* and *Screening Obsessive- Compulsive Disorders/ Tics* as well as on the scale *Screening Internal* that subsumes the screening scales *Depression* and *Anxiety*.

6) Abstract 1060
UNDERSTANDING COREGULATORY PROCESSES AMONG ROMANTIC COUPLES: AN EXAMINATION OF PHYSIOLOGICAL LINKAGE DURING HAND HOLDING

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Background: Two members in a close relationship become interdependent to regulate stress and achieve individual and relational homeostasis, which is manifested in psychological, behavioral, and physiological markers. Such phenomenon of coregulation in romantic relationships may determine whether the relationship is protective or harmful for the individuals involved. Less known is the degree to which physiological coregulation occurs during stress recovery while engaging in physical touch.

Methods: This study examined physiological linkage (PL) as measured by interbeat interval among heterosexual romantic couples (n = 53 dyads). The couples completed baseline questionnaires including dyadic coping and empathy measures, engaged in mixed emotion conversations, and ended the session by holding hands. ECG data were continuously collected. The data analyzed here are from the handholding segment. The R package, *rties*, was used to generate non-linear trajectories of PL with a coupled linear oscillator model.
Results: We identified two dynamic profiles. Profile 1 was characterized by fast frequency, anti-phase synchronization that showed one person's signal amplifying over time. Profile 2 was characterized by slow frequency, anti-phase synchronization that showed both persons' signal damping over time. Using Bayesian statistics, results showed that lower levels of baseline dyadic coping predicted a greater probability of being Profile 1 than Profile 2 (85% HDI [0.08,2.19]), whereas lower levels of baseline empathy predicted a greater probability of being in Profile 2 than Profile 1 (85% HDI [-0.92,-.13]).
Conclusions: These preliminary results suggest that relational and individual-level variables can predict PL during physical touch following emotional conversations. The physiological dynamics could relate to coregulatory processes among the couples. More specifically, the amplification and damping of the signals could be related to ongoing adjustments toward individual and relational homeostasis. Furthermore, future research is needed to understand the role of PL in interpersonal coregulatory processes and differentiate coregulation from co-dysregulation among romantic couples.

7) Abstract 1065
DEPRESSION TRAJECTORIES AMONG FIRST YEAR COLLEGE STUDENTS

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Large epidemiological studies over the past decade highlight significantly accelerating rates of depression, anxiety, and distress among young adults, yet we know little about trajectories of risk over time. Depressive symptoms can present themselves uniquely across individuals, and the factors that give rise to depression vary. Thus, we use a novel approach utilizing K-means clustering to identify depression trajectories in college students, as well as the factors associated with different subgroup trajectories. First year college students ($N=234$), completed measures of depressive symptomatology (CES-D), loneliness, and physical health at the beginning and end of Spring 2017 and 2018 semesters. Throughout the term, students wore a Fitbit smartwatch which captured their sleep data. We identified four clusters of students who exhibited different trends of depression severity, (1) low depressive symptoms at the beginning and end of the semester (n = 83; 35.5%), (2) low depressive symptoms at the beginning of the semester and high depressive symptoms at the end (n = 69; 29.5%), (3) high depressive symptoms at the beginning of the semester and low depressive symptoms at the end (n = 49; 20.9%), and (4) high depressive symptoms at the beginning and end of the semester (n = 33; 14.1%). When comparing these clusters to one another, students in cluster 1 (our 'resilient' subgroup) had fewer pre semester physical health complaints and better pre and post semester sleep quality. Students in cluster 3 had earlier sleep wake times on average over the semester. Students in cluster 2 and 4 had higher pre and post semester

loneliness. Results suggest that better sleep quality and waking up earlier are protective against depression while loneliness and physical complaints may be risk factors for depressive symptomatology among students that fall within certain trajectories. By examining depression trajectories, we can gain insight into understanding who falls into these categories, thus allowing the opportunity to offer interventions that consider the role of such biopsychosocial factors in these trajectories. For example, even if a student reports no depressive symptoms at the start of a term, preventive measures may include maintaining social interactions, healthy sleep habits, and monitoring physical health to reduce the risk of increasing depressive symptoms over time.

8) Abstract 1077
THE IMPACTS OF LONELINESS AND SOCIAL SUPPORT ON THE PHYSICAL HEALTH AND COPING STYLES OF COLLEGE STUDENTS DURING COVID-19

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The COVID-19 pandemic and preventive measures such as social distancing and campus closures have brought unprecedented social isolation to college students. Past studies have suggested that being socially isolated may not only have harmful effects on one's mental health but also result in a variety of physical health problems, such as a weakened cardiovascular system. On the other hand, higher perceived social support can lead to more positive health outcomes as it is associated with lower mortality risk and greater use of active coping strategies. The purpose of the present study was to investigate how loneliness and perceived social support are associated with the physical symptoms and coping styles of college students during the COVID-19 pandemic. This study investigated two types of coping strategies: active coping and self-distraction. The variables were measured through an online survey administered across five different time points in 2020 with students ($n = 292$) enrolled in a university located in Southern California. Linear regression analyses were conducted to predict the students' physical symptoms and coping styles using their levels of loneliness and perceived social support. The analyses used the first wave of data (from May 2020) to predict the second and fifth waves of the survey, which took place in July and December of 2020, in order to examine how baseline levels at the start of the pandemic predicted changes in the beginning of the study compared to at the end of the year. Students who reported higher levels of loneliness in May experienced more physical symptoms in July, $b = 2.89$, $p < .001$. However, social support did not significantly predict physical symptoms ($p > .05$), and neither loneliness nor social support significantly predicted the students' coping styles ($ps > .05$). When using data from May to predict outcomes in December, there were no significant associations. This study may help improve the physical and psychological well-being of college students during the global health crisis.

9) Abstract 1101
HEALTH-RELATED QUALITY OF LIFE, PSYCHOLOGICAL SYMPTOMS, RESILIENCE, AND SPIRITUALITY IN ECMO SURVIVORS AND THEIR FAMILY MEMBERS

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Background Extracorporeal life support (ECMO) is a temporary support in patients with acute cardiac failure. ECMO patients and their family members are exposed to multiple stressors such as post-procedural complications, intensive care unit (ICU) stay or prolonged recovery process. These can lead to reduced health-related quality of life (HRQoL), anxiety, depression or posttraumatic stress disorder (PTSD). The aim of this study was to assess HRQoL, psychological symptoms, resilience, and spirituality in ECMO survivors and their family members.

Methods We used data from a study including 119 patients after an ECMO implantation (from January 2018 until January 2020). We measured HRQoL using EQ-5D-5L, EQ-VAS, and HeartQoL, distress using PSS-4, depression and anxiety using HADS, PTSD using PTSS-14, resilience using RS-13, and spirituality using QoL-VAD.

Results In this study, 58 (48.7%) patients were successfully weaned, 24 (20.2%) were discharged from hospital, and 4 patients died until January 2020. Finally, 16 of 20 surviving patients and 15 family members were assessed. ECMO survivors showed reduced HRQoL in EQ-5D-5L (median 39.9; interquartile IQR 22-64.1), EQ-VAS (median 50, IQR 26.3 - 53), and in HeartQoL (median 1.3, IQR 1-1.8). Furthermore, 56.3% of survivors had an increased depression score, and 62.5% anxiety score (both ≥ 8) in HADS, and showed distress (median 9.5, IQR 5.3-13) in PSS-4. Additionally, 43.7% showed an increased score in PTSS-14 indicating PTSD, 81.3% showed a low resilience, and reduced spirituality (median 57.5, IQR 35-75). Further, 53.3% of the survivors´ family members showed increased scores in PTSS-14, 53.3% had increased anxiety scores in HADS (≥8), and 20% increased depression scores (≥8). Finally, family members showed reduced HRQoL in EQ-5D-5L (median 54.5, IQR 39.9-72.8) likewise.

Conclusions ECMO survivors and their family members showed increased levels of distress, depression, anxiety, posttraumatic stress, as well as reduced HRQoL, reduced levels of resilience, and spirituality. Our study indicates that this population may benefit from a psychological screening and further psychological support. Finally, psychological support during and after ECMO treatment may have an impact on short- and long-term patients´ outcomes, and could improve HRQoL of family members.

10) Abstract 1118
DYSREGULATED RESPONSES TO STRESS AND WEIGHT GAIN IN PEOPLE WITH TYPE 2 DIABETES

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Background: Obesity is involved in the pathogenesis of type 2 diabetes (T2D) and is associated with diabetes-related complications. Dysregulated stress responsivity has been linked with weight gain in healthy samples. However, the prospective relationship between disturbances in stress-related biology and changes in weight in people with T2D is unclear.

Method: A total of 65 participants with T2D underwent laboratory stress-testing and provided cortisol samples over the course of an ordinary day in 2011-2012. Cardiovascular, neuroendocrine and inflammatory responses to standardized mental stress were assessed. Body Mass Index (BMI) was objectively measured at the time of laboratory testing. Participants self-reported information on BMI in 2019. Associations between stress-related biology and BMI at follow-up were modelled using linear regression. All analyses adjusted for age, sex, and BMI at the time of testing.

Results: Greater resting systolic blood pressure ($B = 0.05$, 95% Confidence Interval (CI) 0.00, 0.01, $p = 0.033$) and daily cortisol area under the curve were associated with higher BMI 7.5 years later ($B = 0.01$, 95% CI 0.00, 0.02, $p = 0.041$). Poorer systolic ($B = -0.036$, 95% CI -0.07, -0.01, $p = 0.039$) and diastolic blood pressure recovery post-stress ($B = -0.070$, 95% CI -0.14, -0.01, $p = 0.036$) was associated with higher BMI at follow-up. Greater interleukin-1 receptor antagonist ($B = 18.12$, 95% CI 7.64, 28.60, $p < 0.001$) and

monocyte chemoattractant protein-1 reactivity ($B = 0.04$, 95% CI 0.01, 0.08, $p = 0.044$) were associated with weight gain. These findings were independent of baseline BMI. No significant associations were detected for interleukin-6 or laboratory cortisol measures.

Conclusions: Disturbances in stress-related biology may promote weight gain in people with T2D. Future research with a larger sample size is required to confirm these findings.

11) Abstract 1119
PROSPECTIVE RELATIONSHIPS BETWEEN PSYCHOLOGICAL CONSTRUCTS AND MEDICAL OUTCOMES IN HEART FAILURE: A SECONDARY ANALYSIS FROM THE HOPEFUL HEART TRIAL

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Background:
Psychological characteristics and disorders can impact morbidity and mortality of heart failure (HF) and other cardiovascular diseases. In this secondary analysis of data from the randomized *Hopeful Heart* trial, we assessed the prospective relationships between psychological characteristics (i.e., depression, optimism, and social support), hospital admissions, and mortality in 756 individuals with HF.

Methods:
In the *Hopeful Heart* trial, 629 patients were assigned to phone-delivered collaborative care for either (a) HF and depression or (b) HF alone, or their physician's usual care, and 127 non-depressed patients with HF were enrolled as non-randomized controls. Psychological characteristics, including optimism (Life Orientation Test – Revised), social support (ENRICHD Social Support Inventory) and depressive symptoms (Hamilton Rating Scale for Depression) were assessed at baseline, and rates of hospitalization and mortality were recorded for 12 months. To examine the relationships between psychological characteristics and health outcomes, we performed Cox proportional hazards regression analyses, adjusting for sociodemographic characteristics, New York Heart Association class, medical comorbidities, medication and dietary adherence, and treatment group.

Results:
In unadjusted analyses, optimism was significantly associated with a lower risk of hospital admission (HR=0.98 [95% CI 0.96, 0.999], p=.038). However, this relationship was attenuated in the fully adjusted model (HR=0.98 [95% CI 0.96, 1.005], p=.13). Depression was associated with a trend towards a higher risk of readmission (HR=1.01 [95% CI 0.998, 1.02], p=.098) over 12 months, but this relationship did not persist in the fully adjusted model (HR=1.00 [95% CI 0.98, 1.02], p=.92). Social support was not associated with readmissions, and none of the psychological variables were associated with mortality (all p>.18).

Conclusions:
Of the studied psychological characteristics only optimism was prospectively associated with a reduced risk of hospital admissions, but this relationship was attenuated when adjusting for other factors, suggesting that these factors may explain this relationship, at least in part. Additional studies that control for medical factors and health behavior adherence may help to further clarify the relationships between psychological constructs and heart failure outcomes.

12) Abstract 1133

SUBSTANCE USE AND FAMILY MEAL FREQUENCY AMONG FEMALE ADOLESCENTS

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Adolescents, especially female youth, who have more family meals tend to be at lower risk for substance use (e.g., Eisenberg et al., 2004). Yet, it remains unclear whether aspects of family relationships and daily events explain these associations (Goldfarb et al., 2017). The present study tested whether family meals relate to substance use count and frequency during high school, whether associations differ by gender, and whether other family-related variables explain these associations. A community sample of 310 adolescents (M_{age} = 16.40, SD = 0.74; 57.42% female; 41.94% Latino, 22.90% Asian American, 29.35% European American, 5.81% from other ethnic backgrounds) reported the number of substances they have ever used and how often they used alcohol, marijuana, and cigarettes, and completed measures of parent-child relationship quality and parental support. For each day across 15 days, they reported whether they had a family meal, spent leisure time with family, and got along with parents.

Linear regression models indicated gender differences in the associations between family meal frequency and substance use count, frequency of alcohol use, frequency of marijuana use, and frequency of cigarette use. When probing interactions at the level of gender, we found that associations were consistently significant in female, but not male, adolescents (Figure 1). To identify potential mechanisms relating family meal frequency to substance use, models were repeated controlling for other aspects of family relationships and daily events: adolescents' reports of parent-child relationship quality, parental support, and the number of days when adolescents reported spending leisure time with their parents and reported getting along with parents, as indicated by daily checklists. The Family Meal Frequency × Gender interactions remained generally significant (Table 1), and simple slopes at the level of female adolescents revealed that associations between more frequent family meals and lower substance use among female adolescents remained significant even when controlling for these variables. Taken together, family meals in high school may be uniquely protective against substance use for female adolescents. Family meals may provide a space for family discussions, distinct from other aspects of family relationships, that limit female adolescents' motivation for substance use.

Table 1. Substance use count, alcohol frequency over the past year, marijuana frequency over the past year, and cigarette frequency over the past month as a function of family meal frequency and gender.

	Substance Use Count		Alcohol Frequency		Marijuana Frequency		Cigarette Frequency	
	B	SE	B	SE	B	SE	B	SE
Constant	1.28***	0.13	1.85***	0.22	1.36***	0.22	0.22***	0.06
Family Meals	0.02	0.02	0.00	0.04	0.03	0.04	0.00	0.01
Female	-0.18	0.14	-0.03	0.23	-0.34	0.23	-0.05	0.06
Family Meals × Female	-0.10***	0.03	-0.10	0.05	-0.14**	0.05	-0.03*	0.01
Income	-0.01	0.01	-0.01	0.02	-0.01	0.02	0.00	0.00
Age	0.33***	0.09	0.46**	0.15	0.42***	0.15	0.09*	0.04
Parents' Education	-0.02	0.04	-0.04	0.07	0.01	0.07	-0.04*	0.02
Latino	-0.31	0.17	-0.34	0.30	-0.21	0.30	-0.03	0.08
Asian American	-0.46**	0.17	-0.90**	0.30	-0.78***	0.30	-0.11	0.08
Other Ethnicity	-0.44	0.30	-0.76	0.52	-0.73	0.52	0.32*	0.14
Parental Support	-0.04	0.10	-0.08	0.17	0.20	0.17	0.00	0.05
Family Cohesion	-0.15	0.13	-0.44	0.23	-0.21	0.23	0.02	0.06
Family Leisure	0.21	0.24	0.38	0.42	0.00	0.42	0.11	0.12
Get Along with Parents	0.00	0.02	0.01	0.03	-0.02	0.03	0.00	0.01

Note: * p<.05, **p<.01, ***p<.001. Family Meals, Income, Age, Parents' Education, Parental Support, Family Cohesion, Family Leisure, and Get Along with Parents were centered at the sample mean. Female was dummy-coded (0 = male, 1 = female). Ethnicity was dummy-coded with European American as the reference group. Family Meals, Family Leisure, and Get Along with Parents were reported using daily checklists and represent the sum number of days on which each participant reported experiencing each event.
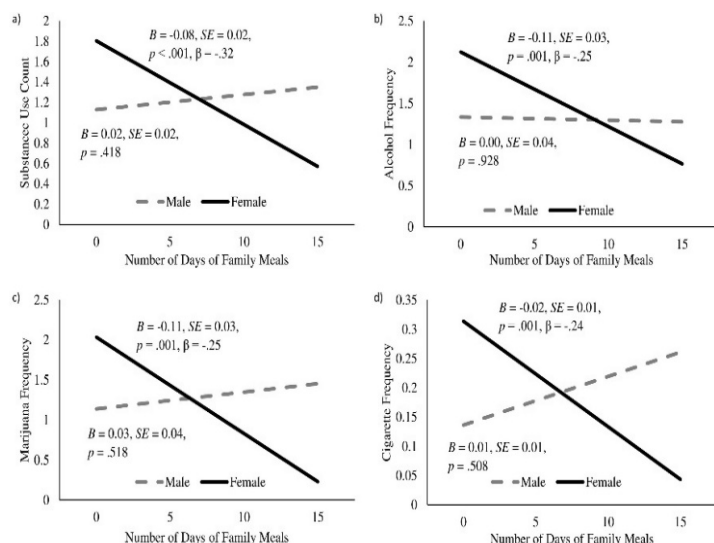
Figure 1. Substance use count (a), alcohol frequency (b), marijuana frequency (c), and cigarette frequency (d) as a function of family meals and gender.

13) Abstract 1155
DOMESTIC VIOLENCE ASSAULT DURING THE COVID-19 PANDEMIC: A COMMUNITY STUDY

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The consequences of the COVID-19 pandemic have been far-reaching, disproportionately impacting vulnerable populations. Of particular concern is the impact on individuals experiencing domestic violence (DV), an urgent public health issue. Reports have indicated that certain regions have experienced surges in DV, and it has been speculated that prolonged periods of state-mandated isolation are the source of these surges. The current study utilized publicly available records to examine fluctuations in DV coinciding with COVID-19 lockdown restrictions in a diverse metropolitan county. Data from two major agencies in Orange County, CA (i.e., Anaheim, Santa Ana) specifying police-reported DV assault were extracted from a web-based crime mapping engine. A total of 7,488 assault incidents were extracted from January 1st, 2020 through March 31st, 2021. All incidents were coded for time in weeks to examine the time course of DV among other types of assault, allowing for a longitudinal view of incidents over a 60-week window. Prior to any major lockdown, about 45% and 85% of assaults reported to police were DV-related in Anaheim and Santa Ana, respectively. A changepoint analysis determined whether and when DV assaults changed when mapped with coinciding tightening or loosening of restrictions county-wide. Results indicated that in Anaheim, there was no meaningful change in DV assault rates at any time interval. In Santa Ana, however, rates spiked in the week following the first major lockdown in March 2020, remaining stable at this higher level thereafter. To evaluate this spike in DV assault, a piecewise regression analysis indicated DV assault incidents in Santa Ana increased 7% in the week following the initial lockdown week (b = .07, SE = .03, t = 2.45, p = .01). The slope of the lines before and after the first week of lockdown were not significantly different, confirming that levels of DV assaults remained relatively stable after the initial spike in DV (b = -.0004, SE = .003, t = -1.77, p = .08). Results suggest that reported surges in DV vary between communities, and that systemic issues may set the stage for the surge of an already endemic problem. In under-resourced communities, simultaneous traumas compound risk for both immediate harm and long-term physical and mental health problems.

14) Abstract 1160
RELEVANT FACTORS FOR SUICIDAL IDEATION IN A LARGE SAMPLE WITH SOCIAL ANXIETY DISORDER

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Suicidal ideation (SI) is highly relevant in individuals suffering from social anxiety disorder (SAD). To prevent SI and optimize treatment the identification of factors significantly associated with SI is crucial.

305 individuals (38.4±14.1 years, 59% female) with SAD were investigated by several self-report questionnaires such as the State Trait Anger Expression Inventory (STAXI), Beck Depression Inventory (BDI), Social Phobia Inventory (SPIN), Adverse Childhood Experience Questionnaire (ACEQ), Beck Scale for Suicidal Ideation (BSS) and the Interpersonal Needs Questionnaire (INQ).

46,6 % of SAD individuals reported SI (n = 142). Compared to individuals without SI (n = 163, 53.4%) they showed significantly more social anxiety and depression symptoms, more adverse childhood experiences (ACE), higher state anger (SA), perceived burdensomeness (PB) and higher thwarted belongingness (TB) . In binary logistic regression, PB (odds ratio (OR)=1.11, 95% confidence interval (CI)=1.06-1.15), TB (OR=1.05, 95% CI=1.02-1.07), SA (OR=1.07, 95% CI=1.01-1.13) and ACE (OR=1.18, 95% CI=1.03-1.35) emerged as significant covariates of acute SI (Nagelkerke's R^2 = .39). Receiver operating characteristic (ROC) curves showcased the following areas under the curve (AUC): PB (AUC=.78), TB (AUC=.76), SA (AUC=.62) and ACE (AUC=.62). Multinomial logistic regression (no SI = ref.) showcased similar results for passive and active SI (n = 42), with SA reaching significance only for active SI. The Youden index identified appropriate cut-off values for PB, TB, SA and ACEQ by maximizing sensitivity and specificity. Our findings confirm the validity of the Interpersonal Theory of Suicide concerning SI in SAD. PB and TB with SA and ACE may support the valid assessment of SI in therapeutic settings.

15) Abstract 1161
EXTENDING THE SOCIAL CURE: GROUP MEMBERSHIP AND PHYSIOLOGICAL RESPONSES TO STRESS

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The benefits of group membership for self-reported measures of health are well documented, however, the processes by which they can influence biological health outcomes via cardiovascular and neuroendocrine responses to stress, remains under explored. In the present study, we aim to address this gap by examining if belonging to a social group affects cardiovascular (systolic and diastolic blood pressure, and heart rate) and cortisol reactivity to stress. Using secondary data from the Pittsburgh Cold Study (PCS3), 213 healthy adults (123 men, 90 women; M_{age} = 30.13, SD = 10.85) underwent a standardised laboratory stress-testing session. During the 2.25hr session, participants completed psychometric measures including the Social Network Index (Cohen et al., 1997) while biological measurements were assessed non-invasively using the Critikon Dynamap Monitor. Results showed that participants who belonged to a social group demonstrated enhanced patterns of cardiovascular adaption (i.e., peak responding at initial stress exposure, then gradual decline). This suggests that those who belong to a group have greater physiological stress tolerance, thus, indicating the benefits of group membership for biomarkers of health.

16) Abstract 1165
TRAJECTORIES OF STRESS MINDSET MEASURES IN PSYCHOSOMATIC PATIENTS AND ITS ASSOCIATION WITH HEART RATE VARIABILITY - RESULTS FROM THE MEPP STUDY

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Background: Stress mindset, defined as the extent to which an individual believes that the effects of stress are either enhancing or debilitating, has been found to be a relevant parameter in experimental studies addressing the physiological stress response. Measures of heart rate variability (HRV) are negatively correlated with other established stress measures. First evidence shows a positive association between a positive mindset and HRV, and a negative association between a negative mindset and HRV. Yet, the relevance of these measures in clinical population is unknown and the assessment via the stress mindset measure (SMM) is innovative. The present study investigates A) the association between SMM and HRV and B) the change in SMM in hospitalized psychosomatic patients pre-to-post therapy.

Methods: A total of 119 consecutive day clinic and inpatients from the Clinic for Psychosomatic Medicine and Psychotherapy in Ulm were included between June 2019 to February 2020. Patients underwent psychometric and psychophysiological measurements at hospitalization (T0) and discharge (T1) as well as one year after discharge (T2). Nonparametric Kendalls TauBeta correlations between HRV parameters and SMM scales were calculated at T0 in 115 patients and main diagnosis subgroups. Change in SMM scales from T0-T1 (N=95) and T1-T2 (N=78) were analyzed using paired t-tests.

Results: There were no significant correlations between SMM scales and HRV parameters neither in the total sample nor in main diagnosis subgroups at T0. The positive SMM subscale at T0 was significantly positively associated to higher vagally-mediated (RMSSD tauB 0.16 p0.038) at T1. The total SMM score significantly increased from T0 (M=1.19) to T1 (M=1.38; $t(94)$= -2.936; p=.004) representing a change in the beliefs that stress is rather enhancing. No relevant increase or decrease in SMM was observed between T1 (M=1.43) and T2 (M=1.37).

Conclusions: The stress mindset seems to be an important factor in psychosomatic health which can change due to psychosomatic treatment. As sample sizes regarding the type of disorders were not equal, future studies should investigate the association of stress mindset and heart rate variability and type of disorder in psychosomatic patients.

17) Abstract 1168
CIRCADIAN PROFILES OF HEART RATE VARIABILITY AND CORTISOL IN PATIENTS OF A PSYCHOTHERAPEUTIC CONSULTATION IN THE WORKPLACE

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Background:
Disturbed stress axes, namely a reduced activity of the autonomic nervous system, indexed by heart rate variability (HRV), and changes in the hypothalamus-pituitary-adrenal axis, indexed by cortisol, have been firmly associated with common mental disorders. We aim to simultaneously investigate these associations using HRV and cortisol as well as their relation to symptom course in an outpatient population.

Methods:
Participants were recruited between June 2017 and June 2019 from an outpatient psychotherapeutic consultation in the workplace (PSIW) offered to employees of a center for disabled care with mental or psychosomatic complaints. Questionnaires included symptoms of depression, irritation and functional impairment. Circadian profile of HRV and salivary cortisol concentrations (eight samples) collected pre and post short term psychotherapeutic intervention (4-12 sessions) were assessed. Multilevel-linear mixed regressions were calculated.

Results:
Out of 65 employees presenting at the PSIW, 42 participated in the study and 29 complete datasets were obtained.
Cortisol levels showed a circadian variability with a significant time effect at baseline and at follow-up. No significant differences were found for the diurnal salivary cortisol rhythm between baseline and follow-up. Compared to the CIRCORT database, median values were within the 5th and 95th CI interval, with the only deviation being a fourfold higher 95th percentile at measurement time point seven and eight.
HRV also showed a significant circadian rhythm with a significant decline of HR at night accompanied by an increase in HRV parameters. The proportion of individuals showing a vagally mediated HRV in the range of the lowest quartile assessed for respective age- and sex-matched healthy controls was reduced at follow-up (pre 34%, post 22%; p=.017).
Linear mixed-effects regression models controlling for age showed a significant interaction between measures of HRV and course of symptoms: Higher vagally mediated HRV at baseline predicted lower symptom burden at follow-up.

Conclusion:
Stress axes are only slightly disturbed in outpatients with moderate symptom severity. HRV parameters predict treatment outcome. Thus, physiological measures could extend psychological assessments to guide individually content and extent of psychotherapy.

18) Abstract 1190
ANXIETY, ANXIETY SENSITIVITY, AND THEIR ASSOCIATION WITH PHYSICAL HEALTH STATUS IN ADULTS WITH CONGENITAL HEART DISEASE

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Introduction: Adult congenital heart disease (ACHD) is a highly prevalent health problem that is accompanied by psychological distress. Previous studies have suggested that physical health status (PHS) is negatively impacted by ACHD. However, it is unknown if there is a meaningful association between anxiety and anxiety sensitivity (i.e., the fear of bodily sensations) with PHS. Therefore, the relationships between 1) anxiety and PHS and 2) anxiety sensitivity and PHS were examined. A hierarchical regression analysis was used to examine the independent effects of demographic factors and anxiety, as well as the added independent effect of anxiety sensitivity, on PHS. Methods: We conducted a cross-sectional study of adult patients (n = 79) diagnosed with ACHD. Data were collected following an outpatient cardiology visit, using self-report, clinical interview, and medical record review. Results: Anxiety (BAI) was significantly associated with PHS (SF-36; physical composite score), r = -.40, p < .001. Anxiety sensitivity (ASI-R) was also significantly associated with PHS, r = -.39, p < .001. In Step 1 of the regression, demographic variables (i.e., gender, age, ACHD complexity) contributed significantly to the regression

model, $p = .01$ and accounted for 16.7% of the variance in PHS. In this step, age uniquely predicted PHS ($b = -.38$), with higher age associated with lower PHS scores. Adding anxiety to the model in Step 2 explained an additional 19.7% of variation and this change in R^2 was significant, $p < .001$. In this step, higher age was still significantly associated with lower PHS scores ($b = -.38$). ACHD severity became significant at this step ($b = -.30$), along with higher anxiety scores being significantly associated with lower PHS scores ($b = -.47$). Adding anxiety sensitivity to the model at Step 3 explained an additional 1.6% of variance in PHS and this change in R^2 was not significant, $p = .21$. Age, ACHD severity, and anxiety scores all maintained their significant associations at this step ($b = -.44$, $b = -.30$, $b = -.33$, respectively). Anxiety and anxiety sensitivity are both negatively associated with PHS. Discussion: Anxiety sensitivity might have independent effects on PHS but more research is needed. These findings may help to develop interventions aimed to ease the burden of patients with ACHD who also experience psychological distress.

19) Abstract 1196
THE INFLUENCE OF CHRONIC GRAFT-VERSUS-HOST DISEASE ON PSYCHOLOGICAL AND PHYSICAL FUNCTION IN ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANT PATIENTS

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Chronic graft-versus-host disease (cGVHD) is a common, late adverse effect of allogeneic hematopoietic cell transplantation (HCT). Few studies have examined quality of life concerns among individuals with cGVHD, and there has been no comprehensive evaluations of psychological functioning. The current study sought to address this gap in knowledge by comparing psychological and physical function between adult HCT survivors with (n=57) and without (n=19) cGVHD and by evaluating the influences of disease site and severity. Participants completed measures of depression and anxiety (IDAS), fatigue (FSI), insomnia (ISI), pain (BPI), cognition (PROMIS), and sexual function (PROMIS) and underwent a comprehensive cGVHD clinical evaluation using NIH consensus scoring criteria. Results indicated that participants with grade 3 (severe) cGVHD reported significantly higher levels of depression (t=-2.13, p=.04) and pain intensity (t=-2.12, p=.04) compared to HCT survivors with no cGVHD. Participants with grades 1 (mild) and 2 (moderate) cGVHD had comparable scores to those with no cGVHD on most of the measures. Those with cGVHD in the skin, joints, or GI tract had the poorest psychological and physical function when compared to those with no cGVHD. When compared to those with no cGVHD, participants with skin cGVHD reported higher levels of depression symptoms, fatigue intensity and interference, pain intensity and interference, and insomnia (all p<.05). Likewise, participants with cGVHD manifesting in the joints reported more depression, somatic anxiety symptoms, and pain interference (all p<.05). Participants with GI tract cGVHD reported greater depression symptoms, somatic anxiety, fatigue intensity and interference, pain intensity, and sexual dysfunction (all p<.05). Participants with cGVHD in the mouth and lungs had comparable physical and psychological function to those with no cGVHD. In sum, results suggest that patients with severe cGVHD and those with cGVHD manifesting in the skin, joints, and GI tract are at risk for poorer psychological and physical function as compared to other

allogeneic HCT survivors and may benefit from proactive biobehavioral interventions to improve quality of life and function.

20) Abstract 1202
ASTHMA AND CHRONIC STRESS DURING THE COVID-19 PANDEMIC: THE MEDIATING ROLE OF SLEEP

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Background: Prior research indicates that asthma is associated with greater stress. Individuals with asthma are also more likely to experience sleep problems, and poorer sleep health has been linked to higher stress levels. However, the role of sleep in the relation between asthma and stress remains understudied. We sought to explore the relationship between asthma and chronic stress, and the potential mediating role of sleep quality components in this association, during July 2020-November 2020 of the COVID-19 pandemic, a period of sustained naturalistic stress. *Method:* Participants (adults, mean age 55.53 years, N=241, n=115 adults with asthma) completed self-report measures assessing sleep efficiency, sleep duration, nocturnal asthma symptoms, and chronic stress. Hierarchical multiple linear regression models controlling for age and sex examined asthma and sleep quality components as predictors of chronic stress during the COVID-19 pandemic. Using the distribution of products method, sleep efficiency and sleep duration were examined as mediators of the association between asthma and chronic stress. Within the sample of adults with asthma, nocturnal asthma symptoms were examined as an additional predictor of chronic stress during COVID-19. *Results:* Asthma independently predicted greater chronic stress during the COVID-19 pandemic. Asthma was not associated with lower sleep efficiency, nor was there a significant relation between sleep efficiency and chronic stress. However, asthma was significantly associated with shorter sleep duration, and shorter sleep duration predicted greater chronic stress during the COVID-19 pandemic. Sleep duration, but not sleep efficiency, mediated the relation between asthma and chronic stress. Within the sample of adults with asthma, shorter sleep duration, but not sleep efficiency nor nocturnal asthma symptoms, predicted chronic stress during the COVID-19 pandemic. These findings suggest that sleep plays a role in health in asthma, above the influence of nocturnal asthma symptoms. Overall, findings highlight the importance of maintaining adequate sleep duration during stressful periods for individuals with asthma.

21) Abstract 1206
PILOT TESTING AN ECOLOGICAL MOMENTARY MINDFULNESS INTERVENTION FOR MIDLIFE WOMEN WITH A HISTORY OF EARLY LIFE ADVERSITY

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Introduction: Early life adversity (ELA) is associated with increased risk for mental health problems in adulthood, including depression. One important pathway is that ELA shapes maladaptive psychological responses to daily stressors, which are relevant for health-related outcomes and serve as an intervention target. In this pilot study we developed an intervention aimed to improve daily stress response habits in women with ELA by incorporating mindfulness-based interventions into everyday life using mobile technology.

Methods: Women (M_{age}=40.80±8.60; 52% White) with a history of at least two adverse childhood experiences (M=4.42±1.93) participated in an app-based mindfulness intervention study (N=50). The study utilized a micro-randomized trial (MRT) design in which participants were randomly assigned to receive either a mindfulness

intervention or no intervention three times per day for 30 days. Participants completed surveys assessing depressive symptoms and stress-related constructs (e.g., perceived stress, positive and negative affect, emotion regulation difficulties, rumination, self-compassion and avoidance tendencies) at baseline and post-intervention.

Results: A series of paired sample t-tests revealed that depressive symptoms significantly improved from baseline to post-intervention. Similarly, rumination and difficulties in emotion regulation significantly decreased from baseline to post-intervention, and positive affect significantly increased from baseline to post-intervention. Greater decreases in perceived stress, rumination, emotion regulation difficulties and negative affect were associated with a greater decrease in depressive symptoms. Improvements in depression were also associated with a greater increase in positive affect from baseline to post-intervention. No significant associations were found between depression improvement and the change in self-compassion or avoidance.

Discussion: Our findings suggest that an app-delivered mindfulness intervention could be effective in reducing depressive symptoms in midlife women with ELA. Our preliminary data suggest that the observed improvement in depressive symptoms was associated with improvements in a number of psychological stress response habits. These findings provide preliminary support for identifying modifiable factors which can potentially improve depression for vulnerable individuals.

22) Abstract 1208
THE MEDIATING ROLE OF CHILD SELF EFFICACY IN SOCIOECONOMIC STATUS AND MARITAL STATUS AFFECTING PEDIATRIC ASTHMA SEVERITY

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Asthma is one of the most prevalent chronic diseases in children. Studies have found that children from families with lower parental socioeconomic status (SES) have poor asthma control, leading to greater asthma severity. Children from single-parent households were also found to have greater asthma severity. These associations between family structure and asthma severity may exist through the mediating mechanism of self-efficacy. Specifically, it has been shown that children from families of higher SES and with married parents have higher self-efficacy and self-esteem. In turn, higher self-efficacy in pediatric asthma patients is associated with greater self-management and lower severity. This study will investigate how family structure and SES are associated with children's asthma severity and the mediating role of self-efficacy. Data were obtained from Children's Health Orange County Pulmonary Clinic with pediatric patients with asthma between the ages of 12-17 (N = 37). Parents and children completed a baseline survey where parents self-reported marital status and SES, and children completed subjective measures of self-efficacy. For seven days, four times a day, children measured their asthma severity by recording lung function values, Peak Expiratory Flow (PEF), and Forced Expiratory Volume in the first second (FEV1), using a peak flow meter. These variables were used to perform mediation analysis in SPSS. Mediation analysis found that there were no significant associations found between parental SES and child self-efficacy, and child self-efficacy and child asthma severity for both FEV1 and PEF values. Similarly, no significant associations were found between parental marital status and child self-efficacy, and child self-efficacy and child asthma severity for both FEV1 and PEF values. These results suggest that child self-efficacy may not serve as a mediator in the association

between parental SES and child asthma severity and the association between parental marital status and child asthma severity.

23) Abstract 1209
DEPRESSIVE SYMPTOMS AND CARDIOVASCULAR HEALTH IN BREAST CANCER PATIENTS

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As breast cancer survivors live longer thanks to advanced, targeted treatments, there is increasing concern for their long-term cardiovascular health. Cardiovascular disease (CVD) is the leading non-cancer cause of death in breast cancer survivors. For both cancer and non-cancer populations, depression is cross-sectionally and longitudinally associated with an increased risk of developing CVD. This study furthers the early identification of breast cancer survivors who are at risk for developing CVD by exploring the relationship between depressive symptoms and A-BEST scores, a novel equation that estimates cardiovascular age using heart rate data from an exercise stress test. In a non-cancer sample, the A-BEST was a more accurate predictor of mortality than chronological age, and this study expands its use to cancer survivors. Participants completed the Center for Epidemiological Studies- Depression measure (CES-D) and a standardized exercise bike test at two visits, two and a half years apart. Trained graduate students and research assistants also administered the Structured Clinical Interview for DSM-V to assess current and past anxiety and mood disorders. A hierarchical linear regression model revealed that breast cancer survivors with more depressive symptoms had a higher cardiovascular age, when controlling for age, visit, chemotherapy treatment, and trunk fat (p=.04). However, current or past Major Depressive Disorder diagnosis was unrelated to A-BEST scores (p>.78). The findings indicate that even subthreshold depressive symptoms linearly predict poorer cardiovascular health in breast cancer survivors, a population that is already prone to declines in cardiovascular health due to cardiotoxic treatments and other factors. Also, the observed relationship corresponds with prior studies that found an association between depression and cardiovascular morbidity and suggests that the A-BEST score may be valid for use among cancer survivors. The current study provides further insight in the quest to identify at risk patients and reduce cardiovascular mortality in breast cancer patients through timely interventions.

24) Abstract 1215
GRIEF AND LOSS DURING THE COVID-19 PANDEMIC: EXPLORING PERCEIVED PHYSICAL HEALTH AS A PREDICTOR FOR RUMINATION

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Background: Ruminative thought predicts complicated grief and hinders the adjustment to loss by acting as a cognitive avoidance strategy. Not only is the process linked to psychological issues, rumination is also associated with negative health consequences, such as poor sleep quality, impaired immune functioning, and cardiovascular disease. Understanding how bereaved people adjust to the death of a loved one, and the associated physical and psychological health outcomes, can offer meaningful direction for interventions. Self-reported physical health has been shown to be indicative of documented physical health. Very few studies have investigated the potential relationship between self-reported physical health and rumination, especially in the bereaved population.

Methods: Arizonans who experienced the death of a partner, child, sibling, parent, grandparent, other family member, non-biological family, or close friend in the past year were recruited for a semi-

structured phone interview, during which they reported their grief severity, depressive symptoms, grief-specific rumination, and perceived physical health. Results: In the present study (N = 51), we tested whether perceived physical health acts as a predictor for grief-specific rumination in bereaved individuals who experienced the death of a loved one during the COVID-19 pandemic. Participants (74.5% White, 80.4% non-Hispanic) had an average age of 51 ($SD = 15.9$) and were mostly female (76.5%). Linear regression analyses showed that self-reported physical health predicted grief rumination outcomes ($F = 4.0$, $p = 0.005$). Notably, self-reported physical health also predicted grief severity ($F = 4.0$, $p < 0.005$) and depression ($F = 5.2$, $p < 0.001$). Conclusion: These results are consistent with previous findings that engagement in ruminative thought is associated with poorer health. Using self-report measures to assess physical health may offer accessible insights related to psychological health outcomes—especially in a time of social distancing.

25) Abstract 1216
ASSOCIATIONS OF SELF-COMPASSION SUBSCALES, CORTISOL, AND INFLAMMATION AMONG A MULTI-ETHNIC POPULATION OF YOUNG ADULTS

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Background: In the empirical literature, self-compassion, relating to oneself with kindness when facing life's challenges, has been continually associated with healthy psychological functioning. However, few studies have analyzed the potential relationship between the six self-compassion subscale components (i.e., compassionate vs. reduced uncompassionate behavior toward suffering), Hypothalamic Pituitary Adrenal Axis, and inflammatory activity. This study investigates self-compassion components (i.e., Self-Kindness, Self-Judgment, Common Humanity, Isolation, Mindfulness, and Over-Identification) to explore their influence on Cortisol, C-reactive protein (CRP), and Interleukin 6 (IL-6) among an ethnically diverse young adult population with a predisposition to Type 2 diabetes (T2D).

Methods: The Metabolism and Stress Assessment (MeSA) Lab recruited participants at higher risk for developing T2D with additional stressors. These young adults completed the 26-item Self-Compassion Scale (SCS), provided hair to measure 3-month cortisol concentration and saliva biospecimens as measures of awakening morning cortisol, CRP, and IL-6. Spearman correlation tests were performed to assess these relationships.

Results: Participants in the final sample (n= 63) were 68.3% female, 64.4% self-identified as Latinx, and had a mean age of 21.12 ± 1.88 years. The SCS mindfulness subscale scores positively correlated with IL-6 (r= 0.352, p< 0.01). In addition, there were marginally significant positive correlations between the SCS mindfulness score and morning awakening cortisol (r= 0.259, p= 0.067) and SCS self-kindness score and morning awakening cortisol (r= 0.263, p= 0.063). No significant correlations were found of the SCS total score, subscale scores, hair cortisol, or CRP.

Conclusions: Results indicate that the mindful component of the SCS was a significant correlate of IL-6. Overall, results suggest that subscales associated with compassionate behavior may be associated with neuroendocrine and inflammatory markers in young adults at risk for T2D. These results add to the limited literature assessing these relationships and is the first to address this in a young adult population at risk for T2D.

26) Abstract 1225
MENTAL HEALTH, FINANCIAL HARDSHIP, AND SOCIAL CONNECTIONS AMONG OLDER ADULTS WITH PROBABLE COVID-19 INFECTION: A LONGITUDINAL COHORT STUDY.

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Background: Despite a large body of research documenting the adverse psychosocial consequences of infectious diseases, little is currently known regarding the impact that contracting COVID-19 may have on the individual's mental health, personal finances, and social relationships. We investigated the immediate and longer-term impact (over 4-6 months) of probable COVID-19 infection on mental health (depression and anxiety), wellbeing (quality of life and loneliness), financial hardship, and social interactions among older people living in England.

Methods: Data were analysed from 5,146 older adults participating in the English Longitudinal Study of Ageing who provided data before the pandemic (2018-19) and at two COVID-19 assessments in 2020 (June-July and November-December). The associations of probable COVID-19 infection at the first COVID-19 assessment with depression, anxiety, poor quality of life (QoL), loneliness, financial hardship, and amount of real-time/written social contact with family and friends at the first and second COVID-19 assessments were tested using linear/logistic regression and were adjusted for pre-pandemic outcome measures and other confounding factors.

Results: Participants with probable COVID-19 infection had higher levels of depression and anxiety, poorer QoL, and greater loneliness scores compared with those without probable infection at both the first ($OR_{depression}=1.62[95\%CI:1.16,2.26]$; $OR_{anxiety}=1.59[95\%CI:1.00,2.51]$; $b_{poorQoL}=1.34[95\%CI:0.66,2.02]$; $b_{loneliness}=0.49[95\%CI:0.25,0.74]$) and second ($OR_{depression}=1.56[95\%CI:1.17,2.09]$; $OR_{anxiety}=1.55[95\%CI:1.02,2.37]$; $b_{poorQoL}=1.38[95\%CI:0.74,2.03]$; $b_{loneliness}=0.31[95\%CI:0.04;0.58]$) assessments. Participants with probable infection also experienced greater financial difficulties than those without infection at the first assessment ($OR=1.50[95\%CI:1.10,2.05]$). In contrast, the levels of social contact were similar in participants with and without probable infection. Similar results were observed when propensity score weighting was used to account for confounding.

Conclusion: Probable COVID-19 infection is associated with longer-term deterioration of mental health and wellbeing and short-term increases in financial hardship among older adults.The mental health and wellbeing of older people affected by COVID-19 should be monitored both in the acute and recovery phases of the disease.

27) Abstract 1240
MATERNAL CARDIOVASCULAR RISK FACTORS, SYMPTOMS OF DEPRESSION AND PREGNANCY-SPECIFIC ANXIETY, AND BLOOD PRESSURE ACROSS GESTATION: A FUNCTIONAL DATA ANALYTIC APPROACH.

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Background: There has been increased interest in identifying blood pressure trajectories across pregnancy and understanding how these relate to maternal cardiovascular risk factors. To date, most research has used clinic blood pressure observations and multivariate statistical methods to describe group-level differences in blood pressure across pregnancy, but these methods are prone to statistical bias since they do not adequately deal with unequally spaced data or account for intercorrelation between observations timepoints. Functional data analysis (FDA) is a novel statistical method that can be used to more elegantly model time-series data and show how the effect of a predictor changes across time.

Aim: To explore associations between maternal cardiovascular risk factors, symptoms of depression and pregnancy-specific anxiety, and blood pressure across pregnancy using FDA.

Methods: Maternal sociodemographic, obstetrical, and psychological variables were assessed with self-report questionnaires in early pregnancy, and clinical blood pressure data were obtained

from medical charts for participants who took part in a prospective, longitudinal cohort study in Montreal, QC, Canada (*N*=370). FDA was used to construct maternal blood pressure curves, and functional regression analysis was used to examine how maternal factors related to blood pressure across gestation.

Results: Consistent with previous research, pre-pregnancy BMI and nulliparity were associated with higher blood pressure across gestation, but the effects were more pronounced at some timepoints. Visible minority status was associated with lower systolic blood pressure in late, but not early pregnancy, and with lower diastolic blood pressure in mid, but not late pregnancy. Depressive symptoms and pregnancy-specific anxiety were not associated with blood pressure across gestation.

Conclusion: Results replicate and extend upon previous research that has identified maternal factors as important predictors of blood pressure across gestation. FDA is a useful method to examine the effect of predictors on blood pressure across pregnancy and is applicable for the analysis of many other time-related cardiovascular processes.

28) Abstract 1255
USABILITY AND FEASIBILITY OF IMMUNONCOTOOL: AN ADVERSE EVENT MANAGEMENT AND REPORTING EHEALTH PROGRAM FOR PATIENTS TAKING IMMUNE CHECKPOINT INHIBITORS

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BACKGROUND. Immune checkpoint inhibitors (ICIs) have improved survival of patients with metastatic cancer but are associated with numerous immune-related adverse events (irAEs). Prompt recognition and management of irAEs before becoming severe can prevent irAEs that may be life-threatening and require discontinuation of ICIs. Accordingly, our team developed ImmunOncoTool, the first patient-centered, web-based irAE assessment and reporting intervention tailored to the unique demands of patients taking ICIs. METHODS. To assess usability, 20 participants (M age=58) with melanoma, lung, liver, or bladder cancer who recently initiated ICIs were onboarded to ImmunOncoTool, completed the Patient-Reported Outcomes version of the Common Terminology Criteria for Adverse Events over 3 weeks, and provided feedback on the website. Provider alerts were sent via Epic messages using predetermined symptom thresholds. In addition, a 5-month randomized control trial (RCT) comparing ImmunOncoTool and usual care is currently underway (enrollment closed) to assess feasibility and preliminary efficacy (N=64; M age=59). RESULTS. The majority of usability participants reported ImmunOncoTool was quick to learn (85%), easy to use (85%), useful (95%), and met their needs (75%). The majority also reported they were satisfied with ImmunOncolTool (85%), thought they would like to use it frequently (80%), and would recommend it to a friend (85%). Over the 3 weeks, the most commonly reported moderate/severe symptoms were fatigue (N=38), muscle/joint pain (N=19), aching muscles (N=18), itchy skin (N=17), and arm weakness (N=15). The top symptom alerts were shortness of breath (N=38), blurry vision (N=20), diarrhea (N=19), arm/leg swelling (N=12), and chest pain (N=11). Interim analyses from the ongoing RCT showed clinicians responded to alerts within 2 days (75%). Analyses on usage in the RCT to date showed over 80% used ImmunOncoTool at least 10 of the 20 study weeks. Number of sessions per week ranged from 0-13 (M=1, SD=.64). Time spent per week ranged from 0-55 minutes (M=3, SD=1.7). DISCUSSION. Results support usability and feasibility of ImmunOncoTool. Longitudinal analyses on the RCT examining preliminary efficacy will conclude in early 2022. If found efficacious, ImmunOncoTool has the potential to improve care of patients receiving ICIs and may facilitate improved cancer outcomes.

29) Abstract 1259
COGNITION OVER CARDIO: MODERATE PHYSICAL ACTIVITY BEHAVIOURS AND LATER MEMORY PERFORMANCE IN MIDDLE-AGED AND OLDER ADULTS

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Background: Physical activity has been lauded as an important factor in long-term health, specifically in the prevention of chronic conditions such as heart disease. Past research has assessed the links between physical activity and specific cognitive aging outcomes, but less has focused on non-clinical cognitive decline. Further, little research has assessed cognitive function through both behavioural and subjective methods. The present study assessed the association of self-reported moderate physical activity with memory performance 9 years later.

Method: Longitudinal data was analysed from the Midlife in the United States (MIDUS) 2 and 3 Study. Participants (N = 2311) were asked how frequently they engaged in moderate forms of physical activity during: 1) work, 2) chores, and 3) leisure time. To assess memory, participants recalled a list of words at two time points: 1) immediately after word list presentation and 2) 10 minutes later; participants were asked how good their memory was compared to when they were younger.

Results: On average, participants reported engaging in physical activity less than once per week and remembered between 5.5 of the 15 presented words (sd = 2.4; range 0-15). Average moderate physical activity was negatively correlated with immediate word recall, r(2309) = -0.14, p < .001, and delayed word recall, r(2309) = -0.13, p < .001. Increased moderate physical activity was unrelated to subjective memory, r(2309) = -0.035, p = .09. Participants' total word recall was positively correlated with subjective memory, r(2309) = 0.17, p < .001.

Conclusion: Although moderate physical activity was negatively associated with behavioural memory performance, no significant correlation was observed with subjective memory. This suggests that, although individuals are generally accurate in evaluating their subjective memory performance, this measure may not be a sensitive enough to utilize when assessing the effects of lifestyle factors such as physical activity. Additionally, there may exist aging effects in physical activity, as individuals may not be able to maintain this level of exercise as they age, thus reducing the possible memory benefits of moderate exercise. Future work should explicitly address aging effects, as well as other exercise intensities to evaluate possible differential effects.

30) Abstract 1264
SLEEP MEDIATES THE EFFECT OF MEANING ON PRE-TREATMENT INFLAMMATION IN OVARIAN CANCER PATIENTS

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Introduction: How positive psychosocial factors relate to health-relevant biology is understudied in cancer. Many cancer patients rely on spirituality as a source of coping and resilience throughout treatment. Here, we examined the association between components of spirituality and interleukin-6 (IL-6), an inflammatory cytokine associated with tumor angiogenesis and ovarian cancer survival, prior

to surgery or neoadjuvant chemotherapy (NACT) in ovarian cancer patients. Of particular interest was meaning, a cognitive aspect of spirituality describing purpose in life that has been related to physical and psychological outcomes. Sleep was examined as a potential mediator of this relationship.

Method: Women with suspected ovarian cancer were recruited from 3 academic cancer centers at their initial clinical visit as part of a larger study of biobehavioral factors and disease progression. Participants completed surveys assessing spirituality (FACIT-Sp 12), anxiety (POMS-SF), sleep (PSQI), and depressive mood (CESD) pre-surgery or NACT. IL-6 was assayed from plasma drawn pre-surgery/NACT and from ascites. Hierarchical multiple regressions examined associations between components of spirituality and IL-6 adjusting for age, cancer stage, BMI, anxiety, and depression. A mediation model including sleep was analyzed using the SPSS PROCESS macro.

Results: 221 women with histologically confirmed high-grade serous ovarian cancer were included. Levels of faith (M=11.90±4.16), meaning (M=13.74±2.76), and peace (M=10.46±3.70) were comparable to cancer patient norms and reflected high resilience. Anxiety and depression were negatively related to all three spirituality subscales ($ps < .001$). Greater meaning was associated with lower plasma IL-6 (β= -.150, p=.044) adjusting for clinical covariates, anxiety, and depression. Peace (β= -.022, p=.109) and faith (β= -.005, p=.632) were unrelated to IL-6. No component of spirituality was significantly related to ascites IL-6. The effects of meaning on IL-6 were significantly mediated by sleep disturbance (Indirect Effect: -.0081, 95% CI -.0194 to -.0004).

Discussion: Greater meaning prior to treatment was associated with an inflammatory marker linked with survival in ovarian cancer patients, suggesting that a sense of meaning may serve as a potential protective resource, supporting healthier sleep at the time of diagnosis.

31) Abstract 1266
PERCEIVED SOCIAL SUPPORT AND LIFE SATISFACTION IN CARDIAC PATIENTS: BIOLOGICAL SEX AS MODERATOR

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Introduction: Despite the substantial growth in knowledge and advances in the management of cardiovascular disease, this chronic condition remains associated with lower life satisfaction. In individuals with cardiovascular disease, it is well established that a lower level of social support is associated with lower life satisfaction. It has also been shown that women, as compared to men, tend to perceive a lower availability of their social network. However, to date, little is known about the interrelationship between social support, life satisfaction and biological sex in cardiac patients. This study, therefore, aims to test the moderating role of biological sex in the relationship between perceived social support and life satisfaction in Canadian patients with cardiovascular disease.

Method: This cross-sectional study uses secondary data from a Canadian population-based survey. The sample comprises 617 adults aged 30 years and older with cardiovascular disease. Life satisfaction was measured using an 11-point Likert scale question (0 = very dissatisfied, 10 = very satisfied). Perceived social support was assessed using the brief version of the Social Provisions Scale, which consists of 10 items rated on a 4-point Likert scale (total score ranging from 10 to 40).

Results: The sample was 51.9% men. Most of the participants (64.2%) were aged 65 and over. Approximately 10.1% of the variance in life satisfaction was explained by perceived social support (F(1, 607) = 68.533, $p < .001$). The results of the moderation analysis indicate that there is a non-significant relationship between perceived social support and biological sex (B = 0.022; 95% bootstrap confidence interval: -0.042-0.085; t = 0.680, p = 0.497).

Conclusions: While social support was associated with life satisfaction, that relationship did not significantly differ between men and women in this general sample of adults with cardiovascular disease. Given those results, it would be interesting to explore the moderating role of gender in the relationship between perceived social support and life satisfaction in patients with cardiovascular disease. Gender could be more strongly associated with these variables than biological sex is, considering that gender differences are influenced by broader environmental, social, and cultural factors.

32) Abstract 1319
PATHWAYS TO COMPLEXITY AT THE INTERFACE OF BRAIN AND BODY: HIGHER RATES OF NEURODIVERGENCE IN COMPLEX CONDITIONS ARE MEDIATED BY VARIANT CONNECTIVE TISSUE

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Background
Neurodivergent (Autism, ADHD) individuals are at greater risk for complex chronic conditions (CCCs), while treatment options are not tailored to specific needs and often inaccessible. Neurodiversity and accompanying needs regularly remain undiagnosed, decreasing the chances for accessing effective treatment. This study aims to quantify this fundamental problem by estimating the prevalence of neurodivergence in CCCs (e.g., fibromyalgia, ME/CFS, BPD/EUPD, C-PTSD), and to establish whether risk factors, such as variant connective tissue (joint hypermobility), impact on this relationship.

Methods
81 adults with and 80 without CCCs completed diagnostic screening tools for autism (RAADS), ADHD (WURS), and joint hypermobility (as an indicator of connective tissue variance) in an online survey. Chi-square tests were used to establish group differences, and binary logistic regression to calculate odds ratios of meeting threshold criteria for autism and ADHD. A mediation analysis was conducted to establish the role of joint hypermobility on the link between neurodivergent traits and CCCs.

Results
Participants with CCCs met diagnostic screening criteria for autism (76.3% CCC, 56.8% comparison; χ^2(1)=6.838, p=.009), ADHD (17.5% CCC, 2.5% comparison; χ^2(1)=10.160, p=.001), and joint hypermobility (78.8% CCC, 39.5% comparison; χ^2(1)=25.626, p<.001) significantly more often. When participants had CCCs, odds of meeting diagnostic threshold criteria were 2.44 (95%CI 1.24-4.81) times higher for autism, and 8.38 (95%CI 1.84-38.2) times higher for ADHD. Mediation analysis showed that there was a significant indirect effect of neurodivergence on presence of CCCs through joint hypermobility, b=1.291, 95%CI 1.105-1.592.

Conclusion
Our results clearly indicate that individuals with CCCs are significantly more likely to be neurodivergent, and that this relationship is mediated by variant connective tissue. Given that neurodivergent individuals often receive inadequate care, which does neitheraddress their specific needs nor the complexity that likely leads to poor health, these findings are of high clinical importance. Routine screening for neurodiversity and tailored patient care in the presence of heterogeneity and complexity should be considered in clinical practice to improve quality of life and grant fair access to healthcare provisions.

33) Abstract 1320
CLINICAL AND PSYCHOLOGICAL CHARACTERISTICS OF PATIENTS WITH ISCHEMIA AND NON-OBSTRUCTIVE CORONARY ARTERIES (INOCA) AND OBSTRUCTIVE CORONARY ARTERY DISEASE.

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Objective: Patients with ischemic cardiac symptoms and non-obstructive coronary arteries during diagnostic testing are referred toas 'Ischemia with no obstructive Coronary Arteries' (INOCA), which is predominantly seen in women. It is hypothesized that psychological distress is more prevalent in patients with INOCA. The study aimed to investigate psychosocial functioning and qualityof life in patients with INOCA compared to patients with obstructive coronary artery disease.

Methods: Participants (N= 202, mean age 65.4 ± 9.7, 52% women) were included from two studies, which examined, respectively, women with (recurrent) cardiac complaints without obstructive coronary artery disease (CAD) and patients referred for myocardial perfusion imaging. Patients were grouped according to the 'diagnostic criteria for microvascular angina' into INOCA (ischemia without obstructive arteries) versus CAD (obstructive CAD). Participants completed questionnaires assessing psychological factors, quality of life, and cardiovascular risk factors.

Results: Patients classified as INOCA (N=88) were more often women (77% vs 26%), younger (64 years vs 67 years),and more often higher educated (27% vs 14%) compared to patients with obstructive CAD (N= 114). In addition, INOCA patients more often reported a familial cardiac history and hypertension and reported less often smoking, hypercholesterolemia, and diabetes. INOCA patients had more often elevated anxiety scores on the General Anxiety Disorder questionnaire. No differences were observed for quality of life or wellbeing and the prevalence of reported depression, stress, and type D personality as compared to patients with obstructive CAD.

Conclusion: Patients with INOCA do not experience more psychological burden compared to patients with obstructive CAD except for anxiety-related symptoms. Differences in timing of measurement between the studies may have affected the outcomes.

34) Abstract 1321
CHARACTERIZING MEDICAL AND PSYCHOLOGICAL FACTORS ASSOCIATED WITH ANXIETY SYMPTOMATOLOGY IN ADULTS WITH CONGENITAL HEART DISEASE

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Background. Medico-technological progress has improved the survival rate of children with congenital heart disease (CHD). As a result, the population of adults with CHD is constantly growing. Among the few studies addressing the psychological health of these adults, high rates of anxiety disorders have been reported.

Objective. We aim to identify medical and psychological protective and risk factors associated with anxiety among adults with CHD, including illness severity, perception of illness, coping styles, and personality traits.

Methods. We recruited 240 adults followed at the Montreal Heart Institute (Québec, Canada) Adult CHD Center for a cross-sectional study from June 2019 to April 2021. They completed self-reported questionnaires about anxiety (Hospital Anxiety and Depression Scale [HADS-A]) and factors listed above, such as the Brief Illness Perception Questionnaire (IPQ), the Brief-COPE, and the Personality Inventory for DSM-5 (PID-5). We reviewed medical records to collect data such as the severity of the CHD diagnosis. We will further conduct multivariable linear and logistic regression analyses to address the research objective.

Results. We conducted preliminary descriptive results on half of the study's sample (*n*=120). 57% were women, and the mean age was 47 years old. 14% displayed clinically significant anxiety symptoms (HADS-A≥11), and 17% mild (HADS-A=8-10). 29% of CHD diagnoses were complex, 46% moderate, and 33% simple. Participants' mean IPQ score (M=37, *SD*=12), on a possible range of 0 (benign perception) 80 (threatening). The three main coping mechanisms were acceptance, active coping, and planning. For personality traits, the mean PID-5 score was 17 (*SD*=11, range: 0-75), with negative affect traits scoring the highest (*M*=6, *SD*=4, range: 0-15), and antagonism traits the lowest (*M*=2, *SD*=2).

Conclusion. Preliminary results show lower anxiety symptoms than previously reported. Participants' perception of their illness is aligned with the average CHD severity being moderate, used adaptive coping strategies, and had relatively low maladaptive traits. Further analyses will identify which factors are associated with anxiety in adults with CHD. A better understanding of modifiable factors, such as illness perception and coping strategies, can help guide future efforts to enforce protective factors or attenuate risk factors.

35) Abstract 1342
UNHEALTHY CULTURAL FOOD PERCEPTIONS ARE ASSOCIATED WITH GREATER DISORDERED EATING, LESS SOCIAL EATING, AND FEELINGS OF GUILT AND SHAME.

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Poor diet remains the largest contributor to disease, surpassing the combined risk of substance use, tobacco use, and risky sexual behaviors in morbidity and mortality. Accordingly, the USDA's dietary guidelines recommend limiting foods high in fat, sugar, and salt and altering how some cultural foods are traditionally prepared. Yet, qualitative research suggests that framing culturally significant foods as unhealthy may come with psychosocial costs.

Cultural foods are critical to social eating experiences and allow individuals to enact and reaffirm their cultural identities. Therefore, limiting cultural foods, however unhealthy they may be, could be difficult, if not harmful to wellbeing. The present study therefore investigated whether unhealthy cultural food perceptions were associated with negative consequences. We hypothesized that individuals who perceived their racial/ethnic group's cultural foods as unhealthy would report greater disordered eating, less social eating, and higher feelings of shame and guilt after unhealthy food consumption, controlling for covariates.

Method: Individuals *(N =*295) > 18 years who identified with a non-white, racial/ethnic group were recruited. Participants completed an online survey including demographic questions, the Culturally-Based Communication about Health, Eating, and Food (CHEF) scale, the Eating Disorder Examination Questionnaire-Short, the Social Eating scale, and a questionnaire on shame and guilt.

Results: Separate linear regression models were run predicting disordered eating, social eating, guilt, and shame from unhealthy food perceptions (CHEF). All models controlled for age, gender, sexual orientation, and income. Both adjusted and unadjusted models yielded significant results. Individuals with greater unhealthy cultural food perceptions reported greater disordered eating (Beta = .141, *p* = .001), greater guilt (Beta = .254, *p* = .010) and shame (Beta = .387, *p* <.001) after unhealthy food consumption, and less social eating (Beta = -.642, *p* = .016), above and beyond covariates.

Conclusion: Our findings show that viewing cultural foods as unhealthy is associated with maladaptive eating and feelings of guilt and shame. Future research should test whether targeting unhealthy cultural food perceptions may improve overall diet, thus ultimately lowering disease risk.

36) Abstract 1345
HABITUATION OF CARDIOVASCULAR REACTIVITY TO REPEATED STRESS: DESCRIPTIVE RESULTS FROM A STUDY USING LATENT PROFILE ANALYSIS

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Adaptation of the cardiovascular response to repeated stress varies widely between individuals and habituation—a decrease in stress responsivity—theoretically predicts better mental and physical health. However, consideration of heart rate (HR) or blood pressure (BP) adaptation in isolation is not ideal as HR and BP influence each other through various physiological mechanisms (e.g., the baroreflex). As such, the current study used latent profile analysis (LPA) to identify underlying latent clusters (or patterns) of reactivity across two repeated mental stress tasks to assess adaptation. Participants (*N* = 452, Mean age = 19.5yrs, 62% female) completed two 4-minute mental arithmetic stressors, each with its own baseline, in a single testing session. Heart rate, systolic (SBP), and diastolic (DBP) reactivity to each stressor was calculated using change scores (i.e., stress– baseline averages). Two LPAs without covariates were conducted—one for each stress task—using HR, SBP, and DBP reactivity as indicator variables. Overall, stress reactivity decreased across exposures. Five groups emerged in each LPA with four being common to both stress exposures. The largest group at each exposure was a typical group with reactivity values that mirrored the sample mean. The second largest group comprised individuals with a blunted reactivity profile. Two smaller profiles were also common to both exposures: one group that had exaggerated reactivity across all indicators and another that had exaggerated SBP and DBP coupled with "extremely" exaggerated HR reactivity. In the first exposure, a unique group characterized by exaggerated HR only emerged while during the second exposure a unique group that was "really" exaggerated across all indicators was found. When group assignments were compared across stress exposures, approximately 55% of individuals were categorized into the same profile across exposures suggesting habituation consistent with changes in the sample mean. Forty-five percent were categorized into a different profile upon second exposure. Reasons for being categorized into a different profile included no habituation, sensitization to stress, extreme habituation (e.g., habituating more than the sample mean), and differential habituation across HR/BP indicators. These results provide novel insights about individual variability in cardiovascular stress adaptation.

37) Abstract 1346

INTERACTIONS OF AGE AND SEX IN THE ASSOCIATION OF GLYCEMIC VARIABILITY WITH NEUROCOGNITIVE FUNCTION IN HEALTHY COMMUNITY-DWELLING OLDER ADULTS

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While type 2 diabetes is known to increase age-related cognitive decline, there remains a need to understand relations of glucose regulation to neurocognition before diabetes onset. An oral glucose tolerance test (OGTT) is a more comprehensive assessment of glucose regulation than either fasting plasma glucose or hemoglobin A1c levels. Thus, we examined an index of glycemic variability reflecting whole glucose excursion during OGTT and its association with neurocognition, as well as interactions by age and sex. Participants were 147 healthy community-dwelling older adults (mean (SD) age = 66 (7) years, 43% female, 90% White), who completed an OGTT. Blood samples taken at 0, 30, 60, 90, and 120 minutes were used to compute glucose Area Under the Curve (gAUC) using the Trapezoidal Rule. Neurocognitive tests assessed attention/working memory (Digits Forward and Backward), perceptuo-motor speed (Trails A), executive functions (Trails B, Stroop Color-Word Test), nonverbal memory (Wechsler Memory Scale-Revised (WMS-R) Visual Reproductions immediate (VRI) and delayed (VRD) recall), verbal memory (WMS-R Logical Memory immediate (LMI) and delayed (LMD) recall), visuoperceptual ability (Judgment of Line Orientation) and manual dexterity/motor speed (Grooved Pegboard (GP) Test).

Fasting glucose values before glucose load placed participants in the normoglycemic category (94.5 (9.9) mg/dL). At 2-hour post-load, 41 persons showed impaired glucose tolerance and 10 persons were in the diabetes range. Multivariable regression analyses adjusting for age, sex, education, race, smoking, alcohol, hypertension, waist-hip ratio, and depression revealed a main effect of gAUC for LMD (B = -.08, t(134) = -2.0 p = .049) such that higher gAUC was associated with lower verbal delayed memory scores. There was a significant three-way interaction of gAUC with age and sex for GP non-dominant hand (B = .001, t(134) = 2.2 p = .03) indicating that, in older men but not women, a pronounced glucose response was associated with worse GP non-dominant performance.

Results indicate a detrimental effect of higher glycemic variability on verbal delayed memory, and manual dexterity/motor speed in healthy older men. It is possible that repeated prolonged post-prandial glucose excursions contribute to cognitive aging, suggesting a need for early interventions aimed at reducing glycemic variability.

38) Abstract 1366
DAILY POSITIVE EVENTS AND WELL-BEING: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Daily positive events (also called uplifts or pleasant events) are relatively minor, favorable events that happen frequently in daily life and reflect transactions between the individual and their environment. Different research traditions starting in the early 1970s have conceptualized the occurrence of these positive events to confer benefits for health and well-being. However, no systematic summary of the links between positive events and well-being has yet been undertaken. The goal of this pre-registered systematic review and meta-analysis is to estimate the magnitude of the relationship between positive event occurrence and well-being. In this systematic review, 4312 papers were screened and 61 studies included. These papers reported 298 effect sizes on the link between positive events and a well-being indicator, such as positive and negative affect, life satisfaction, and self-esteem. Multi-level meta-analysis showed that

people who experienced more frequent positive events had higher well-being (r = .24, 95%-CI = [.20; .27], p < .001). Subanalyses of well-being constructs revealed that the links between positive events and positive indicators such as positive affect (r = .34, 95%-CI = [.30; 39], p < .001) or life satisfaction (r = .27, 95%-CI = [.23; .31], p <.001) were stronger compared to indicators of negative affect (r = -.05, 95%-CI = [-.09; -.02], p = .002) or distress (r = -.10, 95%-CI = [-.16; -.04], p < .001). Self-esteem, however, was also more weakly linked to positive events (r = .14, 95%-CI = [.01; .06], p = .03) compared to positive affect or life satisfaction. These findings highlight the substantial connection between person-environment transactions and a person's sense of well-being. The implications of this work for understanding person-environment interactions, positive vs. negative well-being, and clinical practice will be discussed.

39) Abstract 1375
ADIPOSITY AND THE RELATIONSHIP WITH CARDIOVASCULAR STRESS REACTIVITY IN YOUNG ADULTS

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Background: Adiposity has been associated with cardiovascular reactivity to acute psychological stressors. Evidence suggests the directionality of the relationship differs depending on age. Young children tend to have a positive relationship between adiposity and cardiovascular stress reactivity, while adults show a negative relationship between adiposity and cardiovascular stress reactivity. Few studies have investigated this relationship in young adult populations. Additionally, the relationship between adiposity and cardiovascular stress reactivity habituation has not been examined. **Aim:** To examine the relationship between adiposity and cardiovascular stress reactivity and cardiovascular stress reactivity habituation to acute stress in a young adult population. **Methods:** Participants were categorized into two groups: "normal" weight (BMI between 18.5 and 24.99; n=289; 65.7% White; 63.7% female; Mean [SD] age = 19.37 [0.90] years) and "overweight/obese" (BMI ≥ 25; n=147; 66.0% White; 59.9% female; Mean [SD] age = 19.73 [1.73] years). Cardiovascular activity and perceived stress measures were recorded before and during a mental arithmetic stress task. Averages for each cardiovascular variable (systolic blood pressure, SBP; diastolic blood pressure, DPB; heart rate, HR) were created for each phase (baseline, stress). **Results:** A series of mixed ANOVAs examining group (normal weight; overweight/obese) x time (baseline 1, stress 1, baseline 2, stress 2) demonstrated an overall main effect of time for all cardiovascular variables (higher during stress phases than baseline phases), but no group x time interactions. There was a statistically significant main effect for group for SBP, $F(1, 432) = 50.80$, $p < .001$, eta²= .105; participants in the overweight/obese group had higher SBP compared to the normal weight group. Mixed ANOVAs examining group (normal weight; overweight/obese) x time (Stress 1, Stress 2) demonstrated no statistically significant main effects or interaction effects for perceived stress. **Discussion:** In a young adult sample, cardiovascular stress reactivity and cardiovascular stress reactivity habituation were unrelated to BMI classification. However, since such measures have been shown to relate to stress responses in both younger and older populations, future research should examine why this intermediate age group is less impacted than others.

40) Abstract 1379
EXPLORING THE LINKS BETWEEN COGNITIONS, EMOTIONS, MOTIVATION, AND PHYSICAL ACTIVITY FOLLOWING TREATMENT FOR BREAST CANCER

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Background: Less physical activity is associated with risk for mortality and recurrence among survivors of breast cancer. Yet, many cancer survivors struggle to adhere to recommended guidelines. Some breast cancer survivors report a lack of motivation as a barrier to engaging in physical exercise, which may stem from elevated negative psychological processes, such as rumination and negative affect. We explored the associations between psychological processes, mindsets, motivation, and physical activity in breast cancer survivorship.
Methods: Adult breast cancer survivors (*N*=35) with a history of a stage 0-III breast cancer who completed treatment within 6 months – 3 years of study entry and reported a desire to improve their health behaviors were recruited via electronic invitations based on an electronic medical record query at UCSF, as well as online advertising. Participants completed self-report measures of rumination, negative affect, mindsets toward physical activity and their body, motivation (behavioral inhibition and behavioral activation reward responsiveness subscales), and the number of minutes of physical activity they did within the past week. We conducted linear regressions to examine associations between measures.
Results: Greater rumination was associated with greater behavioral inhibition (R^2 = .55, $F(1, 31) = 37.18$, $p < .001$) and greater negative affect was associated with poorer mindset toward physical activity (R^2 = .20, $F(1, 29) = 6.94$, $p = .014$). Poorer mindset toward physical activity was associated with less physical activity (i.e., sitting; R^2 = .22, ($F(1, 28) = 7.66$, $p = .010$) and poorer mindset toward the body was associated with less vigorous physical activity (R^2 = .31, $F(1, 20) = 8.50$, $p = .009$). We did not observe other statistically significant associations.
Conclusions: We found that rumination, negative affect, and mindsets toward physical activity and the body after treatment for breast cancer were linked to motivation for physical activity and self-reported engagement in physical activity. Further exploration of these processes as potential mechanistic targets for behavioral health interventions to improve physical activity among breast cancer survivors is warranted.

41) Abstract 1381
POSITIVE EMOTIONS AND PHYSICAL ACTIVITY LEVELS FROM YOUNG ADULTHOOD TO MIDLIFE: A 25-YEAR PROSPECTIVE STUDY

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Background
Positive emotions are linked with reduced risk of morbidity and mortality, perhaps because positive emotions are related to higher likelihood of engaging in healthy behaviors like physical activity. However, most evidence evaluating associations with physical activity is cross-sectional and cannot disentangle bidirectional relationships. With data from a racially diverse cohort, we tested if higher levels of baseline positive emotions were associated with higher levels of and slower declines in physical activity over 25 years.
Methods
Data were from the Coronary Artery Risk Development in Young Adults (CARDIA) Study. The sample included 3,969 Black and

White men and women. From 1990-1991 to 2015-2016, study participants completed a 4-item positive emotions scale seven times. Physical activity was also assessed seven times using the validated CARDIA Physical Activity History Questionnaire (Exercise Units [EU]) over the same period. Linear mixed effects models tested longitudinal associations between baseline positive emotions (standardized) and physical activity over follow-up (1992-1993 to 2015-2016). Secondary analyses examined if baseline physical activity was associated with subsequent positive emotions and if associations differed by sex, race, or income.

Results

Participants had an average physical activity level of 377.02 EU (SD=291.36) at baseline, which declined over time (β=-0.72 EU/year; 95% CI=-1.11, -0.33). Adjusting for baseline sociodemographics, health conditions, and negative emotions, each standard deviation increase in baseline positive emotions was associated with higher levels of activity at the subsequent assessment (β=17.27 EU; 95% CI=7.15, 27.39) and slower declines in activity over time (β=0.67 EU/year; 95% CI=0.26, 1.07). In contrast, each standard deviation increase in baseline activity levels was associated with greater positive emotions at the subsequent assessment (β=0.41; 95% CI=0.18, 0.63) but not with changes in positive emotions over time (β=0.005; 95% CI=-0.05, 0.005). Associations did not differ by sex, race, or income.

Conclusions

Findings across 25 years indicated that positive emotions precede greater physical activity and slower decreases in physical activity for Black and White adults. The reverse was not true. This suggests physical activity may be a mechanism by which positive emotions influence health.

42) Abstract 1400

THE INFLUENCE OF PERCEIVED THREAT, AFFECT AND STATE ANXIETY ON CORTISOL AND ALPHA-AMYLASE STRESS RESPONSES DEPENDING ON FOREIGN OR NATIVE LANGUAGE

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Objective: Considering the increasing number of migrants worldwide, the importance of speaking a foreign language comes to the fore. In previous research, lower acute stress responses were found for native compared to foreign language speaking. The present study focused on the differences in salivary cortisol and alpha-amylase (sAA) responses to the Trier Social Stress Test (TSST) in an immigrant sample. Further, the influence of perceived threat, negative affect and state anxiety were examined.

Method: Thirty-two participants (64.5 % female) between the age of 19 and 53 (mean = 30.68) from Hispanic America were tested (15 in Spanish, 17 in German). Participants gave six saliva samples and were randomized to a German or Spanish version of the TSST. State anxiety, negative mood, perceived threat and stress were measured using the STADI (State-Trait Anxiety Depression Inventory), the PASA (Primary Appraisal Secondary Appraisal) and the PANAS (Positive And Negative Affect Scale).

Results: A significantly higher stress response was found in the German condition for salivary cortisol ($F(2.73,79.06) = 3.47$, $p < .05$, $\eta_p^2 = .11$), but not for sAA ($F(5,145) = 0.08$, $p > .05$, $\eta_p^2 = .03$). Self-report showed significantly higher perceived threat ($t(29)= -2.21$, $p < .05$) and stress before the TSST ($t(29) = -2.08$, $p < .05$), as well as significantly higher negative mood ($t(30) = -2.70$, $p < .05$) afterwards in the foreign language condition. A moderation analysis was run to determine whether the interaction between language and state anxiety can predict the cortisol stress response. The overall model was significant ($F(3,28) = 3.55$, $p < .05$, $R^2 = 27.5\%$), the interaction effect was marginally significant ($t = 1.96$, $p = .06$, 95% CI[-0.00,0.05], $\Delta R^2 = 10.0\%$). In the Spanish condition, higher state

anxiety was associated with lower cortisol output following the TSST ($t = -2.55$, $p < .05$, 95% CI[-0.04,-0.00]).

Conclusion: Taken together, results showed a stronger stress response following the TSST for cortisol and subjective stress variables, such as threat and negative affect. For sAA, no differences between conditions were found. Higher state anxiety after the stressor was associated with lower cortisol responses in the native language condition only. This could be a sign for protective mechanisms of native language, even in situations experiencing high levels of anxiety.

43) Abstract 1402

AN EXPERIMENTAL INVESTIGATION ON THE EFFECTS OF THE MUSIC LISTENING STYLE ON PAIN AND STRESS

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Objective: Music listening is effective for pain and stress management, and music listening style may moderate this effect. While music empathizers (ME) focus on emotional aspects of music, music systemizers (MS) focus on structural aspects. Music listening styles might affect how individuals respond to different types of music regarding pain and stress, depending on gender.

Methods: Healthy participants (N=61; age: M=24.2, SD=3.89; four groups: male/female ME/MS) listened to different stimuli during a pain and stress test (cold pressor test) on three days with one condition each (day 1: researcher-selected music, day 2: participant-selected music, day 3: sound of lapping water, random order). Parameters of pain experience (pain intensity and pain tolerance) and stress systems (subjective acute stress, heart rate (HR), heart rate variability parameter RMSSD, salivary alpha-amylase (sAA) and salivary cortisol (sCort)) were repeatedly measured over time.

Results: Multilevel analyses showed significant four-way interaction effects (*Music listening style*Gender*Condition*Time*) for pain intensity (p=.001), subjective acute stress (p=.002), HR (p<.001), and RMSSD (p=.01). Post-hoc tests revealed for ME the highest pain intensity in the participant-selected music condition. In line with this, female ME perceived highest subjective stress and highest HR, whereas male ME perceived highest pain intensity, but lowest subjective stress and lowest HR in this condition. RMSSD was highest for both male and female ME for participant-selected music. For pain tolerance, neither interaction effect (p=.68) or main effects of music listening style (p=.83) or gender (p=.86) were significant. However, the main effect of condition was sig. (p<.001), with the highest pain tolerance for participant-selected music. The four-way interaction effect was not sig. for sAA (p=.11) or sCort (p=.75), in contrast to the main effect of time (sAA p<.001, sCort p=.01).

Conclusion: The study provides new insight into the role of music listening styles in individual differences in pain and stress management. Especially female ME display stronger pain intensity and stress responses in the context of participant-selected music. The music listening style should be considered as an important modulator for individualized pain and stress management programs and further be investigated in a clinical context.

44) Abstract 1423
EXPLORING LATE DIAGNOSIS OF AUTISM, CAMOUFLAGING BEHAVIOURS AND GENDER

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Background
There is a significant gender/sex bias in the diagnosis of autism, whereby the male-to-female ratio is reported as 4:1. Autistic characteristics in females may be underrecognized using current diagnostic criteria, and as such, late diagnosis and missed diagnosis of autism are predominantly associated with females. It is starting to be understood that autistic females exhibit camouflaging behaviours, and that this can contribute to psychological distress including anxiety and depression. Thus, this study will explore whether camouflaging behaviours are associated with later diagnosis, and if this association is related to gender identity or sex. This study is being undertaken by a medical student as part of an independent research project, and the results will be collected and analysed by 21st of March 2022.

Methodology
In this observational cross-sectional study, we are recruiting adults with a formal diagnosis of autism spectrum disorder (ASD). Participants are asked to complete an online survey that includes the camouflaging autistic traits questionnaire (CATQ) and questions regarding age of diagnosis, gender identity at the point of diagnosis, current gender identity and sex assigned at birth. Firstly, the correlation between CATQ score and age of diagnosis will be analysed. Sub-analysis will then include assessing whether this correlation is significantly different in groups based on gender identity, sex assigned at birth and gender congruence.

Hypotheses
Hypothesis 1: A higher CATQ score, indicating the presence of more camouflaging behaviours, will be associated with a later diagnosis of ASD.

Hypothesis 2: The correlation between CATQ score and age of diagnosis will be particularly associated with participants whose gender identity is female.

Outlook
This study will contribute to a body of research about an aspect of autism that is not completely understood: gender and sex in autism and camouflaging behaviours. This study may broaden our understanding of how gendered expectations of behaviour or biological aspects of sex may shape the presentation of autism. Hence, how this may lead to barriers in diagnosis and subsequent barriers to the access of health and social care. These findings can then act as a foundation for a discussion around the inadequacies of the current diagnostic criteria for autism for all gender identities and sexes.

45) Abstract 1426
MY SLEEP OUR SLEEP: DYADIC SLEEP INTERVENTION FOR ADULT CANCER PATIENTS AND THEIR SLEEP-PARTNER CAREGIVERS

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Sleep disturbances are common among both adult cancer patients and their caregivers. To our knowledge, no studies have evaluated the mutual influence of sleep disturbances between cancer patients and their sleep-partner caregivers, and the efficacy of CBT-I for both patients and their caregivers simultaneously. This study aimed to pilot test the feasibility, acceptability, and preliminary efficacy of the newly developed dyadic sleep intervention, My Sleep Our Sleep (MSOS: NCT04712604).

Adult patients who were newly diagnosed with a gastrointestinal cancer and their sleep-partner caregivers ($n = 20$, 62.6 years old, 61.5% female patients, 15.4% Hispanic, 25.4 years in relationship duration), both of whom had at least mild levels of sleep disturbance (PSQI $\geq$ 5), were enrolled. MSOS intervention consists of four 1-hour weekly sessions delivered using Zoom to the patient-caregiver dyad. We were able to contact 77.5% (131/169) of patients who met the eligibility criteria by medical records. Of those, 47.3% (62/131) were ineligible after screening. Of those eligible, 92.9% (13/14) enrolled within 4 months. 23.1% (3/13) withdrew due to cancer recurrence or becoming too busy. Participants reported high satisfaction in 8 domains (average 4.76; 1: strongly disagree, 5: strongly agree). All participants agreed that the number of sessions (4), interval (weekly), and delivery mode (Zoom) of the intervention were optimal. Participants preferred attending all sessions with their partners (as opposed to alone or with someone else). Both patients and caregivers reported improvements in sleep quality after completing the MSOS intervention: Cohen's $d = 2.92$ and 1.79, respectively.

Results support the feasibility and acceptability, and provide the preliminary efficacy of MSOS for adult gastrointestinal cancer patients and their sleep-partner caregivers. Findings suggest that testing the efficacy of MSOS, an innovative and timely intervention for couples/dyads who are facing cancer, in an RCT with a larger sample is warranted. The knowledge from this project may have substantial implications for traditional sleep research and practice with medical populations, shifting the emphasis from individual- to dyad/family-based approaches.

46) Abstract 1443
VALIDATION OF A NEW ELISA METHOD TO ASSESS CORTISOL LEVELS IN HUMAN MILK

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Cortisol is a commonly used marker of the body's stress response system and is typically measured non-invasively via saliva. Recently, there has been a growing interest in cortisol levels in human breast milk amongst psychobiologists, as milk cortisol levels have been found to predict infant growth, obesity risk, and temperament. However, current methods to measure milk cortisol rely on radioimmunoassay methods (RIA) that require handling hazardous radioactive material and specialized equipment not found in many Psychology wet labs. Here, we sought to test if a commonly used and cost-efficient Enzyme-Linked Immunosorbent Assay (ELISA) kit optimized for use in human saliva (Salimetrics, Inc.) could be used to measure cortisol in human milk. To test this, 24-hour milk and saliva samples from 8 mothers were collected at 1-week, 1-month, 3-months and 6-months ($N = 87$ milk samples total and N=78 saliva samples total) postpartum and assayed following the directions of the Salimetrics ELISA kit, with the addition of a simple defatting pre-processing step in milk samples. In short, milk samples were thawed to room temperature, centrifuged for 30 minutes to separate out the fat layer, and then the aqueous portion of the milk was pipetted into the ELISA plate according to kit directions. A sub-sample (N = 20) of human milk samples were sent to an independent lab to assess inter-lab reliability. We found that all milk cortisol levels were within the detection limit of the ELISA kit. Typical diurnal cortisol patterns could be detected in milk samples from all 8 women at all postpartum time points (r^2 ranged from 0.44 to 0.82), in line with previous work utilizing the gold-standard RIA methods showing that cortisol levels are much higher in morning milk than in evening milk. Further, mothers' salivary cortisol levels were highly correlated with milk cortisol levels (Pearson's $r = 0.648$, $p < 0.001$) and we found high inter-laboratory reliability ($r^2 = .96$). We conclude that ELISA

methods can be used to reliably measure cortisol concentrations in human milk.

47) Abstract 1460
COPING STRATEGIES MODERATE THE ASSOCIATION OF TOTAL BODY ADIPOSITY WITH PRECLINICAL CARDIOVASCULAR DISEASE RISK INDICES

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Background: Excess body fat markedly increases cardiovascular disease (CVD) risk, which remains a leading public health concern given the high prevalence of adults classified as overweight or obese in the United States. Thus, the present study examined whether cognitive and behavioral coping strategies moderate the relationship between total adipose tissue (TAT) mass and traditional CVD risk indices.

Methods: The study enrolled 143 adults (65% male, 18-55 years), of which 39.2% were classified as overweight and 41.3% as obese. Coping strategies were assessed using the Brief COPE inventory. TAT was measured using computed tomography. CVD risk indices included systolic (SBP) and diastolic (DBP) blood pressure, insulin sensitivity (IS), triglycerides (TG), high-density lipoprotein (HDL) and total cholesterol. Structural equation modeling analyzed whether a latent factor, adaptive coping (indexed by active, emotional support, positive reframing, planning, and acceptance), as well as denial, behavioral disengagement, and distraction moderated the relationship between TAT and CVD risk indices, controlling for sex, age, education, and aerobic fitness.

Results: The final model (χ^2=29.83, p=.19) had good fit (CFI=.99, RMSEA=.041). There were significant direct paths from TAT to the CVD risk indices, in the expected directions. Greater adaptive coping weakened the positive relationship of TAT with SBP (B=-.24, p<.02) and DBP (B=-.22, p<.04). Moreover, greater adaptive coping strengthened the negative relationship between TAT and HDL (B=-.27, p<.002). Analyses also indicated that greater behavioral disengagement strengthened the positive relationship between TAT and TG (B=.22, p<.09), and greater distraction strengthened the negative relationship between TAT and IS (B=-.19, p<.05). There was no moderation effect of denial coping. In sum, findings indicated that persons with adaptive coping displayed lower BP and HDL, at elevated levels of body fat, and that persons with behavioral disengagement and distraction displayed higher TG level and insulin resistance, respectively, at elevated levels of body fat.

Conclusion: Findings suggest distinct paths through which adaptive and maladaptive coping may influence the relationship between adiposity and CVD risk, informing potential avenues for clinical intervention aimed at diminishing CVD risk in individuals with obesity.

48) Abstract 1464
INDIVIDUAL COMPARED TO DYADIC DELIVERY OF YOGA INTERVENTION FOR CAREGIVERS OF GLIOMA PATIENTS: PRELIMIARY FINDINGS FROM A 3-ARM PILOT RANDOMIZED CONROL TRIAL

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Background: Caring for a loved one with a high-grade glioma presents an overwhelming and well documented physical, emotional, and economic burden. While the efficacy of mind-body interventions is increasingly recognized, questions on efficient delivery methods persist and the potential impact on financial burden is rarely assessed. Therefore, this pilot RCT compared the preliminary efficacy of a dyadic versus individual yoga intervention for family caregivers, including impact on financial burden. Methods: Patients with high-grade glioma and their family caregiver (n=76 dyads) completed self-report questionnaires on quality of life (QoL) (SF-36), caregiver burden (CRA) including financial burden, somatic symptoms (MDASI), and sleep (PSQI) at baseline and were randomized to one of 3 arms: 1) dyadic yoga (DY) where caregivers and patients participated together; 2) caregiver only yoga (CY) where the caregiver attended sessions individually; or 3) care as usual (UC). Yoga programs were delivered over 15 sessions either in-person or via Zoom around patients' treatment schedule. All arms were re-assessed post and 3-mo post-treatment. Results: At baseline, caregivers' (80% female; 78% non-Hispanic White; mean age=53 yrs) report of financial burden was associated with greater somatic symptoms (r=.31, p<.01), affective symptoms (r=.30, p=.01), and poorer overall sleep quality (r=.23, p=.055). At a trend level, attendance in the DY (n=23) was higher than in the CY (n=22) arm (session mean: DY=12.23, CY=9.00; *p*=.06, *d*=.57), yet a clinically significant effect size was found for improved QOL in favor of the CY over the DY group (means, CY=49.45, DY=44.45; F=3.58, *p*=.07; *d*=.67). Post-treatment, caregivers in the CY group also reported less caregiving-related financial burden than the UC group (means: CY=2.79; UC=3.21; F=3.32, p=.08; d=.35). Conclusion: Caregivers in the CY arm at post-treatment experienced better mental QoL and less caregiving-related financial burden compared to DY and UC comparison arms. In efforts to most effectively and efficiently care this vulnerable caregiver population, individual, rather than dyadic delivery, may be a superior approach to delivering yoga interventions. Future study with larger samples is needed to replicate these findings and explore potential implications for caregiver's physical, emotional and financial burden.

49) Abstract 1468
HPA-AXIS VARIATION AND ADVERSE CHILDHOOD EXPERIENCES; EXPERIENCING SEXUAL TRAUMA IN CHILDHOOD RELATES TO LOWER HAIR CORTISOL IN ADULTHOOD.

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A central component of the stress response is the HPA axis where stress can manifest as *hyperactivity* or a *blunted* HPA axis response. The adverse childhood experiences (ACEs) questionnaire explores early life trauma which has an impact on HPA axis function. This study explored the types of trauma, age of trauma, and possible critical stages of development that impact different types of HPA axis function. **Method:** 84 Participants were recruited, completed an ACE questionnaire, and provided 1 hair sample and 2 saliva samples for assessing cortisol. The ACE questionnaire was modified to include age and duration at which each ACE was experienced. Participants were randomly assigned to either a stress group that was presented with an anticipated stressor, or a control group that was not presented with an anticipated stressor. The saliva samples were collected before and after experiencing their assignment group. **Results:** No significant relationships were found between stressor, ACE score and cortisol reactivity. Independent sample t-tests compared hair cortisol levels of those who endorsed each of the indices and those who did not. Sexual trauma was the only type of trauma that was significantly related to hair cortisol. Years sexual abuse occurred was related to blunted hair cortisol with the age group of 5-7 being the only age bracket related to lower hair cortisol. **Discussion:** Sexual trauma was related to blunted hair cortisol, with specific considerations for the ages 5-7 pointing to a potential critical stage of development. With diversity in how cortisol results from HPA axis activation, this

information suggests it's necessary to consider the heterogeneity of stress responses potentially presenting as both hyperactive and blunted function of the HPA axis, while simultaneously considering the type, quantity and age of trauma experienced.

50) Abstract 1477
NEURODIVERGENT CHARACTERISTICS ARE ASSOCIATED WITH VARIANT CONNECTIVE TISSUE FEATURES AND THIS RELATIONSHIP IS MEDIATED BY DIFFERENCES IN SENSORY PROCESSING

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Introduction: There is increasing recognition of the relationship between variant connective tissue (expressed as joint hypermobility and encompassing hypermobility spectrum disorder (HSD) and hEDS) and neurodivergence (including Autism and ADHD). However, potential mechanisms that underlie co-occurrence of HSD/hEDS and neurodivergent conditions are poorly understood, though differences in interoceptive processing are shared.Our aim was to explore neurodivergent characteristics in a sample of hypermobile individuals and determine associations with the number of connective tissue features.

Method: 113 individuals underwent eligibility assessment for a study of joint hypermobility and anxiety (ADAPT; ISRCTN17018615). Hypermobility was assessed using JHS criteria and 2017 hEDS criteria and the number of connective tissue features determined by criterion 2A of hEDS diagnostic criteria. Participants completed the Ritvo Autism Asperger Diagnostic Scale-Revised to quantify autistic characteristics and the Wender Utah Rating Scale to quantify characteristics of ADHD. No participant had a prior diagnosis of Autism or ADHD. Interoceptive sensibility was assessed using the Porges Body Perception Questionnaire.   Mediation analysis was conducted according to Hayes Mehtod

Results: All participants scored 2 or more on the five-part questionnaire for identifying hypermobility of which 58 met criteria for hEDS. 18% scored above threshold for suspected ADHD and 47% scored above threshold for suspected Autism. 60% scored above threshold in the sensory motor domain of the Autism characteristic measure. The number of both autism and ADHD features correlated significantly with the number of connective tissue features recorded. Both independently correlated with interoceptive sensibility. Mediation analyses demonstrated significant indirect effect of interoceptive sensibility on the relationship between number of connective tissue features and neurodivergence.

Discussion: These results add to evidence linking variant connective tissue to neurodivergence, specifically to sensory processing differences. This study provides strong rationale for screening. Our results also provide insight into the processes underlying this relationship, which maybe important for informing personalised interventions for people with hypermobility and neurodivergent characteristics.

51) Abstract 1494
GENDER, HEART RATE VARIABILITY AND EMOTION REGULATION: A FOCUS ON VARYING FACETS OF EMOTIONREGULATION

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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 those higher in HF-HRV more effectively regulate their emotions. Among gender, men and women differ in resting HF-HRV such that women typically exhibit higher HF-HRV in comparison to men. Importantly, research has showed lower resting HRV to predict greater self-reported difficulties in emotion regulation (Williams et al., 2015; Visted et al., 2017), and that this association is stronger in women compared to men (Williams et al., 2018). The goal of the current investigation was to extend our recent results (Williams et al., 2018) by focusing on gender differences in the association between resting HF-HRV and various facets of emotion regulation. In 363 undergraduate student participants (207 women, mean age = 19.34), resting HF-HRV (Task Force, 1996) was assessed for a five-minute baseline. Participants then completed the 36-item Difficulties in Emotion Regulation Scale, designed to assess participants' daily difficulties in emotion regulation in 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. Results found resting HF-HRV to be significantly associated with only impulse control difficulties in men (r = -.202, p = .011); no other subscales reached statistical significance in men (each p > .08). In women, results showed a significant negative relationship between HF-HRV and all subscales (each p < .017) with the exception of emotional awareness (r = -.085, p = .223). These results extend our prior report (Williams et al., 2018) by suggesting a more multifaceted association between HF-HRV and difficulties in emotion regulation in women compared to men, which may account for aforementioned gender differences in the link between resting HRV and difficulties in emotion regulation (Williams et al., 2018).

52) Abstract 1503
PERCEIVED PSYCHOLOGICAL STRESS AND THE LONGITUDINAL PROGRESSION OF SUBCLINICAL ATHEROSCLEROSIS

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Perceived psychological stress confers prospective risk for clinical cardiovascular outcomes in patient samples. At issue in the present study was whether perceived psychological stress likewise relates to the progression of subclinical cardiovascular disease over multiple years in an otherwise healthy sample of midlife adults. Participants were community-dwelling, midlife adults (N = 331, aged 30-51, ~50% women, ~ 30% non-white) who were screened to exclude those with clinical cardiovascular, respiratory, metabolic and other chronic illnesses, as well as those taking psychotropic, cardiovascular, lipid, and glucose control medications. At baseline and then again at follow-up an average of 3 years later (1.6–7.1 year follow-up range), participants completed the 10-item Perceived Stress Scale (PSS), and they underwent ultrasonography for the assessment of carotid artery intima-media thickness (CA-IMT) as a surrogate indicator of subclinical atherosclerosis. At baseline and at follow-up, participants completed protocols for the assessment of waist-to-hip ratio, HDL cholesterol (in mg/dL), fasting glucose (in mg/dL), seated blood pressure (in mmHg), triglycerides (in mg/dL), and total cholesterol (in mg/dL). Of the 331 participants who completed the baseline assessments, 268 had complete longitudinal data available for analysis. Regression models showed that the change in PSS score from baseline to follow-up was positively associated with the corresponding change in CA-IMT, beta = 0.138, p = 0.025, 95% CI [.0002, .003], with covariate control for the change in age and variable length of follow-up across participants. Here, the change in PSS score accounted for approximately 3.5% of the corresponding change in CA-IMT, F (3, 264) = 3.21, p = 0.02. Cardiometabolic risk indicators did not statistically moderate this longitudinal association. These longitudinal findings suggest that increases in psychological stress in midlife relate to corresponding increases in subclinical atherosclerosis. Whether direct effects of stress physiology or indirect effects of stress coping behaviors account for these longitudinal associations remain to be tested.

53) Abstract 1509
HEART RATE VARIABILITY AND SELF-REPORTED ANXIETY: THE INFLUENCE OF GENDER

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Resting heart rate variability (HRV) is an index for self-regulation, for example, emotional regulation (Williams et al., 2015). Lower resting HRV is linked with psychopathology, such as anxiety (Beauchaine & Thayer, 2015). In this regard, literature indicates women tend to report higher levels of anxiety and have a higher prevalence of anxiety disorders compared to men (McLean et al., 2011). Paradoxically, women show higher resting HRV compared to men (Koenig & Thayer, 2015). However, research has yet to explore gender differences in the association between self-reported anxiety and resting HRV. Therefore, this study aims to explore how gender moderates the relationship between anxiety and HRV in 411 participants (219 women, mean age = 19.55, SD = 2.29). Resting HRV was first measured during a five-minute baseline period via an electrocardiogram. Root mean square of successive differences (RMSSD) was calculated and used as a valid and reliable index of HRV (Task Force, 1996). Trait anxiety was then assessed via the Spielberger 20-item Trait Anxiety Inventory (STAI-T; Spielberger, 1983). As expected, lower resting HRV was associated with higher trait anxiety in the full sample ($r = -.190$, $p = .001$). Gender moderated this association (B= 13.93 (SE = 7.75), $p = .073$) such that the association was significantly stronger in women (B= -6.11 (SE = 1.51), $p < .001$) compared to men (B= -2.78 (SE = 1.39), $p = .046$).These data are in line with prior reports suggesting gender matters in the association between resting HRV and self-reported psychological factors, especially as it relates to emotion-based factors (Spangler et al., 2021; Williams et al., 2018). Overall, these suggest a closer link between emotion regulation ability, as indexed by resting HRV, and self-reported anxiety in women compared to men, with implications for psychophysiological well-being.

54) Abstract 1510
CONFRONTING THE POTENTIAL ROLE OF YOGA IN THE MOLECULAR PROFILE OF RURAL HIGH-RISK WOMEN FOR DIABETESE: A PILOT STUDY

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Background and purpose: The beneficial impact of Yoga have been proven to be shown through previous studies. The mind-body practices like Yoga have an ameliorating effect on diabetes and prediabetes. The majority of prior published literature focused their attention on the glucose parameters in diabetic and prediabetic pathology. The purpose of the present pilot study is to explore the effect of AYUSH-approved Diabetic Yoga Protocol (DYP) on selected angiogenesis and neurogenesis markers in high-risk rural women for Diabetes.
Methods: Total 15 high-risk women for Diabetes were selected from rural area of Chandigarh, for a 3-month DYP intervention. The pre-post single group experimental research design was used for the inquiry. The changes in angiogenesis, neurogenesis parameters, and leptin were assessed at baseline and after 3 months of DYP intervention.

Results: The result of the present study revealed that after 3 months of DYP intervention the statistically significant improvements were noticed on serum VEGF levels (p=0.039). The improvements in angiogenin and BDNF levels were also seen after DYP practice.
Conclusion: The results highlight the potential role of DYP on cellular growth and neuronal survival.
Keywords: Diabetic Yoga Protocol, Indian Diabetes Risk Score, Prediabetes, angiogenesis, neurogenesis.

55) Abstract 1515
RELATIONSHIP BETWEEN INTEROCEPTION AND EMOTION REGULATION IN DAILY LIFE

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Background
Interoception refers to the ability to perceive internal bodily sensations, which is considered crucial for emotion processing and regulation (ER). For example, interoception was related to more frequent use ER strategies such as cognitive reappraisal. Until now, interoception and ER were assessed using either performance-based measures, which lack ecological validity, or retrospective questionnaires, subject to recall biases. Those limitations can be reduced by employing ecological momentary assessment (EMA). So far, no study used EMA to measure interoception. Therefore, the present study aims to (a) develop items to measure momentary self-reported interoception and (b) investigate the relationship between interoception and ER in daily life.
Methods
For 7 days, 150 participants received 10 semi-random prompts per day to complete questions about interoception and ER strategy use. Momentary interoception enquired about the awareness of neutral bodily sensations from different domains (e.g., heartbeat, respiration, sensations in stomach) in the last 5 minutes. Additionally, participants completed a 7-day recall and trait measures. Overall compliance with EMA was 88%.
Results
Correlations were used to measure the strength of associations between interoception and ER (Reappraisal, Suppression, Distraction, Acceptance, Rumination, and Sharing) for momentary, 7-day recall, and trait measures. Correlations between momentary interoception and all ER strategies except for Acceptance were significant and ranged between $r = .36$ and $r = .43$. Correlations for 7-day recall and trait measures were small ($r = .08 - .25$ and $r = .02 - .33$, respectively), and the largest associations were observed with reappraisal.
Discussion
Findings clearly show that the strength of the association depended on the self-report method, with the strongest associations appearing for momentary measures. Interoception was related to an increased used of almost all ER strategies, with the most consistant association observed with reappraisal. Interoception might facilitate the use of all ER strategy because perceiving bodily changes might ease their modulation, regardless what strategy is used. Future research should explore whether interoception can lead to more successful ER, such as down-regulation of negative emotions.

56) Abstract 1526
THE RELATIONSHIP BETWEEN PEDIATRIC ADHD SYMPTOMS AND ASTHMA MANAGEMENT AND OUTCOMES IN MINORITY POPULATIONS

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Purpose: Children with co-morbid ADHD and asthma are at an increased risk for adverse health outcomes and reduced quality of

life. It is unclear what the mechanisms are that contribute to these outcomes. The objective of this study was to examine if ADHD symptoms in children with asthma were associated with asthma medication use patterns, including controller medication adherence and quick-relief medication use.

Methods: We conducted a secondary analysis of data from a behavioral interventional for Black and Hispanic children ages 10-17 with asthma. The current study utilized data that were collected on participants prior to the start of the behavioral intervention. Study participants were recruited from pediatric asthma clinics in the Bronx and completed the Conners-3AI assessment for ADHD symptoms at baseline. Asthma medication use data were collected via electronic devices fitted to participants' asthma medications. Other outcome measures included the Asthma Control Test (ACT), self-reported healthcare utilization questions, and pulmonary function as measured by spirometry testing.

Results: The study sample consisted of 302 participants, with 39.1% identifying as Hispanic, 35.6% as Black, and 14.9% as mixed race. The average age of the pediatric participants was 12.8, with the majority of participants meeting criteria for moderate (45.1%) or severe (31.9%) persistent asthma. Amongst the study sample, increased ADHD symptoms were associated with reduced Inhaled Corticosteroid medication adherence (β = -.19, SE = .13, p=.01) and Leukotriene Receptor Antagonist medication adherence (β = -.21, SE = .18, p=.02). ADHD symptoms were not associated with quick-relief medication use, health care utilization, self-reported asthma control, or pulmonary function.

Conclusions: ADHD symptoms were found to be associated with reduced asthma controller medication adherence. Asthma medication adherence may play a key role in the relationship between ADHD symptoms and asthma outcomes in minority children.

Key Words: asthma, ADHD, minority groups, medication adherence

57) Abstract 1527
PREDICTION OF STRESS COPING CAPABILITIES FROM NIGHTLY HEART RATE PATTERNS USING MACHINE LEARNING

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Objective: Stress is related with short- and long-term alterations in stress systems, including hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system (SNS), with altered activation levels of heart rate (HR) and heart rate variability (HRV). While it is well established that stress during the day can affect sleep quality, less is known about how it affects stress systems during night. We assume that stress coping strategies can have an impact on how stress carries over into the night and that individuals with bad coping mechanisms show elevated activation of stress systems during sleep.

Methods: We collected the electrocardiogram (ECG) of n=21 healthy participants (52% female) aged 22.9±1.8 years (M±SD) on two consecutive nights during sleep and the first hour after awakening. We assessed stress coping capabilities the next day using the German version of the Stress Coping Questionnaire (SVF) consisting of 120 items that assess different positive (SVF-Pos), like distraction or stressor devaluation, and negative coping strategies (SVF-Neg), like escape or social distancing. We trained machine learning-based regression models on HR(V) features extracted from the ECG to predict the SVF-Pos and SVF-Neg subscales, respectively. We optimized model hyperparameters via grid-search within a nested 5-fold cross-validation to assert model generalization.

Results: Overall, individuals with higher SVF-Neg scores showed higher SNS activity during night, whereas higher SVF-Pos scores indicated lower SNS activity. The best-performing regression model (random forest regressor) achieved a mean absolute error (MAE) of 1.58±0.71 (M±SD) for predicting the SVF-Pos subscale (range: 6.0-30.0; range in examined population: 11.1-22.7). Accordingly, prediction of the SVF-Neg subscale was achieved with a MAE of 2.81±1.52 (range: 6.0-30.0; range in examined population: 10.3-24.8).

Discussion: Our findings indicate an association between nightly HR(V) and the individual's capability of coping with stress. This provides further information about how stress influences sleep and might be used for tailored intervention and feedback on successful stress coping. To generalize these preliminary findings, future work needs to include more participants from a non-homogeneous group and should control for the overall level of chronic stress.

58) Abstract 1531
EXPLORING THE EFFECTS OF SSRI AND SNRI ANTIDEPRESSANT TREATMENT ON ALLOSTATIC LOAD IN A SAMPLE OF MEN AND WOMEN SEEN AT A PSYCHIATRIC OUTPATIENT CLINIC

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Introduction: Heterogeneity is an important barrier for accurate diagnosis and selection of appropriate pharmacological treatment regimens for men and women who suffer from a variety of psychiatric disorders. Moreover, men and women do not show similar treatment response profiles to common antidepressant medications, like selective serotonin reuptake inhibitors. Researchers have tried to develop biologically informed methods to predict treatment outcomes in psychiatric populations. However, these methods rarely take sex differences into account. The allostatic load model is promising to better explain heterogeneity in pharmacological treatment response profiles of men and women. By measuring multiple allostatic load biomarkers, it is possible to screen for medical comorbidities and monitor the effects of pharmacological interventions, and how those may differ as a function of sex. This preliminary report aimed to explore the effects of different commonly prescribed antidepressants on allostatic load in a sample of men and women seen at an outpatient clinic.

Methods: Participants were psychiatric patients who were prescribed with antidepressant medications (*n*=118) at an outpatient clinic in Montreal, Canada. Allostatic load was measured using 12 biomarkers that reflect neuroendocrine (cortisol), cardiovascular (systolic and diastolic blood pressure, heart rate) and metabolic (sodium, glucose, creatinine, total cholesterol, high-density lipoprotein and low-density lipoprotein cholesterol, triglycerides, body mass index, waist-to-hip ratio) function. Psychiatric diagnosis and medication prescriptions were done by a psychiatrist.

Results: Our preliminary results show that individuals who used serotonin and noradrenalin reuptake inhibitors (*n*=81) had higher levels of allostatic load when compared to those who used selective serotonin reuptake inhibitors (*n*=37). Moreover, this effect seemed to be higher among men when compared to women.

Conclusion: Our exploratory and preliminary results may provide important insights for future studies investigating sex-specific effects of pharmacological treatment on physiological and psychosocial functioning.

59) Abstract 1555
CORTISOL AS A MODERATOR IN THE RELATION BETWEEN STRESS AND SYMPTOMS OF DEPRESSION

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It has been suggested that high exposure to stress and overproduction of daily cortisol is associated with increased risk of developing disease and mental health disorders, like depression. Our study uses cross-sectional and real-world measures to examine if higher levels of cortisol influence (i.e., strengthen) the link between perceived

stress and symptoms of depression. A cohort of 152 individuals aged from 20 to 54 years old took part in our study. We obtained baseline measures of depressive symptoms, perceived stress, and salivary cortisol. Average area under the curve (AUC) of cortisol was also calculated via four times/day samples over five days in real-world settings. We hypothesized that higher levels of cortisol would moderate (strengthen) the association between stress and depressive symptoms. While surprisingly there was no correlation between baseline cortisol and perceived stress or depressive symptoms, we found that baseline cortisol interacted with perceived stress: higher levels of perceived stress and cortisol were associated with higher depression symptoms as compared to participants with lower cortisol levels ($\beta = 1.39$, $p = .002$). No main effects or interactions were found with cortisol AUC averaged over five days. Future studies should examine physiological parameters and daily stress reactivity measures that may play a role in the link between stress and cortisol production in real-world environments. Based on the interaction between stress and baseline cortisol, we provide further evidence on the role of physiological allostatic markers in mental health outcomes, and highlight one way these may play a role in the development of disorders.

Keywords: stress, depression, cortisol, real-world settings.

60) Abstract 1558
THEORY AND IMPLICATIONS OF ANXIETY AND FEAR OF CARDIORESPIRATORY SENSATIONSIN PAIN AMONG ADULTS WITH CONGENTIAL HEART DISEASE

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Objective: Living with congenital heart disease (CHD) can be complex, and patients usually require lifelong medical management. About one-third of adults with CHD experience pain of moderate severity daily. Unfortunately, research has yet to explicate pain and its persistence in CHD. Two primary hypotheses confirmed if emotion had a role in pain and were based on a CHD model (White, 2008): We theorized 1) medical (prior surgeries, severity of CHD) and psychological risk factors (depression, anxiety) would relate to pain status, and 2) cardiorespiratory fear would augment the impact of risk factors on pain status.

Method: Eligible outpatients diagnosed with CHD receiving care at a university-affiliated center for CHD ($N = 80$; 76% response rate) participated in a cardiac medical evaluation, cognitive evaluation, self-report questionnaire, and consenting to a medical record review. Multivariate hierarchical regression was applied to independent and combined predictors of pain.

Results: A total of 33% of patients reported at least moderate pain daily. Anxiety, depression, and cardiorespiratory fear were correlated with pain, $p < .01$. Regression analyses revealed two interactions. Cardiorespiratory fear interacted with both Age and Anxiety, Age X ASI-CF, BAI X ASI-CF. Simple slopes revealed the cardiorespiratory fear and pain status relationship was most prominent at advanced ages, and the relationship decreased as a function of age. For the BAI X ASI-CF interaction, all slopes decreased significantly as a function of anxiety-cardiorespiratory fear. The steepest slope was among those with the lowest cardiovascular fear (slope = -2.32), and high anxiety in this group predicted a significant decrease in pain status (by -6.910 points) at each level of the fear condition. When cardiorespiratory fear was in the middle range or higher, the intercept was lower and the slope more modest, suggesting anxiety relates less to pain at higher levels of cardiorespiratory fear, or the inverse.

Discussion: Pain was prevalent and impairing among one-third of the CHD patients. Consistent with theory, findings reveal anxiety, a higher order cognitive process, and the basic emotion of fear (cardiorespiratory fear) are both associated with pain among adults

with CHD. Implications for screening and potential methods of alleviating the pain are discussed.

Figure 1

Simple Slopes of Cardiorespiratory Fear and its Interaction with Age (1a) and Anxiety (1b) on Pain Status
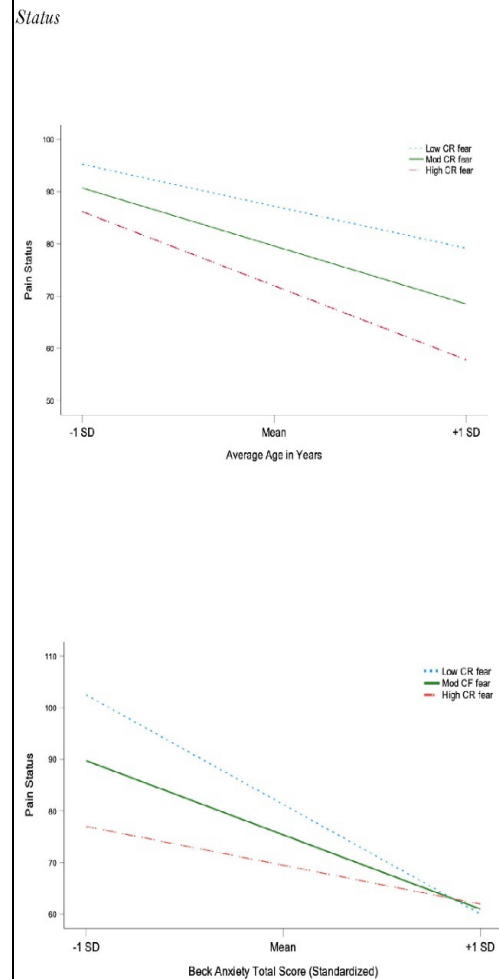
61) Abstract 1569
SUBJECTIVE AWARENESS OF POST-STROKE COGNITIVE DEFICITS EXPLAINS UNIQUE VARIANCE INDEPRESSION SYMPTOMS

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Background: Nearly one-third of stroke survivors experience depression symptoms. Greater awareness of cognitive deficits post-stroke may represent a pathway by which depression develops or is maintained; conversely, unawareness could be protective. This study examined ifawareness of cognitive deficits was associated with depression symptoms in a sample of stroke/TIA survivors.

Methods: Patients were enrolled in the Reactions to Acute Care and Hospitalizations (ReACH) Stroke observational cohort study of psychological distress post-stroke. Assessments at baseline included sociodemographics; assessments at 1-mo included cognitive function via the Telephone interview for Cognitive Status (TICS), subjective complaints of cognition (SCCs), via the Cognitive Failures Questionnaire (COGFQ), and depressive symptoms, via the Patient Health Questionnaire (PHQ-8). Cognitive deficit awareness was calculated via discrepancy score between SCCs and TICS (within-

sample z score of each). Greater discrepancy between the twosuggests lower awareness of cognitive deficits, while lower scores suggest that subjective complaints align with objectively assessed function. Regression analyses were conducted to examine the association between unawareness and post-stroke depressive symptoms adjusting for demographics e.g. age and gender. **Results:** Mean age was 59.45 years (SD = 12.98) and 48.4% identified as women. Patients identified as Black (29.0%) White (29.0%), or other race (32.3%), non-Hispanic or Latino (64.5%), and had a high school degree or higher (74.2%). Mean TICS score was 34.0 (SD = 5.89), mean PHQ-8 score at 1-month was 4.6 (SD = 5.46) and SCCs was 66.3 (SD = 18.7). Unawareness z scores ranged from -2.19 to 2.37. The overall model with depressive symptoms as an outcome was significant [$F(3,27) = 3.96$, $p = .018$] and explained 31% of the variance. Increased awareness of cognitive deficits was associated with greater depressive symptoms (b = -.36, $p = .037$). **Conclusions:** Greater awareness of cognitive deficits after stroke/TIA was associated with greater depressive symptoms, a novel finding that highlights an underexplored pathway by which the manifestation of stroke-related deficits contribute to the expression of post-stroke depression. Addressing subjective concerns about cognitive deficits may be an important component of depression interventions after stroke.

62) Abstract 1589
CORRELATES OF SLEEP DURATION AMONG YOUNG ADULTS DURING THE COVID_19 PANDEMIC

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The COVID-19 pandemic has significantly impacted sleep and mental health. This is true for college students, who are vulnerable to short sleep and have endorsed high rates of anxiety, stress, and depression throughout the pandemic. Research suggests that sleep duration may have improved for some individuals during the pandemic; while shorter sleep may be associated with perceived stress (PS), anxiety, depression, and COVID-19 related worry (CRW). We examined differences in sleep duration based on timing of survey completion (i.e., pre-quarantine, quarantine, post-vaccine phases) and tested the hypothesis that shorter sleep would be associated with higher levels of depression, anxiety, PS, and CRW. Undergraduate students (N=1,035; M_{age}=18.81 (SD=1.25); 27% male) completed self-report measures online from March 2020-October 2021. After data were coded based on timing of survey completion, regression was used to test differences in sleep duration, sleep quality, depression, anxiety, PS and CRW across study phases. Associations between sleep duration and sleep quality, depression, anxiety, PS and CRW were then examined within each study phase while adjusting for age and sex. During the quarantine participants slept 34 minutes longer on average, relative to those who completed the survey pre-quarantine (b=-0.57, p= 0.04), and 16 minutes longer relative to those who completed the survey post vaccine roll out (b=-0.26, p<.01, R^2=.01). There were no differences in sleep quality, depression, anxiety, PS or CRW across the three survey phases (all *p*s >.05). Shorter sleep was not significantly associated with sleep quality, depression, or anxiety during the pre-quarantine phase (all *p*s >.05). Shorter sleep was associated with higher anxiety (b=-0.01, p<.004, R^2=.02; b = -.014, p <.001, R^2=.02), depression (b=-0.03, p<.001, R^2=.04; b=-0.02, p<.001, R^2=.03) and poorer sleep quality (b=-0.62, p<.001, R^2=.09; b=-0.66, p<.001, R^2=.10) during quarantine and post-vaccine roll out phases respectively. Shorter sleep was unrelated to PS or CRW across all 3 study phases (all *p*s >.05). Sleep duration was longest during quarantine and shortest pre-quarantine, with post vaccine roll out falling between the two. Anxiety and depression may be important correlates of sleep duration during the pandemic. Promoting healthy sleep may be particularly important for mental health.

63) Abstract 1593
SOCIAL SUPPORT, EXHALED NITRIC OXIDE, AND UPPER RESPIRATORY SYMPTOMS IN HEALTH AND ASTHMA

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Background: Accumulating research identifies a role of negative affect for airway nitric oxide (NO). More recently, higher levels of social support, which have been linked to reduced respiratory infection susceptibility, are shown to be positively associated with airway NO. However, small samples sizes limit a consensus among the findings, and the consequences of the social support - airway NO association for respiratory infection is yet to be explored. Objective: We therefore examined the associations among negative affect, social support, airway NO, and upper respiratory tract symptoms in a large sample of undergraduate students. Methods: In this cross-sectional study design, 637 participants completed questionnaires of negative affect (i.e. anxiety, depression), social support, medical history, and current respiratory symptoms followed by measurements of fractional exhaled NO (FeNO). If participants had a physician's diagnosis of asthma, additional disease-related questionnaires were completed. Results: Greater social support was associated with higher FeNO, whereas greater anxiety was associated with lower FeNO, controlling for key covariates. Mediation analysis showed an indirect effect of social support on cold symptoms through FeNO. Neither asthma status nor sex significantly moderated any of the findings. Conclusions: Psychosocial processes – particularly social support - are relevant to FeNO levels of young adults, and FeNO levels may play a role in the relationship between social support and respiratory symptoms. Prospective designs are needed to identify directional relations among symptoms of anxiety, social support, and FeNO. Future study with less homogenous samples are additionally warranted.

64) Abstract 1600
SEXISM IS ASSOCIATED WITH POOR MENTAL HEALTH AND PREGNANCY HISTORY IN A SAMPLE OF WOMEN SEEKING OB/GYN CARE.

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OBJECTIVE: Hostile (i.e., insulting or disparaging) and benevolent (i.e., patronizing or infantilizing) sexism exposure have different effects on women's cardiovascular reactivity and recovery. The Experiences with Ambivalent Sexism Inventory (EASI) was recently developed to measure and distinguish women's self-reported exposure to hostile and benevolent sexism. The goal of the present study was to further validate the EASI in a community sample of pregnant and non-pregnant women and examine associations between sexism and women's health.
METHODS: Pregnant (N = 205) and non-pregnant (N = 98) women were recruited from two local OB/GYN clinics. They completed the EASI, the Everyday Discrimination scale, and demographics. Medical history was extracted from chart review.
RESULTS: Age was negatively associated with experiencing hostile (r = -.122, p = .03) and benevolent sexism (r = -.202, p < .001), and was controlled for in further analyses. Everyday discrimination scores were positively associated with hostile (partial r = .59, p < .001) and benevolent sexism (partial r = .56, p < .001) experiences, and women who reported gender as the primary reason for everyday discrimination reported greater levels of both forms of sexism than those who did not. Hostile and benevolent sexism reports were significantly greater among women with diagnoses of anxiety and depression than those without. Women with a history of pregnancy

reported experiencing less benevolent sexism than women without, but there were no differences in hostile sexism reports by pregnancy history. Conversely, women with a history of pregnancy loss reported more of both forms of sexist treatment than women who had not ever lost a pregnancy. However, currently pregnant and non-pregnant women did not differ significantly in either form of sexism. Logistic regression revealed that neither hostile nor benevolent sexism reports predicted pregnancy complications among pregnant women, controlling for relevant covariates.

CONCLUSIONS: These data provide preliminary evidence that pregnancy and pregnancy loss are associated with sexist treatment. Further, greater exposure to hostile and benevolent sexism is associated with younger age and poorer mental health among women. Future work will examine the relationships between sexism and pregnancy outcomes.

65) Abstract 1608
TRANSCUTANEOUS AURICULAR VAGUS NERVE STIMULATION IN CHILDREN AND ADOLESCENTS - A SYSTEMATIC REVIEW OF TREATMENT PROTOCOLS AND STIMULATION PARAMETERS

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Electrical stimulation of the vagus nerve is an efficient treatment for adult patients with a variety of somatic and psychiatric disorders. Due to its invasive nature and potential side-effects, it is not considered safe and ethically acceptable for the use in underage patients. Recent technological advances allow for the transcutaneous stimulation of the vagus nerve via the ear. Non-invasive transcutaneous auricular vagus nerve stimulation (tVNS) has promising therapeutic potential across somatic and psychiatric disorders. Compared to invasive VNS, it shows a favorable risk-benefit profile - supporting its application also in minors. Given the unique neurodevelopmental specifics characterizing this target population, age-appropriate adjustments to treatment protocols and stimulation parameters are most probably indicated. In this study, we aimed to review existing tVNS treatment protocols used in underage patients. The electronic databases PubMed, Scopus, MEDLINE, Cochrane Library, PsycINFO were searched up to 28th July, 2021, and all studies suitable for inclusion were subjected to qualitative review. The systematic search identified 169 studies, of which 79 were screened for eligibility after removal of duplicates. Sixteen studies were included. The following information was extracted from all eligible studies: clinical condition; sample size; sample composition in terms of sex; sample mean age and standard deviation; tVNS device used; electrode type for auricular stimulation; stimulation site; pulse width; stimulation intensity (in mA); stimulation frequency (in Hz); dose of stimulation. tVNS is applied in underage patients with various clinical conditions. Yet, diverse treatment protocols and stimulation parameters are applied without proper justification. Most of the existing studies that include children and adolescents were not specifically designed for the age groups of interest. Overall, tVNS in the treatment of children and adolescents is still in its infancy, and studies considering the specific needs of underage patients are warranted. The choice of treatment protocols and stimulation parameters should be informed by evidence from studies addressing the comparative efficiency and safety of different approaches. Developmental specifics of the targeted neurobiological systems should be taken into account in clinical applications of tVNS in youth.

66) Abstract 1612
REPETITIVE NEGATIVE THINKING DURING PREGNANCY AND POSTPARTUM: ASSOCIATIONS WITH MENTAL HEALTH, INFLAMMATION, AND BREASTFEEDING

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Introduction: Repetitive negative thinking (RNT) is a transdiagnostic feature that predicts increased mental health risks, inflammation, and reduced engagement in health promoting behaviors. Depression, anxiety, stress, inflammation, higher body mass index (BMI), and low engagement in health behaviors are associated with adverse outcomes during pregnancy as well as postpartum. However, there is limited literature on the associations between RNT and these contributing factors in the perinatal period, an at-risk time during which women may benefit from clinical interventions directed at RNT.

Methods: This study examined the contribution of RNT, to inflammation [interleukin(IL)-6] and breastfeeding duration, through mediating indicators of mental health and BMI. Behavioral and biological assessments occurred during late pregnancy as well as 4-6 weeks, 4 months, 8 months, and 12 months postpartum.

Results: RNT was positively associated with depressive symptoms, anxiety, and perceived stress ($ps \leq .001$) at each assessment timepoint, with the strongest associations observed at the pregnancy assessment and significant, but attenuated, associations during postpartum ($ps < .01$). In modeling of the association between RNT and IL-6, the indirect effect of BMI was significant at each timepoint (95% CIs = .0013, .0052). Women with lower RNT exhibited longer breastfeeding duration ($p = .02$). These effects were not significantly mediated by mental health indicators.

Conclusions: Clinically meaningful relationships between RNT and mental health, inflammation, and health behavior engagement were observed among perinatal women. Clinical interventions to reduce RNT may have unique benefits during pregnancy and postpartum.

Limitations: Further research is warranted to determine if therapies to reduce RNT confer unique benefits for maternal and child health.

67) Abstract 1640
EVERYDAY CO-PRESENCE WITH A ROMANTIC PARTNER IS ASSOCIATED WITH LOWER C-REACTIVE PROTEIN

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Background: Inflammation is theorized as one proximal mechanism contributing to the well-documented link between high quality close relationships and health. Yet one untested behavioral mechanism to account for variation in inflammation from close relationships is the amount of time simply spent in the physical presence of a "loved one" in everyday life. Time spent together has been conceptualized as a measure of bonding in the animal literature, but to date, no human research has examined the association between everyday co-presence with a close other, specifically, a romantic partner, and systemic inflammation, indexed by C-reactive protein.

Methods: Ninety-three adult participants in committed romantic relationships were sampled three times over the course of one month. Each time, they reported the amount of time spent co-present with a romantic partner in the prior 24 hours and provided a small sample of

blood via finger prick. Blood was then assayed for C-reactive protein.

Results: Greater time spent together was associated with lower C-reactive protein across the three timepoints, controlling for sex assigned at birth, age, BMI, and recent anti-inflammatory use. This effect held when controlling for other sociodemographic variables, such as race/ethnicity, use of anti-depressants, and use of contraceptives. Further, we found time spent co-present was robustly associated with CRP even when accounting for possible alternative explanations from prior literature, such as relationship quality from the prior week, hostility with the partner from the past week, and feelings of loneliness from the past week. Finally, we conceptually replicated these effects using only the measure of time spent co-sleeping together.

Conclusion: These findings reveal that the amount of time spent in the physical presence of one's partner is associated with lower CRP the next day. This work contributes to literature on social isolation, demonstrating that *not* being with a close other can have deleterious impacts on inflammation. By identifying this proximal pathway through which our closest others may get "under our skin", these findings reveal yet uncharted avenues for addressing the mechanisms through which close relationships affect long-term health.

POSTER SESSION 2

1) Abstract 1002
THE BURDEN OF MODERATE AND SERIOUS MENTAL HEALTH DISTRESS AMONG IMMIGRANT AND NON-IMMIGRANT ASIAN ADULTS IN CALIFORNIA

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Abstract
Background: Despite significant burden of mental health among Asians in the US, a focus on "culture" driving such disparities obscures the role of structural influences in development of these burdens, shifting the blame onto communities themselves. It also makes it more challenging to identify appropriate interventions, due to stigmatization. Furthermore, public health research and discourse on these issues often overlooks potential differences in distress and needs for interventions among immigrant versus non-immigrant Asians in the US.
Purpose: To examine how levels of moderate and serious mental health distress in the past year vary among Asian immigrant versus non-immigrant subgroups.
Methods: We used data from the 2011-2018 California Health Interview Survey (N=15,138) to assess prevalence of moderate and serious distress for immigrants compared to non-immigrants using both a single Asian category and five disaggregated categories: Chinese, Filipino, Japanese, Korean, and Vietnamese,.
Results: U.S. Asian immigrants were more likely to experience moderate (33%) and serious (9%) levels of distress compared to non-immigrants (26% and 5%, respectively). Filipino and Vietnamese immigrants experienced more moderate distress than their counterparts, and Filipino immigrants also experienced more serious distress than their counterparts.
Discussion: These findings highlight the clear association between immigration status and mental health in California. Differences in distress and subgroup-specific needs for U.S. immigrants and non-immigrants appear relevant for developing specific interventions (i.e. culturally sensitive scales and other measurement tools) and public health policies to improve ease of access to proper mental health care for various Asian immigrant populations.
Keywords: Immigrant Health, Mental Health, Distress, Adults, Asian populations

Table 1. Weighted Demographic Characteristics for Asians Overall and Five Asian Subgroups, 2011-2018 CHIS

	All Asian (n=15,138)	Chinese (N=4,730)	Filipino (N=2,374)	Japanese (N=1,496)	Korean (N=1,887)	Vietnamese (N=2,227)
Male	46.6	45.1	45.6	42.4	41.9	48.8
Age (years)						
18-44	56.2	56.8	57.0	38.5	52.8	48.6
45-64	30.0	30.3	29.0	37.6	28.0	34.1
65+	13.8	13.0	14.1	23.9	19.2	17.3
Income						
£138% of FPG	22.4	20.7	20.6	14.2	23.7	34.6
139-400% FPG	34.3	33.3	38.4	31.5	40.3	31.4
>400% FPG	43.3	46.0	41.0	54.3	36.0	34.0
Education						
High School	25.7	27.4	19.3	17.9	28.1	49.6
Some College	17.9	12.8	26.3	22.5	15.3	16.5
Bachelor's Degree or More	56.4	59.8	54.4	59.6	56.6	33.9
Employed	65.8	66.4	66.0	62.3	58.5	59.9
Married or Living with Partner	58.6	58.8	53.3	58.2	58.0	59.6
Speaks English only, very well, or well	81.1	73.7	95.9	95.2	62.2	56.0
Insured	89.6	89.1	90.6	93.3	85.6	89.9
Immigrant	70.3	68.9	62.1	23.5	78.1	79.4

Table 2. Weighted Estimates (%) of Moderate and Serious Mental Health Distress for Asians Overall and Five Asian Subgroups, 2011-2018 CHIS

	All Asian (n=15,138)	Chinese (N=4,730)	Filipino (N=2,374)	Japanese (N=1,496)	Korean (N=1,887)	Vietnamese (N=2,227)
Moderate Distress in Past Year[1]	27.6	27.0	28.9	27.2	36.8	27.3
Serious Distress in Past Year[1]	5.8	4.4	8.5	4.9	9.4	8.2

[1] Moderate and serious distress are measured using the K-6 Distress Scale.

Table 3. Comparisons of Moderate and Serious Distress by Immigrant and Non-Immigrant Status for Asians Overall and Five Asian Subgroups, 2011-2018 CHIS

	All Asian (N=15,138)	Chinese (N=4,730)	Filipino (N=2,374)	Japanese (N=1,496)	Korean (N=1,887)	Vietnamese (N=2,227)
Moderate Distress[1]						
Immigrant	32.7*	29.0	39.4**	28.9	36.5	43.2*
Non-Immigrant	25.5	26.1	23.2	21.8	36.8	20.3
Serious Distress[1]						
Immigrant	9.0**	6.0	13.3**	5.3	10.4	9.7
Non-Immigrant	4.5	3.7	5.6	3.7	9.1	3.3

[1] Moderate and serious distress are measured using the K-6 Distress Scale.

*p<.05
**p<.01

2) Abstract 1010
TIMING OF VACCINATION DOES NOT RELATE TO THE ANTIBODY RESPONSE TO A THYMUS-INDEPENDENT PNEUMOCOCCAL VACCINATION

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Background: The magnitude of antibody response to vaccination is of historical and current concern, particularly among vulnerable groups, such as older adults or caregivers. Consequently, biochemical and behavioural methods of improving vaccination response have been examined. Although there is some evidence that vaccinating in the morning could enhance vaccine responses, this has consistently been shown with thymus-dependent vaccinations, like influenza, and has not been examined in a range of vaccination types.
Objective: To analyse data from two psychoneuroimmunology vaccination studies to examine the impact of time of vaccination on the response to a thymus-independent vaccination.
Methods: Antibody titres at baseline and follow-up to the pneumococcal vaccine were compared across morning versus afternoon vaccine administration in 75 healthy young adults and in 59 parental caregivers, including caregivers of children with developmental disabilities.
Results: Morning versus afternoon vaccination did not influence antibody response to the individual vaccine strains or the overall response in either dataset. This suggests that effects of time of day

may be limited to thymus-dependent vaccinations. Important covariates such as stress, social support and health behaviours did not influence this finding.

Conclusion: Replication in a large randomised controlled trial, in more vulnerable groups using other thymus-independent vaccinations is required to draw firm conclusions about whether time of day of vaccination can influence this type of vaccine response.

3) Abstract 1031
COMPARING THE TRIGEMINOCARDIAL REFLEX RESPONSES TO THE COLD FACE TEST IN A CLINICAL AND A NONCLINICAL SAMPLE

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Introduction: In a previous exploratory study, there was evidence of differences in the reactivity of the trigeminocardial reflex between psychosomatic patients (PP) and healthy controls. This reflex can be elicited by cold stimulation of the trigeminal nerve on the forehead (so-called cold face test; CFT) and measured by heart rate variability (HRV) parameters. The aim of the present secondary data analysis is to test the previous finding by the following hypotheses on two independent experimental samples: A) PP will show a blunted response in the CFT compared to non-psychosomatic patients (nPP) B) PP show overall lower HRV values compared to non-psychosomatic patients.

Method: Included were 61 non-psychosomatic patients of a bereavement study (age 59±5; 16% male) and 113 psychosomatic patients requiring inpatient or outpatient treatment (MEPP study; age 40±12; 44% male). For this purpose, two 2-minute one-channel ECG measurements (Faros 180, 1kHz) were recorded during a seated baseline and during the CFT phase. The software Kubios v3x was used for ECG post processing and HRV parameter calculation. The CFT was performed according to the same protocol in both studies (cool pack at 6°C on midforehead). Mixed-linear multilevel models were used to calculate main- and interaction effects of Group (Study) X Time (Phase), controlling for age & sex.

Results: Systematic between-study differences were observed, with PP showing lower absolute (SDNN, RMSSD, TP, LF) and relative (LF%, HF%) HRV values at both phases (all p<0.05), but not for HF-power. Comparing within-study effect (phase effect) in nPP, lower absolute HRV values were found during the CFT phase while systematically higher proportions of HF% and lower proportions of LF% were recorded (all p<0.05; see figure 1). The PP showed no phase difference in any HRV parameter.

Conclusion: The initial hypotheses could be partially confirmed. The lower absolute HRV values in nPP during CFT might be caused by simultaneous co-stimulation of pain receptor. Cardiac vagal autonomic responses to the trigeminocardial reflex was absent in psychosomatic patients. Although study populations differed regarding age and sex, the present results are in line with previous results that psychosomatic patients seem to have an impaired autonomic regulatory capacity.

4) Abstract 1050
THE EFFECTS OF CHRONIC DISEASE, LIFE DISRUPTIONS, AND PSYCHOSOCIAL PROBLEMS ON SLEEP QUALITY DURING THE COVID-19 PANDEMIC

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Introduction: Sleep quality is impacted by stress and disruptions in daily routine, both of which characterize the COVID-19 pandemic.

The pandemic brought upon decreased social interactions, increased loneliness, and distress, particularly among persons living with a chronic disease and those who lost their job. The aims of the current study were to assess 1) whether chronic disease, unemployment, and access to physical contact were related to sleep quality during the COVID-19 pandemic, and 2) if COVID-19 health worry, work distress, and loneliness would act as specific mediators of each respective relationship.

Method: Adults living in Florida (n=2,152; aged 47±18 years, 64% female) completed a Qualtrics survey in April-May 2020 (Wave 1). Participants (n=831) were reassessed one month later (Wave 2; May-June 2020). At Wave 1, participants reported presence of a chronic disease, employment status, opportunity for physical contact with someone they care about during the pandemic, COVID-19 health worry, work distress, and loneliness. At Wave 2, participants rated their quality of sleep and insomnia symptoms that were used to create a latent variable, sleep quality.

Results: Using structural equation modeling, we found the presence of a chronic disease was associated with greater COVID health worry ($\beta=0.06$, $p<.05$) and unemployment was related to greater work distress ($\beta=0.22$, $p<.001$). Access to physical contact was directly associated with lower levels of loneliness ($\beta=-0.29$, $p<.001$). Loneliness, but not health worry or work distress, directly predicted worse sleep quality ($\beta=-0.29$, $p<.001$). Further, there was a significant indirect effect such that greater access to physical contact was associated with greater sleep quality via lower levels of loneliness ($\beta=0.08$, $p<.001$). While there were no direct effects of unemployment or access to physical contact on sleep quality, the presence of a chronic disease directly predicted worse sleep quality ($\beta=-0.13$, $p=.001$).

Conclusion: As expected, adults living with a chronic disease had poorer sleep quality. Unexpectedly, health worry and work distress did not impact sleep; rather, loneliness was the sole psychosocial predictor of worse sleep quality. Interventions should target reducing loneliness by enhancing social engagement and encouraging safe physical contact to improve sleep problems during the ongoing pandemic.

5) Abstract 1058
"WE'RE IN THIS TOGETHER": RELATIONSHIP SATISFACTION AND JOINT HEALTH BEHAVIORS PREDICT BETTER HEALTH AND STRONGER CONCORDANCE BETWEEN PARTNERS

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Extensive evidence shows that satisfying marriages boost physical health and longevity. A separate literature reveals strong concordance in couples' health, but the relationship processes that contribute to health concordance remain poorly understood. The current study examined whether relationship satisfaction and joint health behaviors—the extent to which couples eat, sleep, and exercise together—are associated simultaneously with better health and greater health similarity between partners. Heterogeneous variance multilevel models were applied to data from 234 married couples (M_{age} = 46, Range$_{age}$ = 20-84) reporting on their relationship satisfaction, joint health behaviors, and four broad health indicators—health satisfaction, depressive symptoms, comorbidities, and medication use. More satisfied couples engaged in more joint health behaviors than less satisfied counterparts. When joint health behaviors and relationship satisfaction were examined as separate fixed effects, both predicted greater health satisfaction and fewer depressive symptoms. More joint health behaviors were also associated with less medication use. When both were modeled together, only relationship satisfaction predicted depressive symptoms. By contrast, in random effects, joint health behaviors predicted greater similarity in health satisfaction, depressive symptoms, and comorbidities. Relationship satisfaction only predicted more similar depressive symptoms. This early evidence

suggests that joint health behaviors may play a key role in a dynamic process linked to greater relationship satisfaction and better health, and may be particularly important in routes to stronger health concordance. Conversely, relationship satisfaction may be more central to better health, and may influence health concordance through the coordination of health routines. The current approach provides a means to integrate models of marriage and health with those of couples' health concordance. We hope it will spur additional research on whether the relationship processes that risk couples' health also bring partners into closer proximity or drive them apart. These insights may be leveraged to enhance the benefits of dyadic intervention, providing fertile ground for the promotion of relationship satisfaction and both partners' health.

6) Abstract 1061
CARDIOVASCULAR COREGULATION TO A SERIES OF ACUTE INTERPERSONAL STRESSORS: INNOVATIVE METHODOLOGICAL APPROACH TO STUDYING REGULATION TO A CHRONIC ILLNESS IN THE FAMILY

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Adjusting to a chronic major illness in the family spans beyond the initial event of diagnosis. It also requires stress management on a daily basis from both patients and their primary caregivers, who are often spouses of the patients. This study aimed to investigate the extent to which one's cardiovascular regulation in response to stress in the close relationship context mutually influences the partner's among colorectal cancer patients and their spouses.

Patients who were newly diagnosed with colorectal cancer (54.6 years old, 35.2% female, 62.9% Hispanic, 6-month post-diagnosis) and their spouses ($n = 84$ dyads, 53.6 years old, 67.4% female, 57.3% Hispanic) underwent an experimental session together that involved a 29-minute interpersonal and health-relevant stress induction. The stress session consisted of 6 phases: baseline, 4 stress (scenario, speech-preparation, speech-I by caregivers, speech-II by patients), and 1 recovery phases. Participants' cardiovascular responses were assessed via electrocardiography throughout the experimental session, from which inter-beat intervals were derived.

Windowed cross-correlation and linear mixed-effects model analyses revealed a significant increase in reciprocal and mutually influencing pattern of stress reduction (coregulation) within patient-caregiver dyads from the baseline phase to the speech-preparation ($p < .001$), speech-I ($p < .001$), and speech-II ($p < .001$) phases. No difference from baseline was observed for the scenario phase ($p = .922$) and the recovery phase ($p = .106$).

Results provided preliminary support that colorectal cancer patients and their spouses mutually influence one another's cardiovascular regulation in response to a series of stressors that resembles the experience of a chronic illness. Further investigations to identify psychosocial antecedents and health consequences of cardiovascular coregulation, and to examine the roles of patient vs caregiver and gender in coregulation are warranted to inform the development of tailored dyadic stress self-management in the context of chronic illness.

7) Abstract 1070
IDENTIFYING THE CHALLENGES EXPERIENCED BY SPOUSALLY BEREAVED INDIVIDUALS WITH SLEEP DISTURBANCE: A MIXED-METHODS STUDY

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Spousally bereaved individuals are at increased risk of mortality particularly due to cardiovascular disease (CVD). Addressing sleep disturbance, an important correlate of CVD, may result in reduced CVD risk in this population. While behavioral sleep interventions are effective among older individuals, those who have recently lost a spouse are likely to face specific challenges not currently addressed by traditional interventions. This study aimed to (1) identify sleep and psychosocial challenges experienced by spousally bereaved individuals, and (2) evaluate patient-reported outcomes in this population. The sample included 20 adults (75% female, M_{age}=67.3, SD=9.5) who lost a spouse within the last 90 days and who endorsed sleep disturbance (Pittsburgh Sleep Quality Index [PSQI]≥5). Participants completed a 90-minute virtual focus group and a battery of sleep-related (PSQI, Insomnia Severity Index) and psychosocial questionnaires (Center for Epidemiological Studies Depression Scale [CES-D], Perceived Stress Scale [PSS]). Qualitative data was analyzed using the framework method, a type of thematic analysis. Qualitative data analysis revealed that commonly endorsed sleep-related challenges included difficulties falling and/or staying asleep, short sleep, poor sleep quality, pre-sleep difficulties such hyper-arousal and/or distress due the physical absence of the partner, and daytime sleepiness. Psychosocial challenges included loneliness, general distress due to changes in identify, grief, and rumination. Further, quantitative analysis showed elevations in sleep disturbance (M_{PSQI}=8.9, SD=3.4), insomnia symptoms (M_{ISI}=12.3, SD=4.7), depressive symptoms (M_{CES-D}=18.6, SD=9.6), and perceived stress (M_{PSS}=14.1, SD=7.6). These findings provide important individual-centered perspectives on sleep and psychosocial challenges experienced following the death of a spouse. Incorporating this information is essential to the successful development of targeted interventions addressing sleep disturbance in spousal bereavement.

8) Abstract 1072
SUPPRESSED NEGATIVE EMOTIONAL MEMORIES INCREASE PAIN UNPLEASANTNESS IN FEMALE ADULTS - AN EXPERIMENTAL STUDY

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Background In 1959 George Engel hypothesized that emotional distress that was out of awareness contributed to the predisposition to experience chronic physical pain. To our knowledge we report the first experimental study to examine the influence of unconscious negative emotion on pain. **Methods** 72 healthy female adults (19 to 34 years, M=22.00, SD = 2.75) without any history of psychiatric, neurological or substance use disorders underwent a modified Think/No-think paradigm (T/NT) in which the pairing of 72 combinations between neutral male face images with 36 neutral (valence M=4.97, SD=1.06; arousal M=2.85, SD=1.95) and 36 negative (valence M=2.18, SD=1.43; arousal M=6.06, SD=2.21) International Affective Picture System pictures was learned. During the training phase the associations were enhanced ("think") or suppressed ("no think" [NT]). Through the recall phase face images were identified in which the association was forgotten or not. In the next phase 20 neutral face images each of the no-think neutral (NTneutral) and no-think negative (NTnegative) conditions were presented in randomized order as individualized intermediate thermal pain stimulation (M=46.96 °C, SD=2.11) was applied to the left hand.

The ratings of pain intensity and pain unpleasantness (NRSI and NRSU) followed immediately. **Results** Analyzing all NT stimuli, NRSI and NRSU for NTnegative was significantly greater than NTneutral (see Figure 1): NRSI $p<0.001$, effect size $d=0.59$; NRSU: $p<0.001$, effect size $d=0.79$. Comparing the pain response as a function of having forgotten the association between the neutral face with negative vs. neutral pictures, NRSU for NTnegative forgotten was significantly higher than NTneutral forgotten stimuli, but not for NRSI: NRSU: $p<0.05$, effect size $d=0.26$; NRSI: n.s. **Conclusion** Using the "Think/No-Think-paradigm" in this novel (pain) context, we replicated previous observations that negative emotional memories amplify pain intensity and unpleasantness more than neutral memories. To our knowledge this is the first experimental demonstration that unconscious (forgotten) negative emotional memories amplify pain unpleasantness more than do unconscious (forgotten) neutral memories. These findings in healthy volunteers show that unconscious aversive emotional states can amplify physical pain unpleasantness, consistent with Engel's hypothesis.
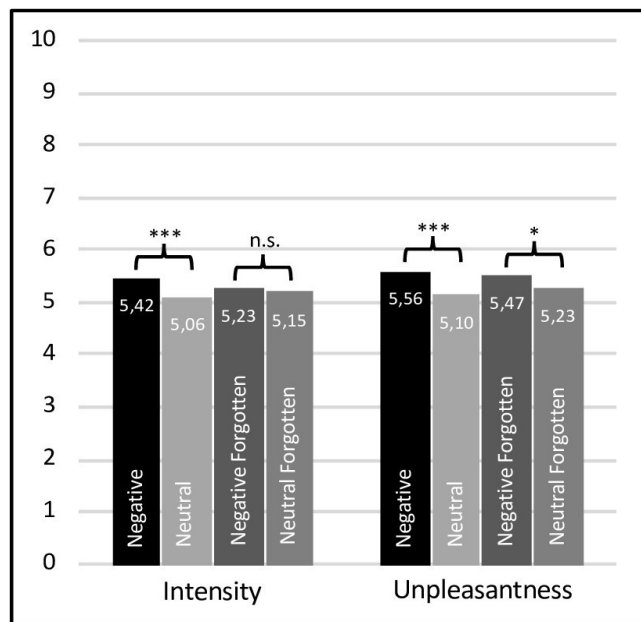

Figure: Pain ratings (mean) of intensity (NRSI) and unpleasantness (NRSU) in the Think/No-Think-Pain paradigm as a function of the neutral, negative, and forgotten conditions. Statistical results are based on a priori planned comparisons using paired t-tests (n.s.=not significant; *p<0.05; ***p<0,001)

9) Abstract 1084
STRONGER TOGETHER: PTSD SYMPTOMS AND LONELINESS AFFECT PROBLEMATIC ALCOHOL USE IN MSM

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Men who have sex with men (MSM) are at heightened risk for lifetime trauma exposure (Mereish & Poteat, 2015; Roberts et. al., 2012; Batchelder et. al., 2017). This trauma exposure doubles their risk of experiencing PTSD symptoms and of having comorbid problematic alcohol use (Roberts et al., 2010); together, PTSD and alcohol use can contribute towards increased risk of HIV infection and virologic failure among those HIV-positive (Choi et. al., 2017). Yet, the mechanisms driving PTSD and alcohol abuse comorbidity remain under-investigated. This paper evaluates whether PTSD and loneliness may affect alcohol use among MSM. We hypothesize that loneliness mediates the relationship between PTSD and problematic alcohol use. Between June 2018 and August 2018, 198 MSM (HIV-negative: $n = 98$, HIV-positive: $n = 100$) were recruited from out-patient clinics and community-based organizations in Hanoi, Vietnam. PTSD was assessed using the PTSD Symptom Scale (PSS); loneliness was assessed with the UCLA Three-Item Loneliness Scale; and alcohol use level was assessed with the Alcohol Use Disorders Identification Test (AUDIT). Loneliness and PTSD symptoms were significantly correlated ($p < 0.001$, $r = 0.41$). Participants who were HIV-positive were significantly lonelier than those who were HIV-negative ($t(194) = 2.43$; $p = 0.016$). In addition, age was significantly associated with problematic alcohol use ($p = 0.03$, $r = 0.15$). Mediation analyses indicated that neither the direct effect of PTSD ($p = 0.060$, CI = [-0.005606, 0.16], path coefficient = 0.079) nor indirect effect of loneliness ($p = 0.969$, CI = [-0.030993, 0.03], path coefficient = 0.0004) were significant in predicting problematic alcohol use, but the total effect ($p = 0.046$, CI: [0.000348, 0.16], path coefficient = 0.08) was significant. Results suggest that PTSD and loneliness may play an overall important role in predicting problematic alcohol use, but the insignificant mediation suggests that these relationships should be further explored in future studies. Primary limitations of this study include a small sample size and reliance on self-report. Information from the analyses may contribute to future examining of how the association between loneliness and PTSD affects MSM's alcohol use in real-time.

10) Abstract 1109
DESIGNING A SOCIAL SUPPORT PLATFORM FOR ADOLESCENTS DIAGNOSED WITH CANCER

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Background
Pain Buddy is a mobile health (mHealth) application that allows youth to record their pain and symptoms during cancer treatment and teaches evidence-based pain management skills. Although this intervention has great promise in improving symptom management in youth with cancer, the app does not currently include a social support component. Alongside pain management, social support is an important intervention target for adolescents given the isolating nature of cancer treatment.

Objectives
This project takes a multi-phased approach to develop and refine a platform that allows adolescents to connect with one another.
Phase 1 used a qualitative approach to assess the social support needs of adolescents undergoing cancer treatment.
Phase 2 aims to refine the beta version of the social connection platform that has been developed using data from Phase 1.

Methods
Phase 1: The ORBIT Model has guided this research project and has incorporated adolescent stakeholders from a larger Pain Buddy effectiveness trial. Phase 1 involved design/needs assessment by interviewing youth about their interest in online health communities, their social media use, and their social support needs.
Phase 2: Phase 2 is the refine phase in which an ongoing formative evaluation will be conducted of the beta platform. Using semi-structured interviews, participants will be asked about the usability, likeability, and relevance of the website.

Results
Phase 1 data was analyzed using a grounded theory approach in

which a thematic analysis was conducted to identify consistent themes across interviews. All of the adolescents interviewed during phase 1 ($N = 4$) expressed interest in connecting with peers who were also undergoing cancer treatment. Consistently identified features of a platform included: the ability to discuss their experiences during cancer treatment, chat with each other using online messaging, and socially connect based on their interests.

Phase 2 ($N = 20$) is an ongoing formative evaluation of the platform. The website will be refined multiple times based on the feedback from 3 iterations of interviews and data are forthcoming.

Conclusion

Currently, a gap exists in providing adolescent cancer patients with necessary social support. This research is significant for understanding the importance of social connection and for designing a platform to help meet their social support needs.

11) Abstract 1135
CHILDHOOD TRAUMA AND CORTISOL REACTIVITY IN RESPONSE TO PSYCHOLOGICAL STRESS: INVESTIGATING THE ROLE OF STRESS APPRAISALS

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Background: Childhood trauma has been linked to adverse health in adulthood. One posited mechanistic pathway is physiological responses to acute stress. Childhood trauma has previously related to both exaggerated and blunted physiological responses to acute stress, however, less is known about the psychological mechanisms which may contribute to patterns of physiological reactivity linked to childhood trauma. Purpose: In the current work, we investigated the role of challenge and threat stress appraisals in explaining relationships between childhood trauma and cortisol reactivity in response to an acute stressor. Methods: Undergraduate students (n=81; 61% female) completed an online survey that included general demographic information and the Risky Families Questionnaire 24 hours before their scheduled lab visit. In the lab, a trained research assistant collected a baseline salivary cortisol sample. Following the baseline period, participants were read instructions for the Trier Social Stress Test (TSST). Next, they completed a challenge vs. threat task appraisal questionnaire and completed the speech and math portion of the TSST (10 minutes total). Participants then completed a 10-minute recovery period, and a second salivary sample was collected during the last minute of this period to measure changes in salivary cortisol following the TSST. Results: Linear regression analyses adjusted for age, sex, annual income, and baseline cortisol levels, showed childhood trauma associated with changes in cortisol levels ($B =-.29$, $t(71)=-2.56$, $p=.01$, $R^2=.08$). Linear regression analyses controlling for age, sex, and annual parental income showed childhood trauma associated with both challenge and threat appraisals ($B =-.58$, $t(77)=-6.09$, $p<0.01$, $R^2=.33$) and ($B =.55$, $t(77)=5.72$, $p=.01$, $R^2=.08$) respectively. Significant indirect effects of childhood trauma on cortisol reactivity were observed through challenge appraisals and threat appraisals ($B =-.01$[95% confidence interval $=-.016,-.003$], and ($B =-.01$[95% confidence interval $=-.012,-.003$] respectively. Conclusions: Childhood trauma may contribute to blunted cortisol reactivity, a pattern linked to obesity, addiction, and other behavior-related diseases, in part by shaping stress appraisals that are characterized by threat rather than challenge.

12) Abstract 1150
EFFECTS OF REPEATED SARS-COV-2 SEROLOGY TESTING ON HEALTHCARE WORKER ANXIETY

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Background: The COVID-19 pandemic has had a considerable effect on mental health, healthcare workers (HCWs), and the healthcare infrastructure. Few simple interventions have been identified to reduce this impact, but access to SARS-CoV-2 testing has been identified as a potential source of anxiety.

Methods: This longitudinal study was conducted April 2020-July 2020 at a quaternary care children's hospital. Participants included pediatric HCWs with direct patient contact or proximity to patient-care areas. Participants received rapid SARS-CoV-2 antibody testing at routine intervals and were asked to rate their "level of anxiety about the COVID-19 pandemic at this moment" on a visual analog scale of 0 to 100. Descriptive statistics were used to characterize the study population, repeated measure ANOVAs were used to examine change in anxiety across time, and Chi squared analyses/logistic regressions were used to examine effects of demographics on change in anxiety.

Results: 362 individuals participated in this study. Reported baseline COVID-19 anxiety was negatively associated with years of experience ($r = -0.12$, p=.030), females reported higher anxiety than males ($Z= -3.66$ p<.001), and nurses reported higher anxiety compared to physicians, physician assistants, and technicians ($F (3,302)=6.04$, p =.003). Results indicated a significant positive result by test number interaction ($F (5,1020)=3.75$, p=.002) in which reported anxiety in those testing positive (n=55) and those testing negative initially decreased, until test 3, after which reported anxiety in those with positive results increased whereas those in the negative group stabilized. Demographic and occupational factors, including gender, age, race, years of experience, job position, and department, did not affect the likelihood of reported anxiety scores decreasing.

Conclusion: This study suggests that repeat SARS-CoV-2 antibody serology testing may be associated with decreasing anxiety levels. If validated by further research, routine screening for disease could potentially be used as a simple but powerful tool to reduce the mental health burden of the current, and future, pandemic(s)/epidemic(s).

Figure 1. Change in reported anxiety from baseline: IgG/IgM positive and IgG/IgM negative populations.
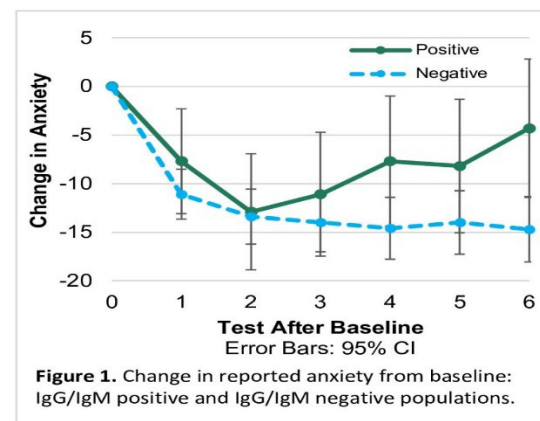
13) Abstract 1153
POSITIVE PSYCHOLOGICAL FACTORS AS PREDICTORS OF RECOVERY IN CARDIAC ARREST SURVIVORS: RATIONALE AND DESIGN OF A PROSPECTIVE OBSERVATIONAL COHORT STUDY

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Background. The experience of cardiac arrest (CA) can be a psychologically distressing event that induces depressive and posttraumatic stress symptoms in > 30% of patients. These negative psychological factors (NPF) are associated with a tripled risk of secondary cardiovascular disease (CVD) or death. Critically, modifiable positive psychological factors (PPF) are associated with improved health-related quality of life (HRQoL), greater independence in activities of daily living (ADL), healthier behaviors, improved cardiac vagal control, and lower risk of dying in CVD patients. The most promising PPF in this regard are a sense of optimism, experiences of positive affect, and a belief that one's life has purpose. This study tests whether PPF and NPF are each independently associated with HRQoL, ADL, and changes in physical activity in the year after the CA. It will also determine the demographic and medical factors that predict who develops PPF and NPF after CA.

Method. Currently admitted NewYork-Presbyterian Hospital patients with a confirmed CA are enrolled into this observational cohort study: *Psychological predictors of recovery after an Acute Cardiac Event (PACE)*. At hospital discharge, participants ($n = 246$) are assessed for baseline demographic information, PPF (optimism, positive affect, purpose in life), NPF (depressive symptoms, generalized anxiety symptoms, cardiac anxiety, posttraumatic stress symptoms), HRQoL, and ADL. These cognitive and medical characteristics are reassessed by telephone or online survey tool Qualtrics at 1, 6, and 12 months after discharge. Additionally, for 1-week post-discharge, and for 1 week at 6-months post-discharge, physical activity is assessed using wrist-worn actigraphy, daily PPF/NPF using mobile ecological momentary assessment, and heart rate/heart rate variability using chest-worn patches for eligible participants.

Results. Twenty-one patients (47.6% women, 52.4% Hispanic or Latino) have enrolled to date (M_{age} [SD] = 55.2 years [55.9 years]). Participants were enrolled at a median of 19 days post-CA.

Discussion. This study will be the first to test the unique associations of potentially cardioprotective PPF and the potentially harmful NPF to investigate how long-term recovery after CA may be improved. Malleable PPF and NPF may be targets for improving QoL and returning CA survivors to independent lives.

14) Abstract 1164
PSYCHOPHYSIOLOGICAL RESPONSES TO A 200-PERSON TRIER SOCIAL STRESS TEST AUDIENCE: USING VIRTUAL REALITY TO STUDY THE IMPACT OF AUDIENCE SIZE ON MALES AND FEMALES

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Compared to performing a speech and math task to a small, 2-person audience, a large 200-person audience may intensify or diffuse the negative impact of the audience. Also, audience size may enhance or mitigate well-documented sex differences in stress responses to this stressful situation, i.e., the Trier Social Stress Test (TSST). A traditional TSST requires the presence of an audience for each participant's performance, making a test of a large 200-person audience impractical. The virtual reality (VR) TSST is a tool that can be used to examine the effects of a large 200-person audience without significant personnel requirements. The present study, involving 201 participants, compared sex differences in stress responses to a traditional, 2-person audience TSST and two pre-recorded VR audiences: a VR 2-person audience and a VR 200-person audience. Salivary cortisol was collected, and cardiovascular measures were recorded to examine physiological reactivity. Participants self-reported psychological responses to the TSST, including stress, emotions, effort, and perceptions of the audience. Consistent with past TSST research, compared to females, males had a significantly greater cortisol response to the TSST regardless of audience presentation or size. Both males and females had significant blood pressure and heart rate responses in all conditions. Estimated Bayes factors suggested that, overall, physiological responses in all conditions were equivalent (i.e., there was strong support for the null hypothesis). In terms of psychological responses, the VR 200-person audience was superior to the VR 2-person audience in eliciting negative affect for both men and women. There were sex differences in psychological responses to the traditional, in-person TSST, including males reporting more positive affect and females reporting more stress, more effort, and more engagement. These psychological sex differences were not evident in the VR audience conditions. This is the first study to validate the use of an immersive, pre-recorded 200-person VR audience to elicit psychophysiological stress responses. Results suggest that this protocol may eliminate sex differences in psychological responses to the TSST. Use of this protocol in future research may provide a more sex-equitable test of stress reactivity.

15) Abstract 1180
ANTI-INFLAMMATORY DRUGS IN THE TREATMENT OF DEPRESSION IN CHILDREN AND ADOLESCENTS - A SYSTEMATIC REVIEW AND META-ANALYSIS

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Major depressive disorder (MDD) is highly prevalent in youth. In adolescence up to 40 % do not respond to first-and second line treatments (i.e. psychotherapy and/or pharmacotherapy). Even though mechanisms leading to MDD are not completely understood, there is strong evidence linking inflammatory processes with the development of MDD. Autoimmune diseases (e.g. rheumatoid arthritis) increase the risk for depression and pro-inflammatory markers are consistently found to be elevated in patients with MDD. Based on these findings anti-inflammatory drugs have been used as a treatment option for depressive symptoms. Studies in adults showed mixed evidence regarding their efficacy. Most results have been conflicting and there may be contraindications using anti-inflammatory drugs in this patient group. However, the current evidence in underage patients has previously not been systematically reviewed. Here we aimed to synthesize the existing evidence for the use of anti-inflammatory drugs in children and adolescents with MDD. The systematic review was preregistered. A systematic search of electronic databases (PubMed, Embase, PsycINFO, Web of Science) was conducted, to identify published articles concerning the efficiency and safety of anti-inflammatory drugs in reducing depressive symptoms in children and adolescents. At the time of abstract submission, the review was still ongoing. Intermediate meta-analysis showed mixed results following anti-inflammatory treatment in children and adolescents with MDD, with reported differences by classes of drugs used. Full analyses, including quality and bias assessments, analyses for publication bias, sensitivity and subgroup analyses will be presented at the meeting.

16) Abstract 1193
URBAN/RURAL GEOGRAPHIC STATUS AND ITS ASSOCIATIONS WITH DAILY EMOTION, PERCEIVED STRESS, AND DIURNAL CORTISOL FOR LGBT PERSONS

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Background. LGBT persons experience minority stress due to their sexual orientation and/or gender identity, and these stressors may lead to negative health. Those living in rural areas may experience worse outcomes due to a lack of LGBT community support and resources, and heightened stigma, negative attitudes, and violence. We previously found that LGBT specific stressors predict diurnal cortisol patterns; therefore, we conducted a secondary analysis to determine whether urban/rural geographic location is also related to diurnal cortisol patterns, as this association has not been examined among LGBT individuals.

Aim. The aim of the current study was to test whether geographic residential status (urban versus rural) is related to diurnal cortisol, daily emotions, perceived stress, and perceived connectedness to the LGBT community among LGBT individuals.

Methods. A total of 121 LGBT young adults (18-35 years, 54.5% female, 61.2% urban, 38.8% rural) completed baseline and daily questionnaires each evening for 7 consecutive days as part of a larger project on LGBT stress and health. A randomly selected subset of participants ($n = 58$) was asked to provide 4 cortisol samples per day: at wake, 45-min post-wake, 12-hr post-wake, and bedtime. Each evening, participants reported positive/negative affect, perceived stress, LGBT-specific and general stressors, and connectedness to the LGBT community. Urban/rural geographic location was determined using the National Center for Health Statistics Urban-Rural Classification Scheme for Counties, by using self-reported counties and zip codes.

Results. After controlling for covariates (sex, wake time, day of the week), there was a significant difference in diurnal cortisol slope for individuals living in urban/rural areas ($t(1258) = 2.21$, $p = .027$). Individuals living in urban areas ($t(1258) = -5.16$, $p < .001$) had steeper diurnal cortisol slopes than individuals living in rural areas ($t(1258) = -4.23$, $p < .001$). Urban/rural geographic status was unrelated to day-to-day affect, perceived stress, daily stressors, and connectedness to the LGBT community.

Discussion. The present results imply that geographic location (urban versus rural) may have mixed effects on daily stress processes for LGBT individuals. Additional findings will be reported and the implications of these results on future research and theory will be discussed.

17) Abstract 1204
PARENTAL DEPRESSIVE SYMPTOMS AND ADOLESCENTS' RESPONSE TO INFLUENZA VACCINATION: THE MODERATING ROLE OF ADOLESCENTS' PERCEPTIONS OF PARENTS AS A SECURE BASE

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Parental depressive symptoms have been found to be negatively associated with adaptive immunity in children (Caserta et al., 2008), and adolescents' perceptions of their parents as a secure base have been found to be positively related to metrics of innate immune function (Ehrlich et al., 2019). In the current study, we investigated whether the relation between parental depressive symptoms and adaptive immunity varied as a function of adolescents' perceptions of parents as a secure base. Specifically, we explored whether adolescents' perceptions of their parents as a secure base moderated the association between parental depressive symptoms and their antibody response to influenza vaccination.

Adolescents ($n = 99$, $M_{age} = 15.0$) participated in two study visits during the 2019-2020 influenza season. At the first visit, adolescents provided a blood sample, received the vaccine (Fluzone™), and completed the Parent as a Secure Base Scale (Cassidy & Woodhouse, 2003). Parents reported their depressive symptoms (CES-D; Radloff, 1977). One month later, adolescents provided another blood sample. We assessed hemagglutination inhibition antibody titers at both visits. For each strain, we corrected for pre-vaccination antibodies (Beyer et al., 2004) and used these values to form a standardized composite score representing adolescents' overall response to vaccination (Segerstrom et al., 2012).

We conducted regression analyses to examine the association between parental depressive symptoms and adolescents' response to vaccination and whether this relation differs as a function of perceptions of their parents as a secure base. After controlling for demographic variables, analyses revealed a significant interaction ($b = -1.01$, $p = .02$). Posthoc analyses indicated two effects reaching marginal significance. When perceptions of parents' secure base provision were low, parental depressive symptoms were associated with a greater antibody response ($b = 0.67$, $p = .07$). When perceptions of secure base provision were high, parental depressive symptoms were negatively associated with antibody response ($b = -0.65$, $p = .06$).

These results challenge the trend in the literature that antibody response following exposure to stressors is dampened (e.g., Burns et al., 2003). Factors including age and stressor type (i.e., chronic or acute) may explain these divergent findings.

18) Abstract 1205
VALIDATION OF THE STRESS AND ADVERSITY INVENTORY FOR ADULTS (ADULT STRAIN) AMONG URBAN MIDDLE-AGED AND OLDER AFRICAN AMERICANS

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Objective. Research has shown that chronic stressors put African Americans at greater risk for cardiovascular diseases, increased mortality, and other mental and physical health problems. However, studies that comprehensively and systematically quantify stressors occurring across the lifespan along with different contexts are limited. The online Stress and Adversity Inventory for Adults (Adult STRAIN) addresses these issues by objectively assessing stressor count, severity, and timing. The STRAIN also considers stressors from twelve life domains and five social-psychological characteristics. The purpose of this study was to validate the Adult STRAIN among middle aged and older African American adults. **Method.** As part of the Health among Older Adults Living in Detroit (HOLD) study, participants ($N = 210$, $M = 67.6$ yrs., $SD = 8.5$, range 50 – 89; 73.0% female) completed two home visits separated by five days of daily diaries. Measures included the Adult STRAIN, Perceived Stress Scale (PSS), Risky Family Questionnaire (RFQ), Center for Epidemiologic Studies Depression Scale (CES-D) Short Form, 15 chronic conditions, and one self-reported health item. **Results.** Bivariate correlations were used to assess concurrent validity. Stressor count assessed by the STRAIN was significantly related to the RFQ ($r = .324$, $p < .001$) and PSS ($r = .184$, $p = .011$). Additionally, self-reported health was significantly associated with several types of stressor exposure assessed by the STRAIN, including acute life event count ($r = .213$, $p = .002$), adulthood stressor count ($r = .220$, $p = .002$), housing ($r = .249$, $p < .001$), education ($r = .204$, $p = .004$), work ($r = .175$, $p = .013$), treatment/health ($r = .186$, $p = .008$), marital/partner domains ($r = .214$, $p = .002$), and stressors involving role change/reversal ($r = .224$, $p = .001$). Multiple sex differences were also evident with males having experienced more stressors compared to females for stressors involving work ($t(198) = 3.60$, $p < .001$), legal/crime ($t(54.37) = 4.20$, $p < .001$), and life-threatening situations ($t(68.20) = 2.72$, $p = .008$). **Conclusion.** These data indicate that the Adult STRAIN is a viable instrument for assessing lifetime stressor exposure in older African Americans. Future research should examine how lifetime

stressor exposure affects other health outcomes and the mechanisms underlying these associations.

19) Abstract 1210
NEUROTICISM IS ASSOCIATED WITH PERCEIVED BOTHERSOME SIDE EFFECTS OF CANCER TREATMENT

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Background: Based on a growing literature that personality is associated with cancer treatment outcomes, this study explored whether patients' personality is associated with bothersome side effects of cancer treatment, which might lead to treatment nonadherence and adverse physical outcomes.

Methods: Participants (N=462) with heterogeneous cancer diagnoses completed questions spanning demographics, health history, the mini-IPIP personality measure, and the FACT-G item, "I am bothered by side effects of treatment." FACT-G responses were dichotomized into "bothered" (response options "a little bit" to "very much") or "not bothered" (response option "not at all"). Hierarchical logistic regression analyses entered all five personality dimensions simultaneously in block 2, after entering the following covariates in block 1: age, gender, race, education, time since diagnosis, presence of metastases and comorbidities, and the two most common cancer diagnoses within the sample (breast and prostate cancer).

Results: On average, participants were 58.23 years old (SD=12.08) and received a cancer diagnosis 6.31 years (SD=6.65) prior to completing the survey. The majority (54.8%) were bothered by treatment side effects. In unadjusted models, extraversion (OR=.93) and conscientiousness (OR=.93) were associated with a reduced likelihood of bothersome side effects, and neuroticism (OR=1.18) was associated with a greater likelihood of bothersome side effects (ps<.01). In hierarchical logistic regression (Nagelkerke R^2=.18, p<.001), personality accounted for incremental variance above covariates in whether participants experienced bothersome treatment side effects (ΔR^2=.04, p<.001). Neuroticism was the only personality factor that independently predicted perceived side effects (OR=1.12, p<.001). Those who were older, more educated, and reported longer time since diagnosis were less likely to report bothersome side effects, whereas those who had metastatic disease were more likely.

Conclusions: More neurotic patients were more likely to experience bothersome side effects of treatment. These findings might assist clinicians in identifying patients who are more likely to struggle with treatment side effects. These patients might benefit from more frequent symptom assessment or supportive care to cope with treatment side effects.

Table 1. Association between personality and sociodemographic characteristics and bothersome side effects of cancer treatment.

Characteristic	Odds Ratio (95% *CI*)	*p*
Neuroticism	1.121 (1.048 – 1.200)	<.001
Extraversion	.949 (.897 – 1.005)	.072
Openness	1.058 (.952 – 1.175)	.297
Agreeableness	.963 (.887 – 1.045)	.366
Conscientiousness	.989 (.925 – 1.058)	.754
Age	.968 (.948 – .989)	.003
Gender, Female	.775 (.383 – 1.571)	.480
Non-White, Hispanic	.593 (.267 – 1.317)	.199
Time Since Diagnosis (Years)	.956 (.921 – .993)	.019
Education (Bachelor's Degree)	.593 (.370 – .949)	.029
Financial Strain (Present)	1.478 (.929 – 2.251)	.099
Metastases (Present)	4.225 (2.414 – 7.393)	<.001
Diagnosis, Breast Cancer	1.499 (.900 – 2.496)	.120
Diagnosis, Prostate Cancer	1.951 (.815 – 4.668)	.133
Comorbidity (Present)	1.482 (.933 – 2.354)	.096

20) Abstract 1212
COLD-SYMPTOMS AND GLOBAL ILLNESS: EXAMINING THE INFLUENCE OF ASTHMA, EXHALED NITRIC OXIDE, AND STRESS LEVELS

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Background: The disease burden of viral infection is substantial, particularly for individuals with respiratory conditions. In asthma, viral infection is a common trigger of worsened symptom control. Stress can contribute to increased susceptibility to viral infection and is also linked to worse lung function in asthma. Nitric oxide, a molecule involved in airway regulation, is a proposed factor underlying the relation between stress and worse health outcomes in asthma. With prior work indicating relations between viral infection and asthma outcomes as well as stress and viral infection, there remains a need to understand associations between stress and asthma in relation to viral infection, and the role of nitric oxide in any potential associations. Thus, we sought to explore the influence of asthma, exhaled nitric oxide (FeNO) and stress ratings on individuals' cold symptoms and global illness ratings concurrently and prospectively. *Method:* Undergraduate students (N=540, 95 with asthma) completed self-report measures of perceived stress, chronic stress, general health information, cold-symptoms, and global illness, along with measurements of FeNO during an academic semester. Cold-symptoms and global illness ratings were completed again during the final exam period and one week after finals. Multilevel models controlling for age, sex, and BMI were calculated including interactions between asthma, perceived stress or chronic stress, and FeNO across time, with separate models for cold symptoms and global illness. Results: Greater baseline chronic and perceived stress were associated prospectively with greater cold symptoms in asthma, but not for healthy controls. No significant interactions between stress, asthma, and FeNO over time were found, but asthma was related to greater cold symptoms and global illness prospectively. FeNO was associated with cold symptoms and global illness during the semester assessment, but not prospectively. Results indicate an importance of psychological health in relation to physical health outcomes in asthma. Fluctuation of FeNO levels and their dual susceptibility to allergic inflammation and viral infection may have prevented longitudinal prediction of illness susceptibility. Interventions to help asthma patients manage stress levels may help buffer against risk for viral infection.

21) Abstract 1226
EFFECT OF DEPRESSION TREATMENT ON SOMATIC DEPRESSIVE SYMPTOMS AND DIABETES RISK MARKERS AMONG PEOPLE WITHOUT DIABETES: DATA FROM THE EIMPACT TRIAL

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While depression is a risk factor for type 2 diabetes, little is known about the effect of depression treatment on diabetes risk markers. Using data from the recently completed eIMPACT trial (NCT02458690, supported by R01 HL122245), we examined if our depression intervention improves diabetes risk markers and if improvements in somatic depressive symptoms mediate potential intervention effects. 216 participants (primary care patients ≥50 years with depression and elevated cardiovascular disease risk from a safety net healthcare system) were randomized to 12 months of the eIMPACT intervention (our modernized collaborative care intervention involving internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants; n=107) or usual primary care for depression (primary care providers supported by

embedded behavioral health clinicians and affiliated psychiatrists; n=109). Given our focus on diabetes risk, we excluded participants who did not attend the post-treatment visit (n=17) or who had a diabetes history at pre-treatment (n=73), leaving a final sample of 126 (n=66 intervention, n=60 usual care; M_{age}=58 years, 79% women, 50% Black, 47% with income <$10k/year). We computed depressive symptom severity variables from the Hopkins Symptom Checklist-20 (SCL-20) items: hyperphagia ("overeating" item), poor appetite ("poor appetite"), hypersomnia ("sleeping too much"), disturbed sleep ("sleep that is restless or disturbed") and SCL-15 (mean of items not pertaining to appetite or sleep). We calculated insulin resistance from fasting glucose and insulin using the Homeostasis Model Assessment for Insulin Resistance (HOMA-IR)-2 calculator, and body mass index (BMI) from measured height and weight. We ran parallel mediation models using PROCESS. As illustrated in Figure 1, the intervention improved hypersomnia, disturbed sleep, and SCL-15 over 12 months. However, intervention did not improve hyperphagia, poor appetite, HOMA-IR, or BMI. Importantly, 12-month increase in hyperphagia was associated with 12-month increase in HOMA-IR and BMI. No somatic depressive symptoms mediated intervention effects on HOMA-IR or BMI. Our findings suggest that 12 months of first-line depression intervention does not improve diabetes risk markers, perhaps because it does not improve hyperphagia, a key somatic depressive symptom associated with diabetes risk.

Figure 1. Results of Parallel Mediation Analyses Examining the Effect of the eIMPACT Intervention on Somatic Depressive Symptoms, Insulin Resistance, and Body Mass Index
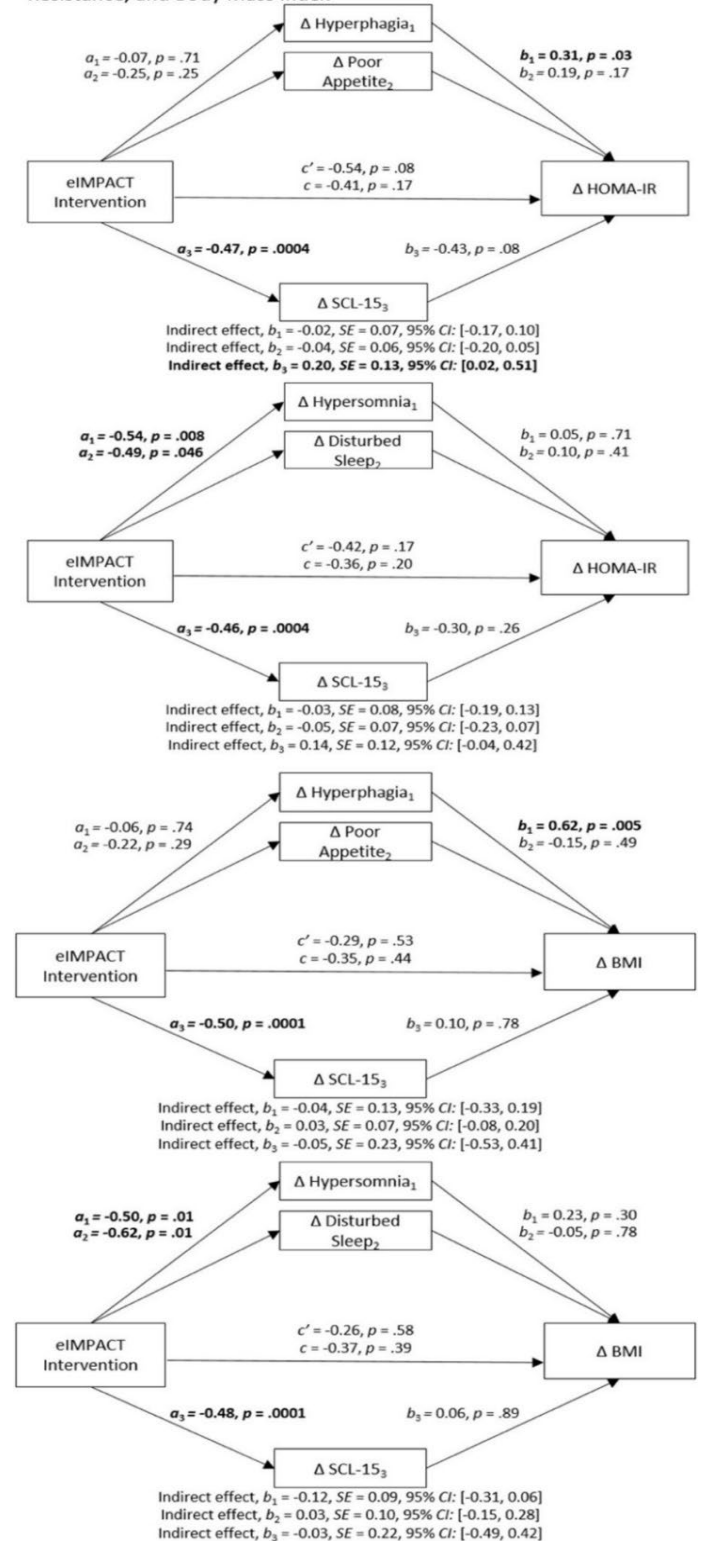
Note. While the total sample size is 126, sample sizes varied across models due to missing data as follows: HOMA-IR appetite model n = 112; HOMA-IR sleep model n = 117; BMI appetite model n = 118; BMI sleep model n = 123. Statistically significant results (p < .05) are bolded. HOMA-IR = Homeostasis Model Assessment for Insulin Resistance; BMI = body mass index; SCL-15 = mean of Hopkins Symptom Checklist-20 items not pertaining to appetite or sleep.

22) Abstract 1239
EMPLOYMENT STATUS AND FAMILY INCOME IN PSYCHOLOGICAL AND PHYSICAL HEALTH POST-BEREAVEMENT

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Bereavement is one of life's most extreme stressors. When widow(er)s are employed, they must cope with their grief in addition to the typical, chronic work stressors. Likewise, differences in socioeconomic status drive health disparities. We integrate these disparate forces to understand psychological and physical health post-bereavement. In an analysis of 183 bereaved spouses (M = 68.57 years old; SD = 8.84 years; 122 women), we examined the relationship between employment status (employed full-time or part-time versus retired) and several psychological and inflammation-related variables. **Methods:** Participants completed data collection approximately three months post-bereavement. Data collection included self-report depressive symptoms (Center for Epidemiological Studies Depression Scale), grief symptoms (Inventory of Complicated Grief), and perceived stress (Perceived Stress Scale), and monocyte stimulated pro-inflammatory cytokines (IL-6, TNF-α, CCL4), which were combined in a linear composite variable. We conducted several linear regressions, accounting for relevant demographic and health-related covariates. **Results:** Employment status was predictive of the composite levels of inflammatory cytokines, p = .02, 95% CI [0.06, 0.86]; employed participants had higher levels of inflammation compared to retired participants. For all psychological health outcomes, a consistent interaction between family income and employment status emerged. This interaction indicates that employed participants with lower family incomes had the highest depressive symptoms, p = .016, 95% CI [-6.21, -0.64], grief symptoms, p = .049, 95% CI [-6.29, -0.20], and perceived stress, p = .044, 95% CI [-0.37, -0.01]. **Discussion.** Our results indicate class-based health disparities in bereavement. We found that employed people with higher family income levels had comparable levels of psychological health (depression, grief, perceived stress) to their retired counterparts. For these people, work may be pleasurable and rewarding; therefore, they *choose* to stay employed. However, employed people with lower family incomes fared the worst with psychological health; these people likely *must* work to support their families. These effects also translate to general physical health differences, such that retired people had lower levels of chronic, low-grade inflammation than their employed counterparts.

23) Abstract 1246
ROLE OF DIET IN IMMUNE HEALTH AMONG CANCER CAREGIVERS

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The stress of a cancer diagnosis has adverse effects on the family caregiver's daily diet and subsequent immune health. Such relation may be exacerbated by limited resources, such as income. Less known is the extent to which daily diet and income relate to immune health of family caregivers of adult cancer patients. This study investigates the association of diet with inflammatory biomarkers and the moderating effects of poverty among cancer caregivers concurrently and prospectively.

Family caregivers (N = 176, mean age = 51.1 years, 67% female, 47.7% Hispanic, 53.4% spouse of the patient) of colorectal cancer patients participated in the study. Caregivers' fruit and vegetable consumption (FVC: days of ≥ 5 servings per week) and fat consumption (FatC: times margarine or butter were consumed per week; NCI Dietary Assessment) around the time of the patient's diagnosis (T1) were self-reported. Household annual income was also self-reported and grouped to indicate poverty level (< $20,000). Circulating interleukin-6 (IL-6) and interleukin-10 (IL-10) were assayed from blood samples collected at T1 and 1-year post-diagnosis (T2). Age, gender, and body mass index were covariates. Participants reported consuming at least 5 servings of fruits and vegetables 3 days a week and fat 4-5 times a week. One-fifth of the sample met the criterion for poverty. IL-6 and IL-10 levels at T1 and T2 were comparable with those reported in other caregiver studies, and changes in levels from T1 to T2 were not significant. Hierarchical regression analyses revealed that higher FatC at T1 was associated with lower IL-10 at T1 (B = -.149, p = .017) and increased IL-6 from T1 to T2 (B = .302, p = .026). Higher FVC at T1 was associated with increased IL-10 from T1 to T2 (B = .146, p < .001). These diet effects were independent of those of poverty level of income.

Findings indicate that dietary habits, regardless of income, uniquely contributes to caregiver's inflammatory biomarkers. Evidence suggests that high fat diets have both concurrent and prospective deleterious effects on caregiver's immune health, whereas diets consisting of high fruits and vegetables have lasting protective effects. Tailored dietary interventions designed to promote sustainable healthy diets may be a promising avenue of support for cancer caregivers.

24) Abstract 1247
PSYCHOLOGICAL HARDINESS AND DIURNAL CORTISOL PRODUCTION IN SEXUAL AND GENDER MINORITIES

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Background: Psychological hardiness describes an individual's ability to endure stressors and use them as opportunities for self-growth and is composed of 3 subcomponents: commitment, control, and challenge. Commitment describes an ability to feel deeply involved in or committed to the activities of [one's life]; control describes the belief that [one] can control or influence the events of their experience; and challenge describes the anticipation of change as an exciting challenge to further development. Hardiness and its subcomponents may decrease biologic responses due to stress and be protective against negative stress-related health outcomes; however, no study has investigated this link for sexual and gender minorities (SGM). Methods: One hundred and twenty-one SGM (aged 18-35, 54.5% female, free of major psychiatric/endocrine disorders) completed initial and daily evening questionnaires for seven consecutive days. A randomly selected subset (n = 58) also provided salivary cortisol samples at wake, 45-min post-wake, 12 hr post-wake, and at bedtime. Psychological hardiness and its 3 subcomponents (control, commitment and challenge) was assessed via the short-form Dispositional Resilience (Hardiness) scale (HARDY) at baseline. The subcomponents were scored via self-report items evaluating an individual's mindset during times of stress. Total hardiness was averaged using the 3 subcomponent scores. Analyses predicting diurnal cortisol values were performed with multilevel modeling.
Results: Only 49 of the 58 participants who provided salivary cortisol had useable cortisol data. Overall, there was no significant interaction between hardiness and cortisol slope or intercepts. When examining the subcomponents of hardiness, there was also no significant interaction between commitment and cortisol slope or intercepts. When examining the subcomponents of control and challenge, we found that the two interacted with cortisol overtime in different ways; control f (1,1105) = 7.43, b= - 0.001, p = 0.01, challenge f (1,1105) = 5.57, b= 0.001, p = 0.02.
Conclusions:

Although overall hardiness was not related to diurnal cortisol in SGM individuals, 2 subcomponents predicted cortisol in different ways. Further research is required to determine
the salience of hardy personality components and their interactions with biologic stress responses in SGM populations.

25) Abstract 1257
INTRANASAL OXYTOCIN IMPEDES THE INHIBITION OF SAD FACIAL EXPRESSIONS IN MALE PARTICIPANTS WITH DEPRESSIVE SYMPTOMS

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Intranasal oxytocin (OT) influences different aspects of social cognition and behavior, including the processing of emotional stimuli. Many of OT's effects are found to be influenced by contextual factors and individual differences, such as maltreatment history, loneliness and depressive symptoms. In a previous study (Ellenbogen et al, 2013), individuals with depressive symptoms who were administered OT, relative to placebo, were unable to ignore sad faces in a negative priming task (i.e., had lower cognitive inhibition) compared to those with low depressive symptoms. Therefore, to attempt replication, we examined whether intranasal OT affects the inhibition of attention to facial expressions using a different task, and whether individuals with depressive symptoms will exhibit an increased sensitivity to OT as observed previously. We also examined whether these effects differ between men and women. Using a double-blind, within-subjects design, 53 participants (28 female) completed a modified anti-saccade task with emotional stimuli (sad, angry, happy or neutral faces) following the administration of OT or placebo, in random order one week apart. The anti-saccade task requires participants to saccade in the opposite direction of a stimulus, and away from an emotional or neutral face. Eye tracking was used to assess the number of fixations on the face and saccades during a trial. Depressive symptoms were measured using the Beck Depression Inventory (BDI). Relative to placebo, OT significantly increased the ratio of fixations on the face to saccades (an index of time spent looking at the face) for sad faces, but only for males with higher depressive symptoms [Sex X Depression interaction: $F(1,49)=4.958$, $p=.031$, $R^2_{change}=.088$]. No effects were found for other emotional stimuli. The result indicates that OT decreased the inhibition of sad faces in depressed male participants. They partially replicate our previous findings using a negative priming task and suggest that males with depressive symptoms have an increased sensitivity to OT. The results add to a growing body of literature showing that individual characteristics such as sex and symptoms of depression may be key in determining for whom intranasal oxytocin may or may not be helpful in influencing social cognition. Importantly, this has implications for the therapeutic use of intranasal oxytocin.

26) Abstract 1282
AEROBIC EXERCISE TRAINING AND SYSTEMIC INFLAMMATION: RESULTS FROM TWO RANDOMIZED CONTROLLED TRIALS

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Background
The health benefits of aerobic exercise and the well-established pathogenic role of inflammation in multiple medical conditions suggest that one mechanism by which exercise contributes to health is through anti-inflammatory effects. Although observational studies generally support this hypothesis, intervention studies are less consistent. In two randomized controlled trials, we sought to determine if aerobic exercise training, compared to control conditions, reduces levels of circulating TNFa, IL-6, and CRP in healthy but inactive adults.

Methods
Both trials were community-based, randomized, parallel group single blind studies. In Trial 1, 119 young adults (age 20-45 years) were randomized to a 12- week, 4X/week training program or wait-list control condition. In Trial 2, 132 young and older healthy adults (age 20-67 years) were randomized to a 24-week, 4X/week training program or a stretching/toning condition. Both exercise groups trained at 55-65%, 65-75%, and at 80% of maximum heart rate based on study entry cardiopulmonary exercise tests in weeks 1-2, 3-4, and the remaining weeks, respectively. The primary outcomes were circulating TNFa, IL-6, and CRP.

Findings
Aerobic training but not the control conditions led to significant increases in aerobic capacity (Study 1: 4.05 ml/kg/min, $p<0.001$; Study 2: 3.09 ml/kg/min, $p<0.001$). However, there were no significant treatment effects on circulating levels of TNFα, IL-6 or CRP in either study, in both intention-to-treat and per-protocol analyses.

Interpretation
Aerobic exercise training sufficient to improve cardiorespiratory fitness failed to produce reductions in circulating TNFa, IL-6, or CRP in two separate trials, suggesting that although aerobic exercise is associated with multiple health benefits, these results do not support the hypothesis it elicits anti-inflammatory effects in inactive but otherwise healthy participants.

27) Abstract 1294
DISPOSITIONAL MINDFULNESS AND DEPRESSIVE SYMPTOMS IN YOUNGER BREAST CANCER SURVIVORS: MEDIATION BY INTRUSIVE THOUGHTS

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Background: Depression is associated with increased risk of cancer recurrence and mortality in breast cancer patients, with a higher prevalence in younger women. Intrusive thoughts about cancer have been shown to heighten depressive symptoms after diagnosis and treatment. Thus, there is a need to identify factors that reduce cancer-related intrusive thoughts and associated depressive symptoms. Dispositional mindfulness is a non-judgmental, present moment awareness that is linked to psychological well-being and has been theorized to reduce intrusive thoughts. No studies have examined the relationship between mindfulness, intrusive thoughts, and depression in a cancer population. We hypothesized that higher dispositional mindfulness would be associated with fewer depressive symptoms, and this association would be mediated by fewer cancer-related intrusive thoughts in younger breast cancer survivors.

Methods: 249 women diagnosed with Stage 0-III breast cancer at or before age 50 who completed cancer treatment and had elevated depressive symptoms participated in a randomized controlled trial (Pathways to Wellness). We focus here on the baseline, pre-intervention assessment. Participants completed measures of depressive symptoms (Center for Epidemiologic Studies Depression Scale), trait mindfulness (Mindful Attention Awareness Scale), and cancer-related intrusive thoughts (Impact of Events Scale, intrusions subscale). A single mediation model using a bootstrap approach was

used to evaluate intrusive thoughts as a mediator in the relationship between mindfulness and depressive symptoms.
Results: On average, women reported elevated depressive symptoms at baseline (M = 17.76, SD = 9.98) with 45.8% reporting depressive symptoms above a clinical threshold. Higher dispositional mindfulness was related to lower depressive symptoms (b = -3.62, SE = .67, p <.001) and lower intrusive thoughts significantly mediated the relationship between trait mindfulness and depressive symptoms (20.7% mediation; *b* = -0.94, 95% CI [-1.56, -0.403]).
Conclusions: Findings highlight the protective role of trait mindfulness in breast cancer survivors, and identify potential mechanisms for mindfulness effects on depression.

28) Abstract 1303
ASSOCIATIONS BETWEEN PERCEIVED STRESS AND MORNING SERUM CORTISOL WITH GLUCOSE METABOLISM AMONG OVERWEIGHT MINORITY YOUTH

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Background: Psychological and biological stress have been associated with impairments in glucose metabolism, which are indicators of type 2 diabetes risk. Previously, we have reported that higher morning serum cortisol is associated with fasting glucose in overweight Latino youth; however, we have not examined the role of psychosocial stress with type 2 diabetes risk factors. In this study, we examined the association between perceived stress and morning cortisol with markers of glucose metabolism (fasting glucose, 2-hour postprandial glucose, hemoglobin A1c (HbA1c)) among overweight minority children and adolescents. **Methods:** Data were analyzed using the Diabetic Risk due to Ectopic Adiposity in Minority Youth (DREAM) study, a cross-sectional study among overweight and obese Latino and African American adolescents (n=195, Mean age =14.58±2.80 years). Perceived stress was measured with Perceived Stress Scale, 14-item for youth. Glucose concentrations at fasting and 2-hour post glucose challenge (1.75g oral glucose solution/kg body weight to a maximum 75 g), HbA1c, and morning cortisol were measured from blood drawn in a controlled clinical environment. Separate linear regression models assessed the relationships between perceived stress and morning cortisol with glucose metabolism markers. A priori covariates included age, sex, race/ethnicity, and social position (a proxy for socioeconomic status), and fasting serum cortisol. **Results:** Before and after adjusting for covariates, perceived stress was not significantly associated with any measure of glucose metabolism (all p>0.05). Serum cortisol was positively associated with HbA1c in unadjusted (β= 0.016; 95% CI=0.002, 0.030) and adjusted models for age, sex, and ethnicity (β=0.015; 95%CI=0.000, 0.030). Although not significant, serum cortisol was positively related with fasting glucose and 2-hour glucose (p>0.05). **Conclusion:** Our results suggest that psychosocial stress is not directly associated with glucose metabolism dysfunction; however, evidence persists on the role of biological stress (via hypothalamic pituitary adrenal axis function) on type 2 diabetes risk factors in a minority youth population. Future research to explore biological stress mechanisms on type 2 diabetes risk is warranted.

29) Abstract 1309
DEVELOPMENT AND VALIDATION OF THE ANTICIPATORY RACISM THREAT SCALE

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Background Prior qualitative data suggests that anticipation of racial prejudice/discrimination increases the stress burden of African American (AA) women. The majority of existing scales capture the type and number of discrimination events, overlooking the phenomenon and chronicity of anticipating racist threat which may alone be sufficient to trigger a deleterious physiological stress response. The anticipatory racism threat (aRT) scale was developed using focus group data from AA women in the Bay area. This study examines the dimensionality and investigates the validity and reliability of the aRT scale in a nationally representative sample of AA women.
Methods Using a nationally representative sample of AA women ages 25-64 (n = 605), we examine the item pool, dimensionality, reliability, and validity of the aRT scale. Confirmatory factor analysis (CFA) evaluated the dimensionality of a five factor scale: stereotype awareness, awareness/expectation, confirmation concern and avoidance, race consciousness, and resilience. Reliability was measured using Cronbach's alpha and Guttman's lambda. Convergent, discriminant, and criterion validity were all evaluated through correlational analyses via Pearson's rho with concurrently collected external scale scores. Differentiation by known groups was also examined, based on the hypothesis that AA women experience more aRT as they climb the socioeconomic ladder.
Results A five factor, 28 item solution was identified as optimal – statistically, conceptually, and logistically. CFA fit statistics fall within acceptable ranges and show evidence in support of the dimensionality of the proposed scale. Reliability was high: four of the five subscales returned estimates of α>0.8 and the fifth had an α>0.7. When comparing the subscales against criterion, convergent and discriminant external scales, correlations were consistently in the direction hypothesized including a moderate correlation with self-reported racial discrimination (criterion validity) (ρ range: 0.17 to 0.55). Known groups analysis of the five subscales did not return significant results for every contrast, but did demonstrate that, within these proxies for higher SES, women tend to score higher on aRT at higher levels of SES.
Conclusion The aRT is a valid measure of a previously under-investigated aspect of AA women's experience with racism.

30) Abstract 1313
EXPERIMENTAL MANIPULATION OF SOCIAL STATUS AND CHANGES IN STRESS PHYSIOLOGY: A META-ANALYSIS

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Background: Socioeconomic disparities in cardiovascular health are well-established, but the role that stress and related physiological changes play in such disparities is still not clear. Extant evidence shows a correlation between lower socioeconomic position and poorer biological functioning, but it is difficult to discern whether lower social rank is driving these associations. A growing literature has explored whether experimental manipulations of social rank and related constructs (e.g., power) influence stress physiology implicated in disease. The current study presents results from a systematic review and meta-analysis on experimental manipulations of social rank and changes in cardiovascular (blood pressure and heart rate) and neuroendocrine (cortisol) parameters.
Methods: PubMed and PsycINFO databases were searched for terms related to manipulation of social status and physiological reactivity. The search returned 6762 studies, 29 of which included relevant data. From these studies, 97 relevant effects were included in analyses after sequential review of titles, abstracts, and then full-text articles. Studies differed with respect to the manipulation of social rank as well as the type of subsequent stressor participants were exposed to.
Results: Sample size ranged from 43 to184 participants and consisted of primarily undergraduate samples. Across studies, most participants were White, and there were more female than male

participants. Results of the overall estimated effect size, including all relevant effects, are not yet complete. However, most effect sizes have been extracted, and preliminary results suggest that the influence of social rank on stress physiology across all studies and all outcomes is small and negative (i.e., lower rank is associated with larger deleterious changes in physiology). However, the magnitude and direction of effects may differ based on how social rank was manipulated, when stress physiology was assessed (during manipulation or subsequent stressor), and how stress was manipulated (e.g., cognitive, social, physical stress exposure). **Conclusion:** Findings highlight strengths and weaknesses in the current experimental literature and support a nuanced understanding of the influence of social rank on physiological reactivity to stress implicated in health disparities.

31) Abstract 1316
UNCERTAINTY AND PSYCHOLOGICAL DISTRESS DURING COVID-19: A GLOBAL STUDY TO EXAMINE THE ROLE OF RESILIENCE AND PERCEIVED SOCIAL SUPPORT

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Objectives. In this study we examined the relationship between perceived uncertainty and depression/ anxiety symptoms during the COVID-19 pandemic and we tested the moderating roles of resilience and perceived social support in this relationship.
Methods. A cross-sectional study was conducted between March 31st and May 15th, 2020, using an online, multi-language, international survey built within Qualtrics. The study included 3786 respondents from 94 different countries, 47.7% of whom reported residence in the United States of America. We collected data on sociodemographic features, perceived uncertainty, perceived social support, depression and anxiety symptoms, and resilience. A moderation model was tested using model 2 of Hayes' PROCESS macro for SPSS.
Results. Results demonstrated that higher perceived uncertainty was associated with more symptoms of depression and anxiety (r = 0.54; p< .001). Higher resilience levels and higher perceived social support were associated with fewer depression and anxiety symptoms (r = -0.49, p< .001 and r = -0.25, p< .001, respectively).
The moderation hypotheses were supported (F (5, 3780) = 585.6, p< 0.0001); the relationship between uncertainty and symptoms of depression and anxiety decreased as levels of resilience increased (B = -0.16; p< .0001) and as perceived social support increased (B = -0.10; p< .0001).
Conclusion. The study confirms the importance of resilience and social support in buffering the impact of major upheaval, such as the COVID-19 pandemic. The results indicate that resilience and social support could be helpful targets to reduce the negative effects of uncertainty on depression and anxiety symptoms.

32) Abstract 1333
MULTIDIMENSIONAL RELIGION AND SPIRITUALITY AND CHRONIC INFLAMMATION IN MIDUS

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Background: Religious involvement and spirituality are associated with lower morbidity and mortality, yet limited work explores physiological mechanisms underlying salubrious associations. Chronic inflammation is a plausible biological mechanism linking religiosity and spirituality to downstream health given the sensitivity of the immune system to the social environment and the role of inflammation in the pathophysiology of several major chronic diseases. We examine associations between multiple aspects of religiosity and spirituality and two markers of chronic inflammation, interleukin (IL)-6 and C-reactive protein (CRP).

Methods: Data came from biological subsamples of two national cohorts from the MIDUS (Midlife in the United States) Study (combined *N*= 2,118). Predictors include six measures of religiosity and spirituality (service attendance, spirituality, private religious practices, daily spiritual experiences, religious coping, and mindfulness). Outcomes include log-transformed IL-6 and CRP. Covariates include age, gender, cohort, race, body mass index, smoking status, and physical activity.
Results. Older adults, men (vs. women), Black or African American (vs. White) adults, those with higher BMIs, current smokers, and those not meeting physical activity guidelines had significantly higher IL-6 and CRP. Higher spirituality, daily spiritual experiences, religious coping, and mindfulness were associated with lower IL-6. Those who attended religious services at least weekly had lower CRP than less than weekly or never attenders. Higher spirituality and religious coping were associated with lower CRP. Adjustments for smoking and physical activity attenuated, but did not eliminate, associations between religiosity/spirituality measures and inflammatory markers.
Conclusions. Religious service attendance, religious coping, spirituality, and daily spiritual experiences may be health protective for midlife and older adults given their associations with lower levels of chronic inflammation. Findings underscore the importance of examining multiple dimensions of religiosity and spirituality to understand mechanistic pathways.
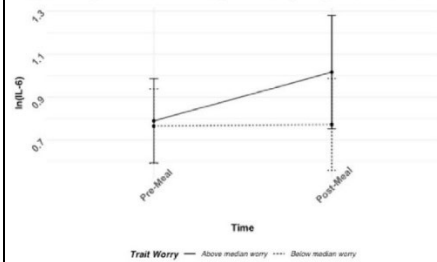
33) Abstract 1337
WORRY, RUMINATION, AND POSTPRANDIAL INFLAMMATION AMONG OLDER ADULTS

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We examined whether perseverative cognition, operationalized as worry or rumination, primed the inflammatory response to a high saturated fat meal in a sample of older adults (*N* = 28). A typical Western-style meal contains 20-40g of dietary fats consumed 3-4 times per day. Thus, people consuming a Western-style diet are in a proinflammatory, post-meal (i.e., postprandial) state for most of the day. The pathophysiological cascade following ingestion of saturated fats leads to postprandial inflammation, which, in turn, induces critical hormonal, metabolic, and nervous system mechanisms. We assessed worry using the Penn State Worry Questionnaire and assessed rumination using the Ruminative Response Questionnaire. We hypothesized that participants would experience different levels of inflammation following a meal high in saturated fat based on their tendency to worry or ruminate. Participants had a blood draw to evaluate serum interleukin-6 (IL-6) before and 4 hours after eating the high saturated fat meal. The meal was 840 kcals, with 58 grams of fat, 47 grams of carbohydrates, and 30 grams of protein. We used hierarchical multiple regressions to examine the unique contribution of each variable of interest. In the first step, postprandial IL-6 (Time 2) was regressed on baseline IL-6 (Time 1) - reflecting residualized change from baseline to postprandial IL-6. Then, potential confounding variables (e.g., age, sex, body mass index) were added to the model. There was a lean (one-tail significance) toward worry boosting postprandial increases in IL-6, such that those who reported worrying more also experienced a greater postprandial increase in IL-6 (*b* = 0.02, *p* = .053; see Figure 1). Trait levels of rumination did not significantly predict postprandial IL-6 (*b* = -0.00, *p* = .84). The results from this study partially support the notion that perseverative cognition, specifically trait worry, is a form of chronic psychological stress that can sensitize (i.e., prime) one's immune system to future stress (i.e., nutritional stress from a high-fat meal).

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Figure 1
Log-transformed IL-6 by level of reported trait worry.

Note. *Error bars represent the standard error of the mean for each group.*

Groups based on a median split.

34) Abstract 1351
CHANGE IN THE SEVERITY OF AUTISM SYMPTOMS RELATES TO CO-OCCURING PSYCHOPATHOLOGY DURING MIDDLE CHILDHOOD

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Background By school age, many autistic children experience change in the severity of their autism symptoms. Additionally, at this age some types of psychopathology begin to emerge. **Objectives** We evaluated whether change in autism symptom severity during middle childhood (6 to 11 years) could be associated with increase in co-occurring psychopathology. **Methods** Seventy-five autistic children were evaluated at 3, 6 and 11 years. Autism symptom severity was evaluated using the Autism Diagnostic Observation Schedule-2 (ADOS-2). Co-occurring psychopathology was evaluated using the Child Behavior Checklist (CBCL) and Anxiety Disorders Interview Schedule/Autism Spectrum Addendum (ADIS/ASA). Change in autism severity was evaluated using the ADOS Calibrated Severity Scores (CSS) across middle childhood (age 6-11), separately for the two autism symptom domains; social-communication symptoms (SA CSS) and restricted, repetitive behaviors (RRB CSS). Based on change patterns, children were classified into groups. **Results** A group of 16 children (21.3%; SA-I) decreased in the severity of social-communication symptoms during early childhood (age 3-6). But, across middle childhood, children in this group increased substantially in severity of social-communication symptoms resulting in a higher mean severity level compared to other children at age 11 (Figure 1 Panel A). Based on CBCL, this group also had elevated psychopathology levels, mainly ADHD and externalizing behaviors, across childhood and predominantly at age 11. A group of 17 children (22.7%; RRB-D) did not change in RRB severity across early childhood (age 3-6). But, across middle childhood, children in the group significantly decreased in RRB severity, to have a lower severity level at age 11 than other children (Figure 1 Panel B). Based on ADIS/ASA, this group also had a higher mean anxiety level than other children at age 11 with 94% of children in the group meeting criteria for an anxiety disorder. **Conclusions** Across middle childhood, increase in social-communication symptom severity is associated with co-occurring ADHD symptoms and externalizing behaviors while decrease in RRB severity is associated with the emergence of anxiety. Individualized interventions should thus be designed in a way that considers a child's autism symptom trajectory and risk for developing specific types of co-occurring psychopathology.
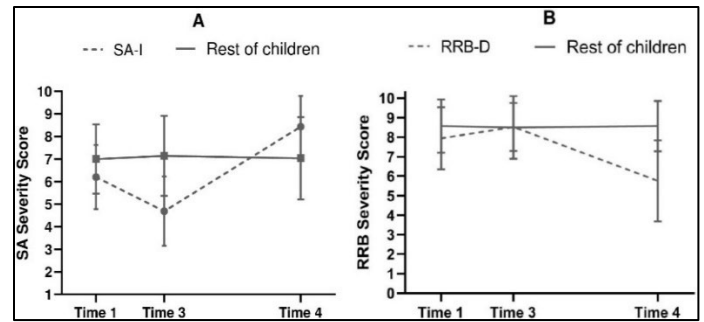
35) Abstract 1354
THE ASSOCIATION BETWEEN FACETS OF MINDFULNESS AND COVID-19 RELATED DISTRESS

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Background: Since the outbreak of COVID-19 several reports have shown that the pandemic has led to increased mental health problems and distress. Trait mindfulness could function as a protective factor against distress during this period. The current study therefore investigated the possible protective character of the five distinct facets of mindfulness in COVID-19 related distress.
Methods: An online self-report study was conducted in a Dutch sample ($N = 811$; $M_{age} = 49\pm17$; 54.5% female) in February 2021. The five subscales of dispositional mindfulness were assessed with the 24-item Five Facet Mindfulness Questionnaire, and the 36-item COVID Stress Scale (CSS) was used to assess COVID-19 related distress. To examine the relationship between the trait mindfulness facets and COVID-19 related distress, multivariate regression analyses were performed.
Findings: In the analysis predicting the CSS score, 11.2% of the variance was explained, and the total model was significant (F (10, 789) = 9.96, $p < .001$). The mindfulness facets describing ($\beta = -.12$, $p = .002$), acting with awareness ($\beta = -.08$, $p = .040$), and non-judging ($\beta = -.12$, $p = .003$), were (negatively) related to distress about COVID-19. The facets observing and non-reacting were unrelated to COVID-19 distress.
Discussion: The results may indicate that individuals high in the mindfulness traits describing, acting with awareness, and non-judging, experience less distress during the pandemic. Given that mindfulness can be enhanced with practice, teaching these skills using e-Health interventions could potentially lead to increased resilience to the psychosocial effects of stressful global situations like pandemics.

36) Abstract 1358
DEVELOPMENT OF THE WELL-BEING IN IBS: STRENGTHS AND HAPPINESS (WISH) POSITIVE PSYCHOLOGY INTERVENTION FOR IRRITABLE BOWEL SYNDROME

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Background: Irritable bowel syndrome (IBS) is a highly prevalent condition associated with reduced health-related quality of life (HRQoL). Existing behavioral health interventions for IBS face important limitations and do not specifically target well-being constructs (e.g., optimism, positive affect), which are deficient in IBS

and associated with superior HRQoL in medical populations. Accordingly, we aimed to develop an IBS-specific positive psychology (PP) intervention informed by the findings of a qualitative study and systematic review.

Methods: Adult participants with IBS completed semi-structured phone interviews and a series of questionnaires about associations between positive psychological constructs, HRQoL, health behaviors, and IBS symptoms. Participants also described the format of a PP program that would be most acceptable to them. Interviews were recorded, transcribed, and analyzed by two independent coders, with all discrepancies resolved by consensus. Additionally, a systematic review examining relationships between PP constructs and IBS was completed, to identify PP constructs previously associated with IBS symptomatology. Collectively, this information was used to adapt a series of evidence-based PP exercises to include in the IBS-specific PP intervention.

Results: Twenty-three participants (13 female, age range = 24-79) with IBS completed the qualitative research phase. Participants described bidirectional associations between positive psychological constructs and health behavior participation, HRQoL, and IBS symptoms. Resilience was a key PP construct identified on the systematic review. Based on qualitative interview themes, feedback regarding program format, and evidence provided by a systematic review, we developed an 8-week, phone-based PP intervention consisting of 8 PP exercises adapted to the IBS population.

Conclusions: Utilizing qualitative data and the findings of a systematic review, we developed an IBS-specific PP intervention. We plan to assess the feasibility, acceptability, and preliminary efficacy of this intervention on HRQoL, health behavior participation, and IBS symptoms in a pilot randomized controlled trial.

37) Abstract 1370
PERSISTENT ASTHMA IN SPECIALIST CARE: CONTRASTING PHYSICIANS' PERCEPTIONS OF PSYCHOLOGICAL BURDEN AND ADHERENCE WITH PATIENTS' PSYCHOPATHOLOGY

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Background: Differences between physician and patient treatment perceptions in asthma are common. However, the degree of concordance between physician perception and psychological burden in asthma severity remains less known. Here, we present an exploratory analysis contrasting physicians' perceptions of asthma patients' psychological problems with indicators of patients' psychopathology derived from self-report indicators.

Methods: This cross-sectional study collected asthma patients' data ($N = 358$) as part of a nationwide, clinical-epidemiological study. Psychological factors were assessed in congruence with the ICD-9 criteria. Information of persistent asthma severity and exacerbations was obtained from physicians' documentation and information on the physicians' perception of the asthma patients and their treatment was surveyed additionally. Multiple linear regression analyses were conducted with age, sex, education, asthma severity, asthma exacerbations, and the interaction between severity and exacerbations as predictors of the physicians' perception. Logistical analyses were conducted to assess for psychological burden regarding likely depression and anxiety diagnoses.

Results: More exacerbations were associated with greater physician-perceived psychological burden in patients with moderate persistent asthma and more than one exacerbation per year, as indicated by

significant Severity x Exacerbation interaction. Main effects of Exacerbations and Severity on physician-perceived medication adherence showed that more exacerbations were associated with reduced physician-perceived medication adherence, and only moderate asthma was associated with lower levels of perceived adherence. In contrast, only patients with more exacerbations had a significantly greater probability of current depression and anxiety diagnoses.

Conclusions: Findings emphasize the importance of physicians' perception and psychological factors in asthma. Notably, these findings suggest that moderate asthma severity in contrast to severe asthma was associated with increased concern from the physician's perspective, while more exacerbations had a greater probability of actual increased psychological burden.

38) Abstract 1374
OPTIMISM AND CRP IN A NATIONWIDE SAMPLE

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Introduction: Considerable research has been conducted on the association between inflammatory biomarkers and negative psychological and emotional factors; however, less is known about the relationship between systemic inflammation and positive psychological factors. The present study aims to examine the relationship between one such positive factor, optimism, and levels of the inflammatory biomarker C-Reactive Protein (CRP).

Methods: The sample featured respondents (n=1945) from the Landmark Study, a nationwide survey in the U.S. conducted in 2014 that included a subgroup of chronically ill individuals. Optimism was measured using a self-report questionnaire (alpha=0.76) and CRP was assessed using a blood-spot from a finger-prick. CRP was assayed using a high sensitivity assay (Precipio Biosciences hsCRP ELISA 11190). Values of CRP were log-transformed in order to normalize the distribution prior to data analysis. Participants with CRP values greater than ten were excluded from the analysis as they could represent people with acute infections.

Results: Hierarchical linear regression was used to assess the relationship between optimism and CRP. Optimism was significantly related to CRP when controlling for age, race, education, and number of chronic health conditions (beta=0.072, t=2.031, p=0.043), and maintained its significance even after controlling for depression (beta=0.087, t=2.34, p=0.02). Those at or below the median on optimism were 18% more likely to have a clinically elevated CRP ($\geq$3.0) than those above the median on optimism.

Conclusion: Optimism may have a protective effect on health through its significant association with lower CRP. This result supports recent research that suggests a link between various factors of positive emotional well-being and CRP. Future research should examine possible explanatory mechanisms for this relationship, such as potential biological pathways as well as health behaviors.

39) Abstract 1378
WHY DO WE SMILE AND GRIMACE DURING ACUTE PAIN? THE ROLE OF NATURALLY OCCURING FACIAL EXPRESSIONS IN PAIN REGULATION

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Recent literature has suggested that facial expressions are not as straightforward as they seem and may not accurately represent the actual emotional experience of an individual. In fact, facial

expressions hold many other more complex functions besides conveying emotions, such as garnering social support, regulating intense emotions, and coping with adversity. The current study explores how positive and negative facial expressions may play a role in handling stressful experiences like acute pain. In particular, this study examined the associations between facial expressions made during a stressful cold task and heart rate in 57 university student participants. Facial expressions were coded by Noldus FaceReader for the degree of smile (positive) as well as the degree of anger and disgust (negative) expression.. Results indicated that, on average, participants who naturally smiled during the cold pressor task had lower heart rate throughout the study, suggesting that smiling can attenuate physiological responses to pain. Expressions of anger and disgust did not influence heart rate response during the cold pressor task. Ultimately, this study gets closer to understanding why people naturally exhibit certain expressions during pain , as well as how they play an important role in pain regulation.

Keywords: facial expressions, smiling, grimacing, anger, disgust, acute pain, pain regulation, heart rate response

40) Abstract 1380
PANDEMIC GRIEF STUDY (PANGS): ACUTE GRIEF OF BEREAVED RELATIVES FOLLOWING DEATHS DURING COVID-19

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Background: The COVID-19 pandemic has led to the death of over 700,000 Americans, with each death leaving 9 surviving Americans (i.e., over 6 million bereaved). One harsh reality of the pandemic has been that survivors have often not been able to care for their dying loved ones, and grieve for them in traditional ways (e.g., wakes, funerals), due to social distancing. The present study used semi-structured clinical interviews to investigate acute grief during the pandemic. **Methods:** Participants were interviewed by phone, including the Center for Epidemiological Studies-Depression scale, a 20-item measure of depression; the Prolonged Grief Disorder scale, a 13-item measure of prolonged grief disorder; the Work and Social Adjustment Scale (WSAS), a 5-item measure assessing for adjustment after major life events; the Post-Traumatic Growth (PTG) scale, a 10-item measure of growth following a traumatic event such as the death of a loved one; the Utrecht Grief Rumination Scale (UGRS), a 15-item scale measuring various aspects of grief-related rumination; the Interpersonal Support Evaluation List (ISEL), a 12-item measure assessing for social support following a major life event. **Results:** Participants ($N = 51$, 74.5% White, 80.4% non-Hispanic) had an average age of 51 ($SD = 15.9$) and were mostly female (76.5%). 53.0% said they were unable to provide support for their dying loved one, 45.1% said they were not able to say good-bye, 47.1% said they were not prepared, 45.1% said they should have been present for the death. The sample experienced sub-clinical depressive symptoms ($M = 10.04$, $SD = 7.03$), and moderate prolonged grief symptoms ($M = 23.0$, $SD = 9.15$). Participants had a mean of 7.61 ($SD = 10.02$) on the WSAS, 23.24 ($SD = 13.50$) on the PTG, 17.31 ($SD = 14.50$) on the UGRS, and 30.25 ($SD = 4.63$) on the ISEL. **Conclusion:** Despite feeling unprepared for the death of their loved ones during the pandemic, depression and grief scores suggest that many individuals are resilient, given their moderate prolonged grief and sub-clinical depression scores on average. The scores for the WSAS suggest that people are adjusting to work and social life following the death of their loved ones. Clinical intervention should focus on the small proportion who are not adjusting during pandemic bereavement.

41) Abstract 1382
PERSEVERATIVE COGNITION PREDICTS NOCTURNAL BLOOD PRESSURE NON-DIPPING IN A COMMUNITY SAMPLE OF ADULTS

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Introduction. Rumination and anxious thinking have been related to cardiovascular disease (CVD) outcomes. This work has often focused on nocturnal blood pressure (BP) dipping as a hypothesized pathway linking perseverative cognition to CVD outcomes. However, this work has yielded mixed results, perhaps due to methodological limitations. Repeated measures data captures CV information more completely, and therefore may clarify previously ambiguous findings. **Aim.** This study assessed associations between perseverative cognition (anxious thinking, rumination) and nocturnal BP dipping captured via repeated measures ambulatory BP assessment. **Methods.** A diverse adult sample (n=300) from the North Texas Heart Study was used. Trait-level rumination and anxiety were assessed through baseline psychosocial surveys. Ambulatory BP monitoring captured BP during wake and sleep states over 2 days/1 night. Relationships were analyzed using Pearson product correlations, t-test, and multivariable linear regression. **Results.** Baseline anxiety and rumination levels were highly correlated ($r=.55$, $p<.0001$). The overall sample had a mean day-night dip in systolic BP (SBP) of 12.24% ($SD=.11$) and diastolic BP (DBP) of 18.60% ($SD=.11$). Using the "non-dipper" metric of < 10% day-night BP differential, 34.20% (n=79) were labeled SBP non-dippers and 14.72% (n=34) were DBP non-dippers. When analyzed as continuous data, higher trait-level anxiety was associated with less nocturnal SBP dipping ($r=-.15$, $p<.05$), but not DBP dipping. Similarly, higher trait-level rumination was associated with less nocturnal SBP dipping ($r=-.16$, $p<.05$), but not DBP dipping. SBP dippers and non-dippers did not significantly differ in mean levels of anxiety. However, mean levels of rumination were significantly higher among SBP non-dippers ($M= 2.83$, $SD=.78$) than among dippers ($M=2.59$, $SD=.82$; t [164.9]= 2.18, pB=-.02, $p<.05$). **Conclusion.** Rumination may be an especially relevant form of preservative cognition for extended hypertensive states across wake and sleep. Effect differences across BP type may reflect differences in stress response dimensions activated by ruminative thought, leaving this line of research open to future study.

42) Abstract 1383
LANGUAGE DIFFERENCES IN QUALITY OF LIFE AMONG CHILDHOOD AND ADOLESCENT CANCER SURVIVORS

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Background: Survival rates for childhood cancer have increased substantially; however, survivors of childhood cancer may be at risk for poor psychosocial outcomes as a result of late effects of treatment. The role of cultural factors in cancer health disparities is currently understudied; therefore, the current study examined the relationship between primary language and parent-report of quality of life among pediatric cancer survivors.

Methods: A total of 76 parents of childhood cancer survivors participated and were grouped based on primary language spoken: English-speaking (*n*=43) and Spanish-speaking (n=33). Parents completed the Child Health & Illness Profile–Child Edition (CHIP-CE), which assesses well-being across satisfaction, comfort, resilience, risk avoidance, and achievement domains. Independent samples t-tests were conducted to examine group differences in CHIP domains.

Results: Spanish-speaking parents reported higher satisfaction with their children's health (*t*(75)=-2.248, *p*=0.028) as well as greater health-related threats to their children's achievement (*t*(75)=2.039, *p*=0.045) than English-speaking parents. No differences were found for the comfort, resilience, and risk avoidance domains.

Conclusion: Spanish-speaking parents were more satisfied with their children's health but also reported greater health-related threats in achievement in their children compared to English-speaking parents. These findings highlight that language, a proxy for acculturation, may play a critical role in cancer health disparities in survivors of childhood cancer. Further understanding the role of social determinants of health in disparities in psychosocial outcomes of cancer survivors is needed in order to address this important gap and improve outcomes for Latinx cancer survivors.

43) Abstract 1385
COMPOSITE GENDER INDEX IN PSYCHIATRIC EMERGENCY RESEARCH

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Introduction: Biological sex is known to have an influence in psychiatry with differences in prevalences and symptomatologies. To dates, few studies in psychiatry have investigated the role of socio-cultural gender in the experience of mental illness. Since research in mental health is costly and many projects are ongoing, approaches to investigate gender diversity using available variables would be advantageous. Using readily available sociodemographic data, promising methodologies have been successfully developed to shed light onto gender diversity in other domains of health research. For example, the creation of a composite gender index developed by Pelletier, Ditto & Pilote (2015) to investigate risk factors in patients with premature acute coronary syndrome resulted in fascinating results with risk factors identified among sociodemographic gender indices that were not present when solely using biological sex.

Method: 2061 psychiatric patients were recruited as part of the Signature biobank during their visit at the emergency in the largest psychiatric hospital in Quebec, Canada. Various data were measured such as diagnosis, symptoms, sociodemographics, and quality of sleep. Promising variables were identified using t-tests and Chi2 for differences between birth-assigned males and females. 32 variables were retained, and an exploratory factor analysis was conducted on a subgroup of the sample to create a composite index. This model will be tested on the rest of the group using confirmatory factor analysis and used to identify potential differences among males and females relative to their gender indices.

Results: In preliminary analyses, males showed lower levels of positive and negative urgency, lack of premedication and higher score on the sensation seeking subscales of the impulsive behavior scale than females. Males also had lower levels of state anxiety, depression, suicide risk, and presented higher levels of life-long aggressive behavior and more substance use. Females experienced more sexual violence during childhood. 11 variables were retained in a 5 factors model extracted from factor analyses to be pursed in forthcoming analyses.

44) Abstract 1387
THE COVID-19 PANDEMIC AND MENTAL HEALTH: EFFECTS OF SOCIAL SUPPORT AND SELF-REGULATION

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Social support has been widely associated with various morbidity and mortality. How does social support availability help youths cope with the global pandemic of Covid-19 and maintain their mental well-being? Utilizing data from a UK national birth cohort, namely the Millennium Cohort Study, this research investigated the joint role of social support availability and self-regulation against such major life stressors, inclusding G × E mechanisms. Results from 4095 cohort members (399 males (47.20%) and 2602 females (63.54%), others refused to report) suggested that social support availability at the outburst of Covid-19 pandemic, as well as age 7 emotional self-regulation (rated by cohort members' parents) contributes to youths' better mental health (viz., mental well-being and non-specific psychological distress) shortly after the outburst of Covid-19 (|*B*|s > 0.072, *p*s < .018). Most importantly, age 7 cognitive self-regulation and social support availability jointly predicted better their well-being 4 months later after the local outbursts of pandemic (for mental well-being, *B* = 0.309, *p* = .017, 95% CI = [0.056, 0.562]; and for non-specific psychological distress, *B* = -0.299, *p* = .043, 95% CI = [-0.587, -0.011]). Johnson-Neyman plots (false discovery rate limited) suggested that it was those high but not low in cognitive self-regulation that benefited more from the perceived social support availability. Within the ranges of significance (81.19% for mental well-being and 80.94% for non-specific psychological well-being), social support availability positively predicted mental health and such effect increased gradually as the increase of age 7 cognitive self-regulation. Findings filled in the research gap such that social support and self-regulation have been investigated separately as two coping mechanisms, by revealing that self-regulation (i.e., internal resources) determines the utility of social support availability (i.e., external resources). Findings here inspired new research questions for the field, such as whether relevant developmental trajectories of self-regulation and social support might intertwin to cast on health trajectories, and whether these processes are subject to potential G × E interactions such as the exposure to childhood adversity or relevant genetic risks. Models to examine these hypotheses will be discussed.

45) Abstract 1393
THE NEURAL CORRELATES OF AUTONOMIC PREDICTION ERROR IN HYPERMOBILITY AND ANXIETY

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Introduction

Motivated by the disproportionate representation of joint laxity within anxiety disorders, this study aimed to investigate the neural mechanisms underpinning this under-researched phenomenon. One proposed theory emanates from the dysfunction of the autonomic nervous system. Atypical connective tissue in the vasculature is thought to disrupt peripheral blood flow. Consequently, anxiety may manifest through the effect of dysautonomia on interoception – sensations from within the body – and emotion. Autonomic prediction error provides a quantifiable correlate of dysautonomia in the framework of interoceptive predictive coding. This work identifies the neural loci of this biological hypothesis and thus the correlates of dysautonomia in hypermobility and anxiety.

Method

Fifty-one participants, twenty-six with clinical anxiety and the remaining as a healthy comparison group, underwent functional neuroimaging and autonomic testing paradigms. Twenty-four of the participants also met threshold for hypermobility classification. A full-factorial design allowed group-level analysis of the interaction with autonomic prediction error, which was calculated as the

mismatch between cardiovascular changes induced by orthostasis and symptoms induced by orthostasis.
Results
Autonomic prediction error correlated with activation of emotion processing and autonomic control regions, specifically the anterior cingulate cortex. Activity was reduced in the inferior frontal gyrus, implicated in higher-level cognitive control. Notably, the anxious group independently showed increased activation of the mid-insula with prediction error. This indicates altered polymodal integration of interoceptive information and substantiates hypotheses for a new role of mid-insula in prediction error-weighting.
Discussion
These findings offer neurobiological mechanisms for heightened affective emotion and aberrant emotion-autonomic-frontal regulation in the hypermobility-anxiety association. This work implicates functional networks of emotion-cognitive control, salience and interoceptive predictive coding. Evidence is offered for a novel phenotype contingent on the laxity-anxiety interaction. The correlates of prediction error should inform representation of neurodiversity and psychopathologies observed across connective tissue disorders and brain-body interactions for precision medicine.

46) Abstract 1399
DRAWING FOR STRESS REDUCTION: CAN IT BE DIGITAL?
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Drawing has been demonstrated in several studies to reduce stress. While digital media are ubiquitous, in art therapy they are not widespread, and research is scant. A previous study in our laboratory found a reduction in parasympathetic indices of HRV during artmaking compared to baseline, and the material used made a difference. The current study was designed to examine psychological and physiological responses to drawing on a tablet compared to oil pastels following stress induction. We hypothesized that artmaking will lead to a decrease in state stress and salivary cortisol with both media and that participants drawing with oil pastels will report higher flow and stronger emotional responses after than those on tablets. To examine our hypotheses, 48 healthy women underwent stress induction with the Sing a Song Stress test for groups and were randomly assigned to draw for 45 minutes on an iPad with an Apple Pencil (n=22) or with oil pastels on paper (n=26). We examined changes in stress (State-Trait Personality Inventory), artmaking experience (Art-based intervention questionnaire). Flow was measured with the Flow State Scale following artmaking. Salivary cortisol was measured after signing informed consent and following artmaking. There was a significant decline in mean situational stress score after drawing with both materials, following stress induction (22.26+6.53) and artmaking (16.47+5.46) (F (1,43) = 25.4, p <.0005), but no difference was found in the magnitude of the decline in stress between the art materials (interaction F(1,43) = -0.07, p=.794). No change in salivary cortisol from baseline to after drawing was found (M=3.74+3.96 and M=4.21 +7.33 ng/ml accordingly, F(1,42)= 0.05). In contrary to our expectations, there were no significant differences in engagement or flow. One major limitation of this study is in the timing of the saliva collection for measuring cortisol levels. We failed to collect saliva following the stress induction, and furthermore, the timing of the saliva collection artmaking was challenging due to the timing of the artmaking. Both drawing on tablets and with oil pastels is beneficial in reducing stress as evident from self-report. There are specific unique properties of each media that can be used accordingly for stress reduction. Further studies are needed to assess the physiological effect of artmaking.

47) Abstract 1429
TRAIT MINDFULNESS AND HEART RATE VARIABILITY REACTIVITY DURING A CAFFEINE MANIPULATED EMOTIONAL TASK
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Background: Higher trait mindfulness is associated with better emotion regulation and is often defined as present-moment awareness with a stance of acceptance. Prior literature supports exploration of interactive effects between awareness and acceptance facets to best capture its mechanisms. As heart rate reactivity (HRV) indexes autonomic, affective, and attentional regulation, higher mindfulness should predict higher HRV at rest and buffer reactivity under stress when levels of both awareness and acceptance are high; however, findings are limited and mixed. We investigated main and interactive relationships between mindfulness facets and vagally mediated HRV under a sympathomimetic manipulation to systematically explore these relationships.
Methods: Healthy adults (N = 99; 82% F; 21.7 +/- 5.9 yrs) participated in a double-blind, placebo-controlled caffeine manipulation. Using negative and positive photos from the International Affective Picture System (IAPS), participants rated emotional valence of each photo. HRV was continuously measured by a Polar® heart rate monitor. Separate linear mixed models tested main effects of mindful *observing (OBS)*, *describing (DESC)*, *acting with awareness (AWA)*, *nonreactivity (NR)*, and *nonjudging (NJ)*, as well as interactions of *AWA*NJ* and *OBS*NR* given prior literature. Vagally-mediated HRV [square root of mean successive differences (RMSSD)] was captured before and during photo viewing. Analyses controlled for sex, BMI, age, race, treatment and valence order effects (fixed effects), and resting RMSSD (random effect).
Results: Higher *AWA, NJ*, and *NR* each significantly predicted higher RMSSD across conditions (*p*'s < .05), regardless of experimental manipulation. There were neither significant interactive effects between facets on RMSSD nor differences over time.
Conclusions: Specific mindfulness facets were associated with higher HRV both at baseline and during a passive emotional reaction task. In conjunction with previous findings from this study that *AWA* and *NJ* interact to predict lower valence while viewing negative photos under caffeine relative to placebo (Alessi et al., 2019), these findings suggest that mindfulness may differentially impact emotion regulation through emotional-cognitive and physiological reactivity mechanisms.

48) Abstract 1434
CANCER-RELATED WORRY IN EVERYDAY LIFE: PRELIMINARY FINDINGS FROM AN ECOLOGICAL MOMENTARY ASSESSMENT STUDY
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BACKGROUND: Adjustment after cancer treatment is an ongoing process, yet research exploring psychological factors in everyday life are still rare. Even less is known about cancer-related worries in everyday life, especially at potentially difficult periods (e.g., prior to a cancer surveillance appointment). This study applied an ecological momentary assessment (EMA) approach to repeatedly assess cancer-related worry in everyday life before and after a cancer care clinical appointment.
METHODS: Adult cancer survivors with diverse diagnoses (n=39; mean age=57; 92% women, 100% white) and scheduled to attend a routine cancer follow-up appointment were recruited. Participants completed a baseline survey and provided EMA surveys for one week prior to and following their appointment. EMA surveys were prompted 6 times per day (9am to 9pm), assessing cancer-related worry, affect, thoughts, stress, symptoms, and health behaviors.

RESULTS: Participants reported an average of 3.5 years since completing active treatment (range 3 months to 21 years), 69% had breast cancer, and 54% reported a Stage I diagnosis. At baseline, 33% of the sample reported meaningful levels of fear of cancer recurrence (≥22 on FCRI-SF) and 56% reported meaningful levels of anxiety and depression (≥13 on HADS total). Compliance with completing EMA surveys was excellent (>90%). Over the entire study period, 87% of participants reported *at least one* instance of cancer-related worry. In the week prior to their appointment, participants reported cancer-related worry an average of 5.1 times (SD=5.6; range 0 to 21). In the week after, cancer-related worry was reported an average of 1.6 times (SD=3.8; range 0 to 20), with 67% reporting no instances. CONCLUSION: Cancer-related worry was relatively common in the week prior to an appointment, even years after active treatment conclusion. The frequency of this worry in the days prior to a routine appointment relative to the week after underscores the importance of anticipatory worry in the cancer survivorship experience. This work demonstrates the feasibility of collecting intensive longitudinal data in cancer survivors and provides preliminary insight regarding experiential processes in the post-treatment period. The use of these data to inform real-time digital health approaches to intervene on cancer-related cognitive processes will be discussed.

49) Abstract 1463
HEART RATE VARIABILITY IS DIFFERENTIALLY ASSOCIATED WITH HEART RATE AS A FUNCTION OF GENDER AND DEPRESSION

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Unexpectedly, women show higher heart rate variability (HRV) and heart rate (HR) than men (Koenig & Thayer, 2015). Our recent report showed women had a stronger association between HRV and HR in women compared to men, thereby potentially explaining such paradoxical associations (Williams et al., *in press*). Psychophysiological differences between men and women may account for such differences, including women's greater reports of depression (Nolen-Hoeksema, 2009) compared to men. Therefore, the following study sought to understand how depression might contribute to the differential HRV-HR link found between men and women. In a sample of 285 young and apparently healthy adults (~%50 women), resting HRV and HR data was measured during a 5-minute baseline period. Participants then answered the 21-item Beck Depression Inventory II, designed to assess self-reported depressive symptoms. Moderation results suggest an impact of both gender and self-reported depression on the association between HRV and HR ($B = 0.28$, SE = 0.15, $p = .075$). Conditional tests showed higher HRV predicted lower HR similarly among women, with no impact of self-reported depression (each p < .001). Similarly, men who reported higher depression showed a significant association between HRV and HR ($B = -5.19$, SE = 1.49, $p < .001$), however this association was significantly attenuated in men who reported lower depression ($B = -1.99$, SE = 1.08, $p = .068$). These data extend our recent report (Williams et al., *in press*), by suggesting that the strength of the association between HRV and HR differ between women and men at lower levels of depression primarily. Given that men generally self-report lower depression over the lifespan, depression may be a psychological mechanism underpinning gender differences in the HRV-HR link (Williams et al., *in press*). Different coping styles produced by gender role socialization may also influence the current results; however, future studies are needed to address this directly.

50) Abstract 1469
PERCEIVED CONTROL'S ASSOCIATION WITH ADOLESCENT SUBSTANCE USE: LONGITUDINAL FINDINGS FROM THE NATIONAL CHILD DEVELOPMENT STUDY

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BACKGROUND
Adolescent substance use has a net negative effect on the population as it interferes with cognitive processes, contributes to mood disorders, and costs society in healthcare, education, and juvenile crime. Perceived control may be a relevant factor for adolescent substance use, including cigarette and alcohol intake. Past longitudinal research that studied the relationship between perceived control and cigarette smoking and alcohol use in ninth grade students revealed that those who showed more perceived control were less likely to have experimented with alcohol and smoking than those who showed less perceived control. However, most evidence examines adults and focuses on gender effects, leaving a gap of information about perceived control in adolescents and substance use. We hypothesized that adolescents with less perceived control would have more recent alcohol consumption and cigarette smoking relative to those with more control.
METHODS
The study used data from 2,824 participants in the 1958 National Child Development Study, which examined individuals born in England, Scotland, or Wales in March 1958 from birth through older age. Essays written by participants at age 11 were rated for perceived control by two judges ("To what extent does the author seem to feel in charge of or in control of his or her life?"; Finn's r interrater reliability = .88). Cigarette smoking (smoker vs. non-smoker) and alcohol consumption (drinker vs. non-drinker) was self-reported at age 16.
RESULTS
A logistic regression did not show a statistically significant relationship between perceived control and being a smoker (b = -0.05, standard error [SE] = 0.04, $p = 0.18$, odds ratio [OR] = 0.95). Similarly, a logistic regression did not show a statistically significant relationship between perceived control and drinking alcohol (b = -0.06, SE = 0.09, $p = 0.51$, OR = 0.94). However, the direction of associations were consistent with the hypothesis that more control would predict less smoking and drinking.
DISCUSSION
Findings do not suggest that feeling in control of one's life at age 11 is correlated with less recent alcohol consumption and cigarette use 5 years later. Due to the observational nature of this study, causality cannot be inferred from the results. Further research on this topic would be beneficial.

51) Abstract 1479
DEPRESSIVE AND ANXIOUS SYMPTOMS AND IMMUNE TRANSCRIPTIONAL PROFILES SEVERAL YEARS POSTPARTUM

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Most research on maternal mental health focuses on the perinatal period and does not extend beyond 12 months postpartum. However, emerging evidence suggests that for some women (30%-50%),

depression and anxiety symptoms may persist beyond the first year postpartum. Despite the high prevalence rates and devastating maternal-child consequences, our understanding of the underlying biological mechanisms of maternal mental health beyond the first year postpartum is incomplete. Changes in the immune system, specifically inflammatory and antiviral processes, are thought to be involved in the pathophysiology of mood and anxiety disorders in the general population. Therefore, the purpose of the current investigation focuses on women two to three years post-delivery to examine the relationship of depression and anxiety symptoms with transcriptional control pathways relevant to inflammatory and antiviral processes using differential gene expression (DGEs) analyses. Women (N = 33) over 18 years of age self-reported on their levels of depression (Edinburgh Postnatal Depression Scale), anxiety (Overall Anxiety Severity and Impairment Scale) and PTSD (Impact of Events Scale) and provided a blood sample approximately 2-3 years post-delivery. DGE analyses revealed that women with clinically elevated symptoms of depression (EPDS$\geq$12) anxiety (OASIS$\geq$7) and/or PTSD (IES>26) (n =16) had a higher prevalence of genes activated by transcription control pathways associated with inflammation (NF-κB, p=0.004; JUN, p=0.02; CREB, p=0.01) and reduced activation of genes associated with the antiviral response (IRF2, p=0.02) and the glucocorticoid (GR, p=0.02) signaling pathway compared to women without symptoms (n=17). This is one of the first investigations into the immune signaling pathways involved in mood and anxiety disorders two to three years post-delivery. The results of this study suggest that clinically elevated symptoms of depression, anxiety, and PTSD two to three years post-delivery are associated with a gene expression profile characterized by upregulated expression of pro-inflammatory genes and downregulated expression of antiviral genes. The data also points to two potential pathways linking symptoms to increased systematic inflammation: activation of the sympathetic nervous system and reduced hypothalamic pituitary adrenal axis activity.

52) Abstract 1485
DETECTION OF ACUTE PSYCHOSOCIAL STRESS FROM BODY MOVEMENTS USING MACHINE LEARNING

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Objective: Stress has become one of the key problems of modern industrialized societies. One biological pathway of how stress negatively affects health is via inflammation, which is induced under acute stress and plays an important role in chronic diseases like cardiovascular diseases, diabetes, and cancer. Traditional stress assessment methods usually measure acute stress reactions and require complex and often invasive laboratory procedures, such as saliva- and blood-based biomarkers. A promising alternative might be the observation of movement parameters. Previous work has shown that these parameters are affected by negative emotions and systemic inflammation. Therefore, we investigate whether body movements can be used to classify acute stress via machine learning. Methods: Twenty healthy participants (90% female) aged 22.6±4.1 years (M±SD) were exposed to the Trier Social Stress Test (TSST) and the friendly TSST (f-TSST) in randomized order in a within-subjects experiment on two consecutive days. We measured body movements with an inertial measurement unit-based motion capture suit and extracted features resulting from time-series data. The extracted features were used to train machine learning models to detect when participants are exposed to the TSST or the f-TSST. We optimized model hyperparameters via grid-search within a nested 5-fold cross-validation to assert model generalization. Results: Participants showed significantly (p<0.001) higher cortisol increases when being exposed to the TSST compared to the f-TSST.

Similarly, the two conditions can be accurately predicted by the machine learning models trained on body movements. The best-performing classifier achieved a classification accuracy of 85.0±9.4%, a precision of 81.8±9.8%, and a recall of 90.0±5.6%. However, results also indicate that the condition order may have an effect on classification performance.
Discussion: Being able to distinguish the two TSST variants indicates that the machine learning models are able to learn stress related movement features. Reliable classification of stress based on body worn sensors provides the foundation for non-invasive continuous stress monitoring systems. Further, our results support the connections between movement and stress highlighted in previous work. In future, the influence of condition order on stress perception needs to be further investigated.

53) Abstract 1496
THE ASSOCIATION BETWEEN MEMORY, PHYSICAL ACTIVITY AND AIR POLLUTION IN MIDDLE-AGED COHORT OF THE 4HAIE STUDY FROM THE CZECH REPUBLIC

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Introduction: There has been a discussion and increasing research interest in modifiable risk factors including physical inactivity and exposure to air pollution on cognitive health. However, the evidence on the association between memory and physical activity in young and middle adulthood is limited and rather mixed.
We aimed to evaluate the association between episodic memory, an important marker of cognitive health, chronic physical activity and long-term exposure to air pollution in middle-aged adults (36-45 years).
Methods: We analyzed a total of 289 participants (129 women, 44.64 %; 160 men, 55.36 %) aged 40.95±2.58 years involved in the Czech study Healthy Aging in Industrial Environment (Programme 4), residing for at least 5 years in a historically high air-polluted region (Moravian-Silesian) or in a control region with low air-pollution (South Bohemia). To determine the level of physical activity a standardized Leisure-Time Exercise Questionnaire (LTEQ) was used. Participants in each region were categorized based on LTEQ score into 2 groups: „sedentary" and „moderately active or active".
Episodic memory was assessed using the standardized Rey Auditory Verbal Learning Test.
Results: Regression analyses replicated findings from previous studies that being a woman, younger and having higher education was associated with better memory. There was no statistically significant difference in memory score by physical activity status (p=0.140) and by region (p=0.362). The interaction term between region and physical activity status was not significant as well (p=0.335).
Conclusion: In the middle-aged cohort we did not observe any association between the level of physical activity, air pollution and memory. It is possible that middle adulthood is too early to detect the negative effects of long-term air pollution and chronic physical inactivity on memory, that have been previously observed in older age groups. Future evaluation of larger samples of middle-aged individuals with more nuanced methodology, including objective measurement of physical activity and personalized air pollution exposure is needed.

54) Abstract 1517
THE STROOP COMPETITION: A SOCIAL-EVALUATIVE STROOP TEST FOR ACUTE STRESS INDUCTION

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Objective: The Stroop test is one of the most widely used protocols to induce cognitive stress and it reliably activates the sympathetic nervous system (SNS). However, it only moderately activates the hypothalamic-pituitary-adrenal (HPA) axis. In other well-known stress protocols, such as the cold-pressor test, adding social-evaluative elements to the regular procedure has proven to cause increased HPA axis activation. For this reason, we introduce and evaluate the "Stroop Competition", a novel stress protocol based on the established Stroop test that adds social-evaluative feedback. Methods: We investigated the biological stress response of 22 healthy participants (50% female) aged 24.4 ± 7.2 years (M±SD) in a randomized between-subjects pilot experiment. Participants were either performing three repetitions of the regular Stroop test (control group) or the Stroop Competition (competition group). At the beginning of the Stroop Competition, participants were informed that they have to perform the Stroop test against an opponent while not knowing that the opponent was part of the study personnel, and supposed to always win. Each repetition was accompanied by a performance evaluation. During the experiment, we recorded heart rate (HR) and heart rate variability (HRV) extracted from electrocardiogram data, and measured salivary alpha-amylase (sAA) and cortisol to assess the biological stress response. Results: Participants in the competition group experienced higher SNS activation, which increased over the three Stroop repetitions, indicated by a statistically significant ($p<0.05$) interaction effect between time and condition. During each Stroop repetition, the competition group experienced significantly higher HR and lower HRV levels. Additionally, we observed significantly ($p<0.05$) higher cortisol levels in the competition group indicating higher HPA axis activity. Furthermore, the sAA response to the Stroop Competition was higher than to the regular Stroop test. Discussion: The findings of our pilot study confirms our hypothesis that adding social-evaluative elements to the Stroop test causes a more effective activation of both SNS and HPA axis. We are convinced that our novel Stroop Competition protocol will provide a valuable addition to the already existing portfolio of stress protocols since it is easy to implement and requires less (personnel) resources.

55) Abstract 1524
INCREASED DEPRESSION AND ANXIETY DURING THE COVID-19 PANDEMIC REGARDLESS OF COVID-19 POSITIVITY

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Background: Recent studies have reported increased rates of mood and anxiety disorders in COVID-19 patients after acute illness, possibly resulting from inflammation, which is linked to depression and childhood trauma. Increased rates of anxiety and depression have also been observed at the population level following past viral outbreaks (e.g. SARS-CoV-1, MERS) and pandemic associated stress could also impact mental health. Thus, the present study compared depression, anxiety, and perceived stress scores in university students who tested positive for COVID-19 to those who never contracted the disease, and to scores prior to the pandemic. Methods: University students completed self-report measures of depression, anxiety, and perceived stress before (N=150) and during (N=334) the COVID-19 pandemic. The pandemic sample also completed measures of COVID-19 positivity, symptoms, and recovery. One third of the sample tested positive for COVID-19 (N=109). Three x (pre-pandemic, COVID-19 positive, COVID-19 negative) x two (male, female) ANOVAs examined differences in depression, anxiety, and perceived stress. A two (COVID-19 positive, COVID-19 negative) x two (male, female) ANOVA compared PTSD severity. Results: There were significant group effects for depression ($F(1,477)=3.06$, $p=.048$, partial $\eta^2=.013$), anxiety ($F(1,477)=3.03$, $p=.049$, partial $\eta^2=.013$), and perceived stress ($F(1,376)=5.62$, $p=.004$, partial $\eta^2=.029$). Post-hoc analyses indicated that depression and anxiety were higher in the COVID-19 positive (all p's <.034) and negative (all p's <.042) groups compared to the pre-pandemic sample, but did not differ across the pandemic samples (all p's >.584). In contrast, perceived stress was higher in the pre-pandemic group compared to those who were COVID-19 positive (p=.033) and negative (p=.011). PTSD severity did not differ between the COVID-19 positive and negative groups (p=.645). Females were more depressed (p=.036), anxious (p<.001) and stressed (p=.006) than males but did not differ in PTSD severity (p=.305). Discussion: These results suggest that rates of depression and anxiety have increased during the pandemic regardless of COVID-19 positivity. Reduced stress during the pandemic may reflect reduced extracurricular commitments due to university activity restrictions. Future research should examine if these results generalize beyond university students.

56) Abstract 1529
PUBLIC VIEWS DURING THE CORONAVIRUS PANDEMIC: A UK BASED MIXED METHOD STUDY

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Introduction: The coronavirus pandemic presents the greatest challenge to public health in living memory. To slow the spread of the virus the UK initiated periods of strict social distancing, or lockdown. The ongoing social and psychological impacts of the pandemic and lockdowns are still under investigation. We aimed to explore longitudinally the attitudes and behaviors of members of the UK public from the start of UK lockdowns in March, 2020. We focused on mental health, adherence to health behaviours and government regulations, perceptions of vaccinations, and impact on Black, Asian, Minority Ethnic (BAME) participants. Method: Focus groups (2-8 people, 60 min) and surveys were conducted with 57 UK residents from March 23, 2020 to the present at 5 different timepoints that captured lockdowns and firebreaks (93% retention). Participants were 51% Female, mean age 37.1 (Range: 20-60), 72% White, 5% Mixed or Multiple ethnic groups, 16% Asian or Asian British, and 7% Black, African, Caribbean or Black British. Surveys included the Patient Health Questionnaire - Somatic, Anxiety, and Depressive Symptoms (PHQ-SADS), the Capabilities, Opportunities, Motivations and Behaviours questionnaire (COM-B), and coronavirus specific questions such as vaccination intention. Qualitative results: The central theme was that of loss; 'practical losses' e.g. income and 'psychological losses' e.g. motivation. *Loss* improved, but *uncertainty and anticipatory anxiety* continued across timepoints. Reported *mental health issues* improved over Summer 2020 and worsened in Nov 2020. *Alert fatigue and learned helplessness* emerged as the main

themes at that time and *marginalization* by BAME participants. Behavioural adherence and vaccination uptake focused around *perception of risk and community vs individual responsibility*. **Quantitative results**: Data will be analysed following the current wave of data collection (Nov-Dec 2021) and will presented in March, 2022. **Conclusion:** Mental health fluctuated with the ability to socially connect with others outside of the household. Feelings of loss improved over time. Alert fatigue and general mistrust in government increased as did learned helplessness resulting in a loss of motivation. Results have had a significant policy and media impact in the UK and resulted in several publications to date.

57) Abstract 1533
SLEEP DURATION AND EMOTIONAL WELLBEING MEDIATE ASSOCIATIONS BETWEEN SOCIAL STATUS AND COLLEGE GPA

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Background: Low socioeconomic status (SES) is associated with poor academic performance. However, one's *perception* of their social status in society may be more relevant for adverse outcomes. Moreover, emotional wellbeing and sleep health also predict college performance. Thus, we tested whether sleep health and wellbeing explain the association between social status and one objective index of performance, first-year cumulative GPA.
Methods: Participants were 693 first-year college students (74.5% female, Age: M=18.59, SD=1.29). Self-identified race was 80.9% White, 11.1% African American/Black, 3.1% Asian, and 3.3% other. Participants rated their perceived social standing in the United States (M=6.03, SD=1.75). Emotional wellbeing was derived from 8 items on the Patient Health Questionnaire (M=6.85, SD=5.51) and sleep duration (M=411.23 minutes, SD=76.16) from the Pittsburgh Sleep Quality Index. GPA was provided by the university registrar. A nonparametric bootstrapping approach with resampling assessed two mediation models to test direct and indirect effects. Covariates were age, race, and gender.
Results: Higher perceived social status within the United States predicted better first-year college GPA (total effect: b=.050, t=2.745, p=.006). With sleep duration included in the model, social status (direct effect: b=.046, t=2.546, p=.011) and sleep duration (b=.001, t=3.071, p=.002) were associated with GPA. Sleep duration did not mediate the association between social status and GPA (indirect effect: b=.004, SE=.003, 95% CI=-.001, .011). In the second model, higher social status predicted better emotional wellbeing (total effect: b=.050, t=2.726, p=.007). With sleep duration included, only wellbeing remained associated with GPA (b=-.025, t=-4.800, p<.001) while social status did not (direct effect: b=.033, t=1.816, p=.070). Emotional wellbeing mediated the association between social status and GPA (indirect effect: b=.017, SE=.006, 95% CI=.007, .029).
Conclusion: Low perceived social status influenced college performance through emotional wellbeing. Sleep duration was an independent predictor of performance. Targeting wellbeing could perhaps mitigate effects of low social status. Sleep duration and other daytime demands (need for employment) should also be evaluated in the context of social status to better predict, and target, first-year college performance.

Figure 1.
Mediation model displaying how emotional wellbeing (M) mediates the association between perceived social status in the United States (X) and first-year college academic performance (Y).

58) Abstract 1538
CAN THE SNOO IMPROVE MATERNAL AND INFANT SLEEP IN THE FIRST 5 MONTHS POSTPARTUM? POSSIBLE IMPLICATIONS FOR POSTPARTUM DEPRESSION AND ANXIETY

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Identifying risk factors for postpartum depression and anxiety is critical in order to intervene in a timely manner. Poor maternal sleep is a recognized risk factor for PPD. Infant sleep, on the other hand, is less appreciated as a potent risk factor. The SNOO is a robotic, responsive bassinet that helps an infant self-soothe and return to sleep without the intervention of the parents. In theory, fewer awakenings to attend to their infant would result in more consolidated sleep. In this longitudinal, observational study 114 women with a history of MDD were recruited in late pregnancy and were provided a SNOO to use up to 6 months postpartum. Participants completed online surveys in late pregnancy and then monthly through 5 months postpartum. Questionnaires included the Pittsburgh Sleep Quality Index (PSQI), Insomnia Symptom Questionnaire (ISQ), the Edinburgh Postnatal Depression Scale (EPDS), and the Generalized Anxiety Disorder scale (GAD). Mothers also reported on their infant's sleep each month with the Brief infant Sleep Questionnaire (BISQ). Linear regressions were done to determine whether maternal and infant sleep were associated with depression and anxiety scores. Participants were 30 ±4.2 years of age and 75.9% were White. Sleep quality worsened in the first month postpartum compared to late pregnancy, and modestly improved overtime (F= 8.983, p < .001). However, on average sleep quality remained poor (scores >6). Clinical insomnia did not change over time, but about 20% endorsed clinical insomnia at any given timepoint. EPDS and GAD scores worsened in the first month postpartum and remained higher compared to late pregnancy (F= 9.17, p < .001) and (F = 12.67, p < .001). But importantly, scores on average were well below clinically suggestive scores for depression and anxiety. Lastly, infant sleep significantly increased over time: 8.27 (1.76) hours in Month 1 to 9.81 (1.5) hours in Month 5 (F = 23.19, p <.001), and nightly infant awakenings decreased over time: 3.4(2.0) in Month 1 to 1.79 (1.3) in Month 5 (F = 41.69, p <.001). Sleep quality in the postpartum period is typically poor as a result of caring for a newborn. While these data are lacking a control group with which to confidently state that the SNOO does improve maternal and infant sleep, they do suggest that this may be a viable option to use in order to mitigate recurrent PPD risk.

59) Abstract 1542
VALENCE WEIGHTING BIAS CURVILINEARLY PREDICTS LONGITUDINAL CHANGES IN C-REACTIVE PROTEIN IN THREE INDEPENDENT STUDIES.

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Prior research has demonstrated psychological experiences like stress can influence physical health through increases in non-resolving, low-grade inflammation. Comparatively less research has focused on the basic psychological processes that lead to perceived stress and inflammation. The present research examines the role of valence weighting bias in this process. Valence weighting bias reflects the extent to which individuals give weight to negative versus positive information when encountering and judging an ambiguous stimulus. A negative weighting bias has been associated with increased perceived threat in ambiguous situations and a positive weighting bias has been associated with increased risk-taking behavior and self-control failures in the domain of unhealthy eating. Integrating these findings, we hypothesized a curvilinear relationship between weighting bias and change in inflammation over time such that both negative and positive weighting biases would be associated with larger increases in inflammation relative to individuals who give more equal weight to negative and positive information. We also hypothesized that these increases in inflammation may be due to
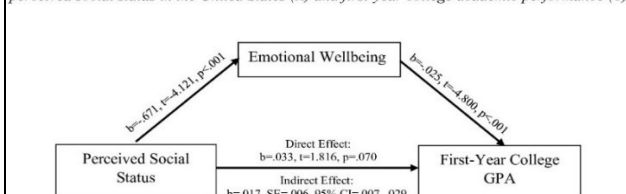
higher perceived stress for those with more extreme weighting biases. In each of three studies (Study 1 n=148; Study 2 n=108; Study 3 n=228), we demonstrated a curvilinear relationship between weighting bias and change in inflammation over 6 weeks. Perceived stress was a significant mediator in Study 1. In Study 2, we demonstrate a more extreme negative weighting bias leads to higher perceived stress through increased perceived likelihood of threat in ambiguous situations, though this effect was marginally significant in Study 3. In Study 3, we demonstrate a more extreme positive weighting bias leads to higher perceived stress through more frequent self-control failures. Taken together, this research demonstrates that (a) both a positive and negative weighting bias can lead to higher perceived stress through different mechanisms; (b) both a positive and negative weighting bias can lead to increases in inflammation over time, though further research is needed to determine the mechanisms through which this effect occurs. This line of research provides novel insight into the antecedents of stress and inflammation and that not only negativity, but also positivity can increase inflammation.

60) Abstract 1543
NATURALISTIC SOCIAL COGNITIVE AND EMOTIONAL REACTIONS TO TECHNOLOGY-MEDIATED SOCIAL EXPOSURES AND CORTISOL IN DAILY LIFE

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Background: The emotional and social evaluative aspects of social interactions influence cortisol secretion. Despite the connections between social comparison and social threat and between social threat and cortisol, no work has examined whether social comparisons occurring in daily life are associated with cortisol levels. The social interactions that mothers have daily on social networking sites and via other technology involve heightened social evaluations, social comparisons, and emotions. Thus, we examined the associations between technology-mediated social engagement, social comparisons and emotion during technology-mediated social exposures (TMSE), and cortisol during daily life using multilevel modelling. Methods: Forty-seven mothers (mean age = 34.38) completed a baseline questionnaire and a 4-day monitoring period involving four saliva collections and questionnaires daily at awakening, 4 hours post awakening, 9 hours post awakening, and bedtime. Results: On the momentary level, controlling for momentary and demographic covariates, higher within-persons social comparison during TMSE was associated with lower cortisol, $b = -.07$, $p = .045$, whereas higher within-persons negative emotions during TMSE and more time spent in TMSE were associated with higher cortisol, $b = .10$, $p = .027$ and $b = .09$, $p = .009$, respectively. Additional analyses examined two additional, specific forms of social comparison with downward social comparison during TMSE specifically being marginally associated with lower momentary cortisol, $b = -.04$, $p = .078$, and upwards social comparison not being associated with momentary cortisol. On the participant level, higher average social comparison during TMSE was associated with lower average cortisol AUCg, $b = -8.74$, $p = .016$, partial $\eta^2 = .14$, and more time spent on TMSE was associated with higher average cortisol AUCg, $b = 5.35$, $p = .031$, partial $\eta^2 = .11$. Conclusions: This study presents the first evidence that naturalistic social-cognitive and emotional reactions to TMSE are associated with cortisol in daily life. Findings suggest that social comparison in and of itself is not necessarily unhealthy and that downward comparison and comparisons not accompanied by negative emotion are associated with lower momentary cortisol. This study has implications for social comparison theory and intervention. Future directions are discussed.

61) Abstract 1554
PREDICTORS OF 30-DAY HEALTH STATUS IN HIGH-RISK PATIENTS UNDERGOING CAROTID ARTERY STENTING

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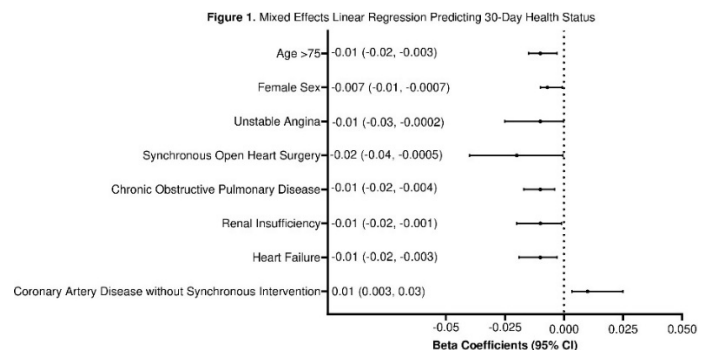
Background: Transfemoral carotid artery stenting (TF-CAS) is indicated for patients with carotid artery stenosis who are too high-risk for surgical intervention. Considerations for risk-benefit requires an evaluation of the risk of stroke, myocardial infarction, and death, against gains in health status. The aim of this study was to identify correlates of 30-day health status outcomes following TF-CAS.
Methods: The 390-center SAPPHIRE registry evaluated outcomes in high-risk patients who underwent TF-CAS from 2006-2014. Demographics, comorbidities, and carotid disease characteristics were documented at baseline, pre-procedure. Health status was assessed at baseline and 30-days later with the EQ-5D-5L index score (range=0 'death' to 1 'full health'). Paired t-tests were used to evaluate within-person health status change. Mixed effects linear regression was used to identify correlates of 30-day health status, adjusting for baseline health status, with a random effect to additionally adjust for clustering by site.
Results: Assessment of 30-day health status was completed by 4950 registry patients (mean age=71.9±9.3, 37.2% women, 92.6% White). Mean EQ-5D Index score was 0.87±0.10 at baseline and 0.89±0.10 at 30-days; on average, there was a significant improvement between assessments (mean change=0.02±0.08; $p<.0001$). Age >75, female sex, unstable angina, having to undergo synchronous open heart surgery, and comorbid pulmonary and renal disease, and heart failure all predicted lower 30-day health status (all $p<.05$; see Figure 1). Patients with significant coronary artery disease that did not undergo synchronous intervention with TF-CAS had higher 30-day health status ($\beta=0.01$, $p=0.01$).
Conclusion: Cardiac intervention studies have found that an increase of 0.019 in the EQ-5D score corresponds to clinically significant improvements in exercise tolerance. Changes in health status in this sample exceeded this threshold but more work is needed to determine the minimal clinically important difference specific to this patient population. Older age, female sex, chronic health conditions, and synchronous cardiac intervention were associated with a worse self-rated health status 30-days following TF-CAS. These results can be used to inform the development of more tailored risk prediction models that can inform the medical decision making process for TF-CAS.

Figure 1. Mixed Effects Linear Regression Predicting 30-Day Health Status

Predictor	Beta (95% CI)
Age >75	-0.01 (-0.02, -0.003)
Female Sex	-0.007 (-0.01, -0.0007)
Unstable Angina	-0.01 (-0.03, -0.0002)
Synchronous Open Heart Surgery	-0.02 (-0.04, -0.0005)
Chronic Obstructive Pulmonary Disease	-0.01 (-0.02, -0.004)
Renal Insufficiency	-0.01 (-0.02, -0.001)
Heart Failure	-0.01 (-0.02, -0.003)
Coronary Artery Disease without Synchronous Intervention	0.01 (0.003, 0.03)

62) Abstract 1632
BENDY BODIES, CREATIVE MINDS: JOINT HYPERMOBILITY IS LINKED TO CREATIVITY THROUGH ADHD TRAITS

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Background

Joint hypermobility (JH), a common variant of connective tissue structure, is known to be associated with a number of mental and physical health issues. Yet JH can be a considerable asset, as evident in artistic athletes and musicians, for example. Growing evidence links JH to neurodivergence (e.g., attention deficit hyperactivity disorder (ADHD)), wherein individuals perceive and interact with the world differently. For this, they often face negative stigma, affecting their health, education, and employment. We sought to quantify, for the first time, whether JH is connected to measures of creativity, hypothesising that this link is mediated by neurodivergent characteristics.

Methods

104 volunteers completed an online survey with screening questionnaires for JH and ADHD, in addition to questions on their engagement with creative activities, such as creative writing, music, and cooking. Correlation analyses were used to assess the association between creative engagement and JH, and creative engagement and ADHD traits. To test the role of JH, we ran a mediation analysis (Hayes method) with creativity engagement score as the outcome, JH as predictor, and ADHD traits as mediator.

Results

Total creativity activity score significantly correlated with JH score (r=.206, p=.036) and ADHD features (r=.265, p=.007). JH score was associated with ADHD features (r=.195, p=.048). A Hayes mediation analysis confirmed that, independently of ADHD, JH predicted levels of creativity (b=.07, t(102)=2.13, p=.036) and that this relationship was weakened when ADHD features were controlled for (b=.05, t(102)=1.66, p=.100), implying a mediation effect.

Conclusions

Our results indicate an association between JH, ADHD traits and creativity, where ADHD traits mediated the effect of JH on creativity. ADHD is stigmatised for its deficits, but our findings provide preliminary evidence of one of its advantages. Further research is needed to deepen the knowledge on the connection between JH, neurodivergence, and creativity. The scientific acknowledgment of positive aspects of neurodivergence and variant connective tissue may aid in reducing stigma, foster awareness of health risks, and thereby increase quality of life.

63) Abstract 1638
INSOMNIA AND ITS ASSOCIATIONS WITH MENTAL AND PHYSICAL HEALTH CORRELATES IN NURSES

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Introduction: Insomnia is common among nurses and other healthcare workers and a significant risk factors for physical (e.g., inflammation, musculoskeletal pain, heart rate variability and cardiovascular disease) and mental (e.g., stress, depression, anxiety) health problems. Little is known about the association between insomnia and physical and mental health in nurses, despite the importance of these variables to nurse well-being.

Methods: Participants (N=459) were nurses recruited for a parent study, "Sleep and Vaccine Response in Nurses (SAV-RN)" (Taylor & Kelly: R01AI128359-01). Most identified as female (90.5%), White/Caucasian (77.2%), and non-Hispanic (88.6%) with an average age of 39.03 (SD = 11.07). Participants completed baseline measures online via Qualtrics survey. The Sleep Condition Indicator (SCI; Espie et al., 2014) measured insomnia symptom severity. Various questionnaires were used to measure mental health (PSS, Cohen et al., 1994; PHQ9, Kroenke et al., 2001; GAD7, Spitzer et al., 2006; PCL5, Weathers et al., 2013). In addition, a checklist of current major health conditions (high blood pressure, sleep apnea, GI issues, HIV/AIDS, cancer, etc.) was completed. Chi square tests and odds ratio risk analyses were conducted using SPSS.

Results: At baseline, 25.4% (n = 117) of nurses met criteria for a probable insomnia diagnosis and 18.1% (n = 83) met full criteria for diagnosis. Insomnia was significantly associated with several mental health variables (higher subjective stress; probable diagnostic criteria of depression, anxiety, and PTSD), physical health variables (sleep apnea, cancer [all types], high blood pressure, chronic pain, gastrointestinal problems, an autoimmune disease, and endocrine problem) at baseline (all ps <.05). Additionally, results indicated increased risk as defined by odds ratios >2 for those meeting criteria for a probable insomnia diagnosis for endorsing several physical and mental health conditions (e.g., cancer, anxiety, depression).

Conclusion: These results help to identify associations between insomnia health conditions in nurses and may contribute to future research that supports evidence-based intervention and prevention strategies for this population. Ensuring accessibility and feasibility of scaling such interventions to reach the nursing community is an ongoing effort that is furthered by such research.

POSTER SESSION 3

1) Abstract 1009
KEEPING ACTIVE IN RESIDENTIAL ELDERLY 2 (KARE2): PERSONALISED PROGRESSIVE RESISTANCE TRAINING IN PRE-FRAIL OLDER ADULTS IMPROVES MULTI-DIMENSIONAL HEALTH

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Background: Pre-frailty is a potentially reversible condition preceding the development of frailty and functional decline in older people. Resistance exercise training has consistently been shown as a beneficial treatment for improving or maintaining physical function.
However, much research in this area has focused on independent-living older adults. Little is known about the impact and feasibility of resistance training in pre-frail older adults in residential care on a range of physical and mental health outcomes.

Aims: To assess the feasibility of a personalised progressive resistance training group intervention using machines specifically designed for inclusive active ageing.

Participants and Methods: Eleven older adults (>65 years) who were screened as being pre-frail were randomised into the intervention or wait-list control group. Six weeks of training on five computerised pneumatic resistance machines. These were used in rotation in a group setting for 30 minutes three times per week. The main outcomes were the feasibility and acceptability of the intervention, and pre- to post-intervention changes in psychosocial, cognitive, physiological, neuroendocrine, and functional health outcomes were measured.

Results: Six participants were randomised to the intervention group, two withdrew due to ill-health and four (66.6%) completed all 18 sessions resulting in 100% adherence. Interviews with participants and staff revealed that they found the intervention feasible and the research measures acceptable, and participants self-reported improved mood and motivation. Intention to treat analysis showed no differences in change from pre- to post-intervention between the intervention and waitlist control groups. However, analysis in those who completed the intervention, suggested improvements in walking speed and the overall Short Physical Performance Battery which incorporates measures of gait speed, balance, dynamic leg strength in the intervention group.

Conclusion: These findings support the feasibility of a resistance training intervention with pre-frail older adults, although a longer intervention period may be needed to observe meaningful changes in this cohort. A future large scale randomised controlled trial would be needed to confirm the optimal exercise prescription to improve physical function in pre-frail older people in residential care.

2) Abstract 1041
AN ACUTE SOCIAL STRESSOR INCREASES RELATIVE REINFORCING VALUE OF M&MS BUT NOT GRAPES, WITHOUT CHANGING PERCEIVED LIKING

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It is well known that, in a large percentage of the population, stress increases caloric intake and shifts food preference toward sweet high-fat items. Furthermore, there is an association between chronic stress, weight gain, and elevated BMI. Although we know that stress stimulates increased intake of readily available unhealthy food, it has not been determined if this translates to working harder to obtain unhealthy food items. This may be a critical aspect of the relationship between stress and weight gain because how hard individuals work for food, or the relative reinforcing value (RRV) of food, is reliably associated with obesity. Therefore, it was hypothesized that a stressor would increase the RRV of an unhealthy food item while having no effect on a healthy food item. To this end, participants (n = 35) arrived at the laboratory and sat quietly for a 20-min relaxation period. After which, baseline self-rated anxiety and salivary α-amylase were measured. They were then assigned to a stress or no stress condition. Participants in the stress condition completed the Trier Social Stress Test, whereas participants in the no stress condition sat quietly and played solitaire. After the stress condition, self-rated anxiety and salivary α-amylase were measured a second time. Then, RRV of either an unhealthy (M&Ms) or healthy food item (equal gram portions of grapes) was determined. RRV is established by having participants sit in front of two computers. On either computer they can click a computer mouse to gain access to a reward, but for one computer the reward is a food item (either M&Ms or grapes depending on their condition) and on the other the reward is magazine reading time. When participants finished playing the RRV game, they received all portions of food and reading. It was found that, after stress, participants played for significantly more portions of M&Ms than of reading (p = .03), but there was no effect of stress on RRV of grapes. When liking of food was examined, there was a main effect of food, with participants giving grapes a higher liking rating than M&Ms (p = .03) but liking was not affected by stress. Overall, these results show that stress enhances RRV of an unhealthy food item without effecting liking.

3) Abstract 1044
THE INFLUENCE OF SYMPTOM-RELATED MEMORY ON SYMPTOM PERCEPTION

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Background
Symptom perception, a process of becoming aware of bodily disfunction, can be affected by a number of psychological processes, including attention, expectations, emotions, and personality. Recent work in the field of pain has shown that pain perception too can be influenced by memory, such that more negative memories lead to more pain being reported on subsequent experience with the same stimulus. Given the recurrent character of dyspnea in many disorders, like chronic obstructive pulmonary disease, asthma, and anxiety, our study aimed to investigate whether memory of past dyspnea can affect future dyspnea reporting.

Methods
Healthy participants (N=78) took part in two laboratory sessions (S1 and S2), two weeks apart, in which dyspnea was induced using a rebreathing paradigm. On S1, peak and average dyspnea as well as anxiety experienced during the induction were assessed after the dyspnea induction. On S2, participants were asked to retrospectively rate their S1 experiences before completing the exact same rebreathing paradigm for the second time.

Results
Hierarchical linear regressions were performed on the most intense (peak) and average dyspnea ratings, controlling for other variables that could influence symptom reporting, including gender, personality traits (negative affectivity, anxiety sensitivity, habitual symptom reporting), S1 and S2 anxiety, and S1 dyspnea ratings. Memory for S1 dyspnea was significantly associated with S2 dyspnea ratings, uniquely explaining 6% of variance in S2 average dyspnea and 2% in peak dyspnea ratings. Other significant predictors of S2 dyspnea included S1 dyspnea ratings and S2 anxiety.

Discussion
Findings highlight that memory plays an important role in dyspnea perception. The way one remembers past dyspneic experiences can influence the self-reported ratings of dyspnea intensity during a subsequent event. Follow-up research is necessary to investigate clinical implications of this finding, for example by exploring whether changing the symptom-related memories could lower symptom burden.

4) Abstract 1047
SOCIAL SUPPORT MITIGATES THE EFFECT OF STRESS ON SEXUAL AND GENDER MINORITY PEOPLE'S MENTAL HEALTH DURING COVID-19

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Sexual and gender minority (SGM) people face pre-existing inequalities that may have been exacerbated by the Coronavirus-19 (COVID-19) pandemic. Canadian sexual minorities are twice as likely to live alone compared to heterosexual people and are more vulnerable to anxiety, depression, self-harm, and substance abuse. Despite these vulnerabilities, several studies suggest that social support and community solidarity can mitigate the effect of stress on SGM mental health. Using a cross-sectional online survey, our team examined SGM and cisgender heterosexual mental health and social support during the first four months of the COVID-19 crisis in Quebec, Canada. A total of 2900 adults ($n = 304$ SGM people, $n = 2596$ cisgender heterosexual people) completed questionnaires measuring perceived social support, perceived stress, depressive symptoms, anxiety symptoms, and loneliness. A series of one-way ANOVAs revealed that SGM people presented worse health outcomes than cisgender heterosexual people on all questionnaires ($p < .001$). Post hoc analyses also showed that some particularly marginalised SGM sub-groups, including bisexual and asexual people, showed the worst health outcomes. Moderation analyses later revealed that social support moderated the relationship between perceived stress and depressive symptoms among both SGM and cisgender heterosexual people - but this effect was four times stronger among SGM people ($\Delta R^2 = .041$; $p < .001$) than among cisgender heterosexual people ($\Delta R^2 = .010$; $p < .001$). These results suggest fostering social connectedness among SGM people may be especially beneficial in buffering against distress in the face of a crisis. To better understand how SGM mental health is evolving during this pandemic, our team is currently conducting a follow-up longitudinal study examining mental health, trauma, coping strategies and resilience among SGM and cisgender heterosexual adults before and after vaccination efforts started in Canada (to date, $N = 6083$). Preliminary results from time 1 (July 2020) and 2 (Fall 2021) are being treated and will also be presented.

5) Abstract 1051
DAY-TO-DAY RELATIONSHIP BETWEEN SLEEP REGULARITY AND MOOD

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Habitual poor sleep and misalignment of circadian rhythms are related to the risk of psychological disorders and mental health problems. Several studies have shown that day-to-day variability in sleep features is associated with affective states such as depressive mood. However, many studies focus on overall sleep/wake patterns over the whole study and do not address day-to-day variations in sleep regularity. Here, we examined the bidirectional relationships between 1) overall mood during a day and sleep regularity across the following two days, and between 2) sleep regularity across two days and the subsequent morning mood. Twenty participants (8 F, mean±SD age: 26.3±10.5) wore a wrist accelerometer for two weeks (Total: 305 days for all participants). Accelerometer data was used to detect sleep/wake for every one-minute epoch using the Cole-Kripke algorithm. To capture sleep regularity, we used the Sleep Regularity Index (SRI) and the mid-sleep time. SRI was sequentially calculated as the likelihood of how much the sleep/wake epochs matched over every two days. The mid-sleep time was computed by adding half of the total sleep time to bedtime. Every day, participants also answered a 12-item smartphone questionnaire (6 positive, 6 negative, 0-10 scale) about their current mood in the morning and the overall mood for the day before going to bed. Positive and negative items were separately averaged. Multilevel models were estimated for negative or positive mood as a predictor of sleep regularity (SRI or mid-sleep time) and vice versa. To predict within-person variability, person-mean centering was used for predictors. We observed that SRI was related to a lower negative mood in the morning (p=.03), and a late mid-sleep time was associated with a higher negative mood in the morning (p<.01). Neither SRI nor mid-sleep time was related to a positive morning mood. Daily overall mood did not predict sleep regularity. Irregular sleep/wake patterns leading to insufficient sleep duration or quality may contribute to a negative morning mood. Developing methods of sleep intervention that encourage individuals to improve their sleep habits by monitoring changes in daily sleep could help improve mental well-being.

6) Abstract 1068
DAILY DISCRIMINATION DURING THE COVID-19 PANDEMIC PREDICTS STRESS BEYOND DEMOGRAPHIC AND COVID-19 SELF-EFFICACY DIFFERENCES

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Individual differences in experiences of stress are considered a primary pathway through which health disparities are thought to arise. Because COVID-19-related outcomes differ across demographic characteristics, it is important to examine factors associated with increased stress among diverse participants during the COVID-19 pandemic. Higher discrimination based on demographic characteristics has been associated with heightened stress prior to the pandemic, and lower self-efficacy for preventing and overcoming COVID-19 might disproportionately lead to stress among demographic groups where individuals are more likely to hold "essential worker" positions. Therefore, the current study examined whether experiences of discrimination and COVID-19 self-efficacy associate with stress assessed during the COVID-19 pandemic. A sample of N=75 participants (M_{age}= 24; 35% Asian, 30% White, 23% Hispanic/Latino, 11% multi-racial, and 3% Black; 72% Female; 65% Straight/Heterosexual) completed an online questionnaire packet assessing their COVID-19 self-efficacy (assessed using a revised version of the Middle Eastern Respiratory Syndrome Self-Efficacy

Scale), perceived daily discrimination (Daily Discrimination Scale), and perceived stress (Stress Overload Scale – Short Form). Results from a sequential linear regression indicated that neither demographic characteristics (race, gender identity, sexual orientation, and age) nor COVID-19 self-efficacy predicted stress during the COVID-19 pandemic. On the other hand, perceived discrimination predicted stress above and beyond demographic and COVID-19 self-efficacy differences, β = 0.43, p < 0.01, ΔR^2 = 0.17. Though in the direction we might expect, there were no significant demographic differences in perceived discrimination, indicating that differences in perceived daily discrimination in our sample might be associated with factors not presently studied (e.g., socioeconomic status) or may arise through an intersection of group membership. These results demonstrate that perceived daily discrimination is an important predictor of stress during the COVID-19 pandemic and highlight the importance of addressing daily discrimination as a potential avenue for mitigating stress-related COVID-19 outcomes.

7) Abstract 1069
EFFECT OF ACE AND COPING ON COVID SELF-EFFICACY

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It is well established that exposure to Adverse Childhood Experiences (ACEs) can have a profound negative impact on physical and mental health and other health-related processes (e.g. decision making; Chang et al. 2019). Research has also indicated that individual differences in coping styles represent one pathway through which exposure to ACEs can confer risk for negative health outcomes (Sheffler et al. 2019). It is less clear however, whether the negative effects of exposure to ACEs extend also to one's self-efficacy for preventing and overcoming COVID-19. The current study aimed to examine the relationship between ACEs, measured as the total number of adverse childhood experiences endorsed on the Adverse Childhood Experiences Scale, and self-efficacy for preventing and overcoming COVID-19, measured using a modified version of the Self-Efficacy for Middle East Respiratory Syndrome. In addition, we examined whether the use of avoidant coping strategies (denial, venting, and behavioral disengagement) derived from a principal components analysis of the Brief Coping Questionnaire, statistically mediated the association between ACE scores and COVID-19 self-efficacy. Young adults (N = 86, M_{age} = 23.6; 69% female; 34% Asian, 33% white, 23% Latinx, 8% Mixed Race, 2% Black or African American) completed measures as part of a larger study. A series of linear regression analyses indicated that both exposure to a greater number of ACEs (β = -.23, p = .033) and greater use of avoidant coping strategies (β = -.36, p < .001) were associated with lower COVID-19 self-efficacy. On the other hand, ACE scores did not significantly predict the use of avoidant coping strategies (β = .09, p = .41) and when entered into a model simultaneously, both ACEs (β = -.20, p = .049) and coping (β = -.34, p = .001) remained significant predictors of COVID-19 self-efficacy. These results indicate that ACE scores and the use of avoidant coping strategies independently affect COVID-19 self-efficacy, and confirm that the negative health effects of ACEs extend also to perceptions of ability to prevent and overcome COVID-19.

8) Abstract 1086
ELEVATED HAIR CORTISOL CONCENTRATIONS IN YOUTH DURING THE PANDEMIC

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The COVID-19 pandemic has elicited increases in stress, anxiety and depression, as evidenced in large samples of adults (Ettman et al., 2020; Jia et al., 2020). In youth, mental health symptoms also appear elevated compared to pre-pandemic norms (Glynn et al., 2021, Hawke et al., 2020). While children's mental health symptoms appear to be increasing during the pandemic, many studies implement cross-sectional, rather than longitudinal designs. Therefore, less is known about the impact of the COVID-19 pandemic on youth's stress and within-person changes over time. In addition, studying stress biomarkers such as hair cortisol can inform about the impact that the current pandemic and resulting changes to daily life have on youth's stress physiology. To our knowledge, only one previous study examined hair cortisol concentrations (HCC) in children during the pandemic, and found that more negative changes to family life predicted greater HCC in 4–5-year-old children relative to pre-pandemic HCC (Hastings et al., 2021). The present study utilized hair cortisol data collected pre-pandemic (2017-2020) and re-contacted participants to participate in a follow-up study during the pandemic (October 2020 - March 2021). Participants (N = 86, 61.7% female) included youth ages 10-13 (M = 11.41, SD = .95) who had provided hair samples in the original study and agreed to provide a second hair sample during the pandemic. Parents collected hair samples from youth while guided by experimenters via Zoom and mailed the samples to our laboratory. Parents and youth also completed questionnaires regarding the impact of the pandemic on their lives, including the Covid-19 Adolescent Symptom & Psychological Experience Questionnaire. The Child Life Events and Perceived Stress Scales were administered both before and during the pandemic. Initial paired samples t-tests revealed a significant increase in hair cortisol from pre-pandemic to post-pandemic, $t(79)$ = 3.305, p = .001, and increases in youth self-reported perceived stress, t(84) = 7.15, p < .0001. Conference analyses will include comparing post-pandemic HCC in this sample to another age-matched pre-pandemic comparison group to account for any age-related differences. The present study illustrates the impact of the COVID-19 pandemic on children's long-term cortisol output using a within-person design.

9) Abstract 1094
THE CORONAVIRUS PANDEMIC: ASSOCIATIONS OF OPTIMISM AND POSITIVE AFFECT WITH MENTAL & PHYSICAL HEALTH OUTCOMES

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COVID-19 has led to the emergence of an altered society. Cumulative and individual stressors may lead to a time of crisis for students over time. Considering the detrimental impacts that stress may have, proper attention should be given to various mental and physical health issues. During this pandemic, there has been a high prevalence of anxiety and depression and serious impairments in mental and physical health. Previous studies suggest that certain psychosocial factors, such as optimism and positive affect, serve as valuable resources for mental and physical health during times of stress. However, the associations between optimism and positive affect with mental and physical health outcomes during the pandemic are yet to be investigated. This study aims to investigate these associations. We hypothesized that greater levels of optimism and positive affect would be associated with lower levels of depression, anxiety, and physical health symptoms during the early months of the COVID-19 pandemic. 293 university students were recruited to complete an online questionnaire in the spring of 2020. Longitudinal data was collected from participants every two months after, for a total of five assessments. Students self-reported their optimism, positive affect, anxiety, depression, and physical health levels. Multilevel modeling was used to test associations. Results indicated that greater optimism and positive affect were associated with fewer depressive symptoms, lower anxiety, fewer physical health symptoms, and better self-reported physical health (ps < 0.05). When testing optimism and positive affect together, both were associated with depressive symptoms, but only optimism was associated with anxiety (ps < 0.05). When entered together in the model, optimism and positive affect were not significantly associated with physical symptoms or self-reported physical health (ps > 0.05). Results suggest optimism and positive affect may serve as resources during COVID-19, and there are overlaps in their effects on health. Further investigations could create and implement effective health interventions that promote optimism and positive affect.

10) Abstract 1095
DOES SEEKING THE BRAWNS IMPACT THE BRAIN?: AN INVESTIGATION OF MUSCULARITY-ORIENTED DISORDERED BEHAVIORS AND COGNITIVE FUNCTION

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Brain health is impacted by body composition as well as associated health behaviors (e.g., exercise). In recent years, the shift in body-image ideals towards a more lean and muscular body has revealed new eating and exercise behaviors that may be related to cognitive function. The aim of this study is to investigate possible longitudinal relationships between 1) a drive for muscularity and 2) associated muscularity-oriented disordered behaviors (MODBs) with cognitive performance. Data were primarily drawn from subsamples of Add Health – a national longitudinal database – Waves III and IV (Max N = 12,843). Drive for muscularity and MODB engagement were gathered during a home interview in emerging adulthood. MODBs included: eating different foods than usual, exercise, lifting weights, eating more, taking food supplements, legal performance-enhancing substance use, and illegal performance-enhancing substance (PES) use to gain weight or bulk up. Cognition variables included short-term verbal memory, long-term verbal memory, and working memory measured via immediate word recall, delayed-word recall, and number recall, respectively. Results of a one-way ANCOVA revealed that those with a drive for muscularity had significantly lower immediate word recall ($F(3, 12819)$ = 3.845, p = .009), delayed word recall ($F(3, 12807)$ = 5.933, p < .001), and composite cognition scores ($F(3, 12843)$ = 6.080, p < .001) than the other weight goal groups after controlling for covariates (i.e., age, sex, body mass index, and highest education achieved). Next, hierarchical linear regressions were conducted to assess the association between composite MODB scores as well as individual MODBs and cognitive outcomes. Legal PES-use (βs = 0.06-0.07, p < .05) and exercise (β = 0.06, p < .05) were positively associated with some of the cognition scores after taking covariates into account. Conversely, lifting weights (β = -0.06, p < .05) and eating different foods than usual (β = -0.05, p < .05) exhibited negative associations with some of the cognitive outcomes. Composite MODB score was not related to cognitive variables. Future research should be conducted to examine other potential neurocognitive and health outcomes related to the drive for muscularity and associated MODBs.

11) Abstract 1096
A PROSPECTIVE STUDY EXAMINING THE COURSE AND DETERMINANTS OF SLEEP QUALITY DURING PREGNANCY

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Poor sleep quality during pregnancy is highly prevalent and has been associated with greater risks of perinatal depression, stress, and pregnancy complications. This study examined the pattern of sleep quality in pregnancy and identified sociodemographic, health-related, and psychosocial factors associated with lower sleep quality over the course of pregnancy. A total of 535 pregnant women (mean$_{age}$=33.1 yrs, ±4.2 yrs) completed standardized online self-report questionnaires measuring demographic factors, pregnancy-related

physical symptoms, health status, and psychosocial factors in each trimester. The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. A repeated measures ANOVA on the PSQI in each trimester indicated a significant effect for time ($p<0.001$). Sleep quality during pregnancy was characterized by stability from first to second trimester, with scores significantly increasing (reflecting poorer sleep quality) from second trimester to third trimester ($p<0.001$). Multiple linear regressions were computed to examine factors associated with poorer sleep quality in each trimester. Poor sleep hygiene, greater severity of pregnancy-related symptoms, elevated depressed mood scores, parity, and poorer self-reported health status were associated with elevated PSQI scores in the first trimester (p's<0.01). Poorer sleep quality in the first trimester was the strongest determinant of poorer sleep quality in the second and third trimesters (p's<0.001). Elevated pregnancy specific stress and elevated depressed mood scores in the first trimester were independently associated with higher PSQI scores in the second trimester (p's<0.05), while greater severity of pregnancy-related symptoms and elevated depressed mood scores in the first trimester were independently related to elevated PSQI scores in the third trimester (p's<0.01). Poor sleep quality was observed throughout pregnancy, worsening at the third trimester. Given that poorer sleep quality in the first trimester was strongly associated with higher levels of poor sleep quality over the course of pregnancy, screening and interventions early in pregnancy targeting sleep hygiene, pregnancy-specific stress, depression, and coping with common pregnancy related physical symptoms may help improve sleep quality and reduce the adverse maternal and infant outcomes associated with poor sleep quality.

12) Abstract 1099
THE EXPERIENCE OF DEPRESSION IN OLDER ADULTS WITH AND WITHOUT A PHYSICAL LONG-TERM CONDITION: FINDINGS FROM A QUALITATIVE INTERVIEW STUDY.

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Objective: To understand how the lived experience of depression differs among patients with a long-term condition (LTC) compared to those without an LTC, and how the experience differs across different types of LTC.
Design: Face-to-face, semi-structured, interviews.
Setting: Primary care; GP surgeries in and around North London.
Participants: 42 primary care patients with depression were recruited. Our sample comprised participants aged 55-75 years old with depression only (n= 12), depression and coronary heart disease (n=5), depression and type 2 diabetes (n=10) and depression and arthritis (n=14).
Results: Interviews were conducted, audio-recorded, transcribed, and analysed using thematic analysis. The results revealed that the cardinal diagnostic symptoms of depression (anhedonia, sadness) were experienced by all our participants regardless of LTC. However, the LTC did interact with depression by compounding somatic, cognitive and emotional symptoms, increasing disability and reducing independence, and hindering attempts at coping with mental illness. Our findings demonstrate common experiences across patients, as well as key differences based on LTC.
Conclusions: We suggest four key implications for future care practices of these patients: (1) Not all participants with depression and LTC view their mental and physical health as interconnected; there should be allowances in care plans for separate treatment pathways; (2) Key features of depression that affect LTC management are social withdrawal and lack of motivation to self-

manage or access healthcare; (3) Key features of LTCs that worsen depression are pain, the unpredictability of future health and progressive disability; (4) Positive self-management of LTC could improve self-efficacy and therefore mood, and should be encouraged.

13) Abstract 1108
ACCULTURATIVE STRESS AND PROBLEMATIC EATING BEHAVIORS: THE MODERATING ROLE OF EMOTIONAL SOCIAL SUPPORT AMONG LATINX AND ASIAN YOUNG ADULTS

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Cultural minorities in the U.S. often experience acculturative stress, a type of stress related to cultural adaptation. Acculturative stress is a risk factor for problematic eating behaviors (PEBs) which may have downstream health implications, thereby contributing to health disparities in the U.S. According to the stress-buffering theory, social support can mitigate the deleterious effect of stress on health. However, most studies focus on measures of chronic stress, and the role of social support in mitigating the effect of acculturative stress on health remains unclear. Thus, this study aimed to test the moderating role of family and friend emotional social support on the link between acculturative stress and PEBs (i.e., uncontrolled eating, cognitive restraint, and emotional eating) in Latinx and Asian young adults. An online cross-sectional survey study of 497 undergraduate students (55% Asian, 45% Latinx; 88.1% female, 11.5% male, 0.4% others; M_{age} = 20.80) was conducted at the University of California, Irvine. Overall emotional social support moderated the link between acculturative stress and all three PEBs (bs range: 0.09 – 0.13, ps < .025), controlling for general perceived stress. Similarly, emotional social support from family moderated the link between acculturative stress and all three PEBs (bs range: 0.06 – 0.10, ps < .047). Unexpectedly, in both analyses, the positive links between acculturative stress and PEBs were stronger when perceived emotional social support was high. Higher friend support, contrastingly, was associated with less uncontrolled (b = -0.07, p = .002) and emotional eating (b = -0.05, p = .051; main effects). Moreover, although Latinx (vs. Asian) students perceived higher family emotional support (M_{diff} = 0.33, p = .015), no three-way interactions (acculturative stress x emotional social support x ethnicity) were identified. This study suggests that family emotional social support enhances minority students' propensity for PEBs when they experience acculturative stress. This may be because the emotional support provided by family – even if it is generally present – may not be helpful or even be an aggravating factor in this context. The current study underlines the importance of further examining facets of social support, which may have implications for developing a more appropriate and inclusive care strategy for PEBs.

14) Abstract 1121
CLUSTER ANALYSIS REVEALS A DISTINCT PATTERN OF CHILDHOOD ADVERSITY, BEHAVIOURAL DISENGAGEMENT AND DEPRESSION, UNIQUELY RELATED TO LOWER LEVELS OF CARDIOVASCULAR REACTIVITY TO STRESS

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Objective: There is considerable evidence documenting associations between early life adversity, behavioural disengagement, and depression with blunted cardiovascular reactivity. However, the majority of research has examined each outcome independently and has yet to examine if a combination of these factors uniquely relate to cardiovascular reactivity to stress. Therefore, the present study employed multivariate cluster analysis to examine if distinct combinations of these outcomes relate to cardiovascular stress

reactivity. **Methods:** Participants (N = 465) were predominantly female (60.9%) with a mean age of 19.30 years (SD = .82). Measures of early life adversity (Childhood Trauma Questionnaire; CTQ), behavioural disengagement (Brief Coping Orientation to Problems Experienced Scale; Brief COPE) and depression (Hospital Anxiety and Depression Scale; HADS) were completed; in addition, participants had their blood pressure and heart rate monitored throughout a standardized stress testing session. Cardiovascular reactivity was calculated as the difference between mean stress and mean baseline values. **Results:** Preliminary analyses reveal two clusters with distinct patterns of exposure to early life adversity, levels of behavioural disengagement and depression, uniquely related to cardiovascular reactivity. Cluster 2, characterised by greater exposure to early life adversity, higher levels of behavioural disengagement and depression, was associated with lower SBP, DBP and HR reactivity. **Conclusions:** The present study identifies a behavioural cluster that is characteristic of a blunted reactivity profile, significantly extending the research in this area.
Key words: Blunted reactivity, early life adversity, behavioural disengagement, depression, cluster analysis

15) Abstract 1123
COVID-19 PROTECTIVE BEHAVIORS AND CONSCIENTIOUSNESS IN OLDER ADULTS
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Conscientiousness has been defined as a relatively stable personality trait that influences one's tendency to follow norms and rules, to be goal-directed and planful, and to engage in impulse control. Higher conscientiousness has been associated with decreased engagement in health-degrading behaviors (e.g., physical inactivity, unhealthy eating, smoking). Conscientiousness is correlated with use of protective health behaviors that could impact others (e.g., social distancing, quarantining) during the COVID-19 pandemic for adolescent and working adult age ranges and certain occupational fields (e.g. nursing) within the American and global population. However, these studies were generally cross-sectional, which does not allow for investigation of maintenance of these protective health behaviors, and generally not performed with high-risk populations, such as older adults. The present study will examine the longitudinal relationship between conscientiousness and protective health behaviors among older adults during the COVID-19 pandemic (N = 98). Participants completed measures of personality (NEO-FFI) before the pandemic and pandemic-specific protective health behaviors (Pandemic Stress Index) in March – May of 2020 and March – May of 2021. We hypothesize that higher conscientiousness will be associated with more protective health behaviors. We also hypothesize that higher conscientiousness will be associated with continued engagement in protective health behaviors and more adherence to CDC guidelines for COVID-19. Models will regress (1) baseline behavior on conscientiousness and (2) later behavior on baseline behavior and conscientiousness, testing whether behavior is maintained over time. Exploratory analyses will test interactions between conscientiousness and demographics (age, gender, and education). Examining the impact of conscientiousness among older adults in the context of a novel global pandemic may help to predict reactions to large-scale public health situations.

16) Abstract 1156
DIFFERENTIAL SUSCEPTIBILITY TO PARENTAL WARMTH AND FAMILY CONFLICT AND THE EFFECTS ON SELF-ATTITUDES IN YOUNG ADULTHOOD
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The family environment, and parent-child relationship quality specifically, play a critical role in well-being across the lifespan

(Bowlby, 1988). Family cohesion and parental warmth have significant developmental influences on the child's conceptualization of self-esteem and self-compassion (Grevenstein et al., 2019). Family conflict contributes to psychological maladjustment in offspring by undermining self-worth and self-esteem (El-Sheikh & Erath, 2011; Li & Warner, 2015), whereas parent-child relationships characterized by warmth and availability predict positive outcomes for self-esteem in subsequent developmental stages (Khaleque, 2013; Xin et al., 2004). Biological sensitivity to context proposes that an individual's level of biological sensitivity (often measured as physiological reactivity) predicts whether they will thrive exceptionally in a positive environment or struggle the most in a negative environment (Ellis & Boyce, 2008). The current study examined how positive or negative family environments, measured by levels of high parental warmth or high family conflict, interacted with one's biological sensitivity of baseline RSA to affect self-attitudes of self-compassion, self-worth, and self-esteem. RSA was measured during a 5-minute resting period. Multiple regression analyses showed that baseline RSA interacted with parental warmth (B = .02, SE = .01, t=2.08, p = .04), such that greater parental warmth was associated with more positive self-attitudes among young women with lower baseline RSA (B = .05, SE = .01, t=3.94, p = .0001). Although the interaction between RSA and family conflict was only marginally significant (B = .15, SE = .09, t=1.76, p = .08), the pattern of the interaction was in the hypothesized direction: at low baseline RSA there was a statistically significant negative association between family conflict and positive self-attitudes (B = -.37, SE = .12, t = -3.10, p = .002).

17) Abstract 1159
ASSOCIATIONS OF DEPRESSIVE SYMPTOM CLUSTERS WITH BIOMARKERS OF MONOCYTE ACTIVATION, SYSTEMIC INFLAMMATION, AND COAGULATION IN PEOPLE WITH HIV AND DEPRESSION
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The risk of cardiovascular disease (CVD) among people with HIV (PWH) is increased, even when HIV is well managed by antiretroviral therapy (ART). Biological mechanisms thought to underlie CVD in HIV include chronic immune activation, systemic inflammation, and altered coagulation. Additionally, PWH have elevated rates of depression, which has been found to be an independent predictor of incident CVD in PWH. At present, little is known about depression's potential role in the biological mechanisms of CVD in HIV. This study's objective is to assess associations of somatic and cognitive/affective depressive symptom clusters with monocyte activation (soluble [s]CD14, sCD163), systemic inflammation (interleukin-6 [IL-6], high-sensitivity C-reactive protein [hsCRP]), and coagulation (D-dimer, fibrinogen) in PWH on virologically suppressive ART and with depression (Patient Health Questionnaire [PHQ]-9 scores ≥10). We analyzed baseline data from participants (N=54, M age=45 years, 83% male, 67% Black) in a recently completed randomized controlled trial (NCT02309372). Depressive symptoms were assessed by the PHQ-9 (M=15.6, SD=4.9), from which somatic and cognitive/affective cluster scores were computed. Covariates were age, sex, race, CD4+ cell count, hepatitis B or C coinfection, body mass index, and current smoking. As shown in Table 1, adjusted linear regressions examining each cluster separately (individual models) revealed that only associations of the cognitive/affective cluster with CRP and D-dimer approached statistical significance. However, linear regressions examining both clusters simultaneously (simultaneous models)

revealed multiple statistically significant relationships. Specifically, the somatic cluster was positively associated with inflammation biomarkers (IL-6, CRP), while surprisingly the cognitive/affective cluster was negatively associated with inflammation (IL-6, CRP) and coagulation (D-dimer, fibrinogen) biomarkers. Our findings suggest that depressive symptom clusters are differentially associated with biological mechanisms underlying CVD in HIV. Ultimately, this line of research could identify subgroups of PWH with depression who are at particularly elevated CVD risk and in need of early CVD prevention approaches. This research was supported by R01 HL126557.

Table 1
Results of Adjusted Linear Regression Models Examining Associations of Depressive Symptom Clusters with Biomarkers of Monocyte Activation, Systemic Inflammation, and Coagulation in People with HIV and Depression

	Individual Models with Each Cluster Separately		Simultaneous Models with Both Clusters	
	Somatic	Cognitive/ Affective	Somatic	Cognitive/ Affective
	β	β	β	β
CD14	0.11	-0.05	0.26	-0.24
CD163	0.02	-0.13	0.19	-0.26
IL6	0.10	-0.18	0.40*	-0.46*
CRP	0.02	-0.27†	0.35*	-0.53*
D-dimer	-0.05	-0.27†	0.22	-0.42*
Fibrinogen	-0.06	-0.24	0.18	-0.37†

Note: Values reported are standardized regression coefficients (β), adjusted for age, sex, race, CD4+ cell counts, known hepatitis B or C coinfection, body mass index, and current smoking. Shaded cells indicate associations which are statistically significant or which approach significance.
*p < .05
†p = .05-.10

18) Abstract 1186
PROSPECTIVE PREDICTORS OF COVID-19 RISK BEHAVIORS AND VACCINATION INTENT IN YOUNG ADULTS

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Widespread community transmission of the SARS-CoV-2 virus with high rates of COVID-19 morbidity and mortality in 2021-22 provided a unique opportunity to examine prospective predictors of pandemic risk behavior. Public health recommendations to limit the spread of COVID-19 included social distancing, mask wearing, hand washing, travel restrictions, and vaccination. Models of health behavior suggest that perceptions of health threat, efficacy of risk-reducing behaviors, norms, and control may be important predictors for adherence to these recommendations. The present study utilized a prospective, cross-lagged, longitudinal design to examine the relationship between these predictors of health behavior and subsequent adherence to recommendations for risk-reducing behavior.

We sent an email-based survey of health behavior predictors and personal risk-taking behaviors for SARS-CoV-2 exposure and COVID-19 risk to 289 former laboratory participants during the summer of 2020. Our survey assessed perceptions of COVID-19 threat and personal engagement in community social distancing, mask wearing, and handwashing to reduce exposure during a time of increasing community viral transmission. Eighty-five participants responded, yielding a response rate of 29.4%. Respondent ages ranged from 18-36 with mean age of 22.0 years. We sent a similar follow-up survey that also assessed intent to receive vaccinations to these same participants in the winter of 2021, with 45 responding to both surveys. We assessed relationships of health behavior predictors from the summer survey to subsequent risk behaviors from the winter survey.

Results indicate that perceptions of health threat and perceived efficacy of risk-reducing behaviors significantly predicted subsequent social distancing, mask wearing and handwashing during both essential and nonessential travel (ps<.05). Moreover, receipt or intention to receive a vaccination was significantly predicted by perceived efficacy of risk-reducing behaviors (r=.583, p<.001) and by normative perceptions of family and friends (r=.310, p= .039). These findings suggest that public health strategies to change perceptions of threat, perceptions of efficacy of risk-reducing behaviors, and attitudes of family and friends may have measurable effects on pandemic risk-related behaviors including participation in vaccination campaigns.

19) Abstract 1229
EFFECT OF DAILY TRANSCUTANEOUS VAGAL NERVE STIMULATION ON SLEEP QUALITY: RESULTS FROM A RANDOMIZED PLACEBO-CONTROLLED TRIAL IN NON-CLINICAL ADULTS

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Poor sleep quality is common in general population and increases the risk of morbidity and mortality. This study aimed to test the effect of daily transcutaneous vagal nerve stimulation (tVNS) administered for 2 weeks on sleep in apparently healthy adults. Participants were 68 men and women aged 18 to 75 years (mean age 48.2 years) who were randomised into four groups: early actual and sham tVNS and late actual and sham tVNS. Early groups underwent daily 4hr stimulation between Day 0 and 13, while late groups underwent daily 4hr stimulation between Day 14 and 28. Sleep was measured with the Pittsburgh Sleep Quality Index questionnaire. Across the 4 groups there were no baseline differences in sociodemographic data, medical conditions or sleep scores. Analysis of prespecified contrasts, based on linear mixed modelling, revealed that for actual tVNS groups there were significant improvements in sleep scores over time between Day 0 and Day 13 in the early stimulation phase (C = -1.90; p <0.001), and between Day 14 and Day 28 in the late phase (C = -0.87; p = 0.02). No such difference was found in sham tVNS groups applied early or late (p=0.11 and p=0.31). However, sleep has not improved in tVNS conditions when compared with control groups in both early (χ2 = 0.83, p = 0.36), and late stimulation phase (χ2 = 0.24, p = 0.63). We showed that two weeks of daily tVNS improved sleep scores while 2 weeks of sham tVNS did not affect sleep scores. Nevertheless the change in sleep was not significantly different to control (sham tVNS) groups. Transcutaneous vagus nerve stimulation

applied daily may have a beneficial effect on sleep but studies are warranted to test the utility of tVNS in alleviating sleep complains in non-clinical samples.

20) Abstract 1263
"I CAN'T THINK IN ENGLISH WHEN I HURT SO BAD:" THE PHENOMENOLOGY OF ETHNIC AND LINGUISTIC MINORITY PAIN PATIENTS' EXPERIENCES WITH PAIN COMMUNICATION

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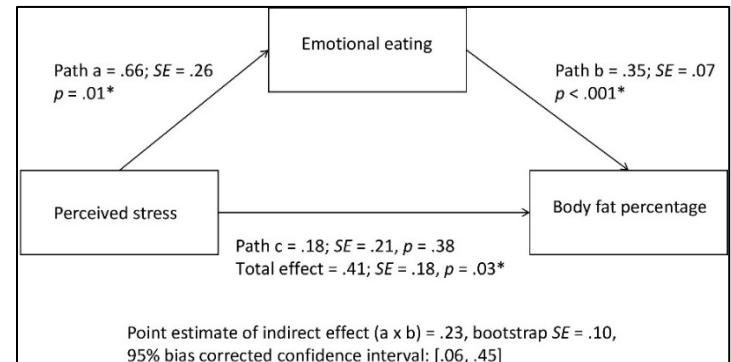
Objective: Pain assessment is complicated by the subjective nature of pain, as well as the lack of objective pain measurement tools. Providers rely heavily on a patient's ability to communicate their internal states to make accurate diagnosis and treatment recommendations. Reliance on verbal communication poses a unique problem for culturally diverse and limited English-proficient (LEP) patients, all of whom are at greater risk of inadequate pain care. The present study uses a phenomenological approach to examine linguistic and ethnic minority patients' experiences communicating pain, their perceptions of treatment received, and hopes for future care. **Methods:** The sample consisted of 24 ethnic and linguistic minority pain patients. Participants self-identified as Latinx (n=4), African American (n=1) and Asian (n=19). Participants' native languages include Spanish (n=4), Korean (n=12), Vietnamese (n=6), Tagalog (n=1) and Amharic (n=1). Open-ended questions were asked to facilitate exploration of participants' experiences in pain communication and perceptions of pain care received. Transcriptions were translated and coded using an open coding method, then grouped into six overarching themes. **Results:** Six themes emerged from participants' interviews: 1) difficulties of language barriers, 2) cultural variations in pain experience, 3) use of existing resources, 4) coping strategies and behaviors, 5) perceptions of healthcare received, and 6) hopes for holistic and individualized pain care. The bilingual pain communication process was confirmed as a challenging task, with patients reporting difficulties expressing their pain along with various emotional reactions to said challenges. Participants reported mixed satisfaction regarding interactions with healthcare providers and existing language assistance or translation services. Hopes for future resources and improved care were identified, with many patients expressing desires for culturally informed and individualized care. **Conclusion:** Current findings expand upon the field's understanding of non-native English speakers and ethnic minorities' pain experiences, creating the basis for inclusive, patient-centered pain care. Detailed, nuanced understandings of language and cultural barriers in pain care emphasize the necessity for holistic pain assessment and patient-centered interventions.

21) Abstract 1265
EMOTIONAL EATING MEDIATES STRESS-BODY FAT RELATIONSHIP IN ACTIVE-DUTY U.S. NAVY PERSONNEL

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Active-duty military personnel experience unique stressors and tend to report high levels of perceived stress. Higher perceived stress is related to greater psychological distress, physiological dysregulation, and use of maladaptive coping strategies such as emotional eating, all of which may contribute to increased body fat. Military personnel are required to meet specific physical ability and body composition standards, and risk demotion or discharge if standards are not met. To support well-being among military personnel and maintain readiness of military forces, it is important to understand the relationships of stress and emotional eating with body composition. U.S. Navy personnel (N=178) who were at risk of failing their Physical Readiness Test or the Body Composition Assessment enrolled in a behavioral weight loss program. Participants were primarily female (62%) and white (60%) with an average of 7.8 years in service (SD=6.24) and average body mass index of 33.13 kg/m^2 (SD=3.89). At baseline, participants completed the Perceived Stress Scale (PSS-4) and emotional eating subscale of the Weight Loss Readiness Test (WLRT). Body composition indicators also were collected. Body fat % was significantly correlated with both perceived stress (r=.20, p<.01) and emotional eating (r=.31, p<.01). We used path analysis to estimate the effects of perceived stress and emotional eating on predicting body fat % ($M(SD)$=35.63 [8.89]). The Chi-Square test of model fit was significant ($X^2(3)$=4.18, p<.001). Overall model fit indices were all in the excellent range (RMSEA=.00 [.00, .00], p<.001; CFI=1.00; TLI=1.00; SRMR=.001). Both the total effect and the indirect effects were statistically significant (see Figure 1). We found that emotional eating fully mediated the relationship between perceived stress and body fat %. Due to the cross-sectional nature of these data it is not possible to determine temporal causality. However, results suggest that higher levels of perceived stress may contribute to greater engagement in emotional eating, which relates to higher body fat %. This hypothesized mediation pathway is strongly supported by theory and prior research. If replicated longitudinally, these results would also suggest that interventions targeting perceived stress and emotional eating may improve body composition, thereby potentially increasing personnel retention.

Path a = .66; SE = .26 p = .01* Path b = .35; SE = .07 p < .001* Emotional eating. Perceived stress. Body fat percentage. Path c = .18; SE = .21, p = .38. Total effect = .41; SE = .18, p = .03*. Point estimate of indirect effect (a x b) = .23, bootstrap SE = .10, 95% bias corrected confidence interval: [.06, .45]

22) Abstract 1267
THE INFLUENCE OF POSITIVE BODY IMAGE AND NUTRITION ON PRENATAL STRESS

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Prenatal stress has been associated with negative health outcomes for both the mother and her child. One factor which may influence prenatal stress is pregnancy-related body image. Specifically, lower perceptions of pregnancy-related body image (i.e., not seeing yourself as beautiful when pregnant) may contribute to elevated stress, and influence stress-relevant health behaviors such as prenatal nutrition choices. However, few studies have examined whether women with a more positive view of pregnancy-related body image show lower stress, and none have examined whether positive body image might influence the relationship between nutrition behaviors and stress. The current study examined whether positive pregnancy body image (i.e., "How positive do comments from others about your pregnancy or appearance make you feel?") and nutrition (number of high fat food and fruit/vegetable servings per week) influence levels of prenatal stress among an ethnically diverse sample (45% Latina, 39% African American) of pregnant women. The study sample (n = 100 women, M_{age} = 25, gestational age = 17 weeks pregnant) self-reported weekly number of servings of high fat foods and fruits and

vegetables, and completed measures of positive pregnancy body image (derived from the Pregnancy Experience Scale and Pregnancy Attitude and Weight Gain Scale) and perceived stress (Perceived Stress Scale, PSS). Linear regression analyses controlling for ethnicity showed that a more positive pregnancy body image was associated with lower perceived stress (β = -.30, p= .003). Additionally, better nutrition was related to lower stress, specifically more high fat consumption was related to higher stress (β = .22, p = .03) while more fruit and vegetable consumption was related to lower stress (β = -.20, p = .04). On the other hand, positive pregnancy body image did not interact with either high fat or fruit and vegetable consumption to influence stress. These findings indicate that positive pregnancy body image and nutrition behaviors independently influence prenatal stress, highlighting two potential targets for interventions aiming to reduce prenatal stress and its associated negative consequences.

23) Abstract 1268
FRIENDSHIP QUALITY ALTERS CONCURRENT COGNITIVE FUNCTIONING AND DECLINE OVER 10 YEARS DIFFERENTIALLY WITHIN THE CONTEXT OF VARYING PHYSIOLOGICAL HEALTH MARKERS

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Background: Lower levels of social support have detrimental effects on physical and cognitive health; robust evidence has linked family, spousal, and friend support to enhanced or maintained cognitive health among aging adults. Yet, few studies have examined these dynamic social protective factors with known neurocardiac risk factors, such as systemic inflammation and vagally-mediated heart rate variability (vm-HRV), on cognition. Using publicly available data from MIDUS II (M2) and III (M3) studies, we investigated the moderating influences of age, positive friendship quality, and neurocardiac risk factors on global cognition both concurrently and longitudinally.
Method: Composite Z-scores from the Brief Test of Adult Cognition by Telephone (BTACT) were examined from 818 (358 men, 460 women) adults (average M2 age: 55.4 ± 11.4 years). Analyses controlled for M2 prescription medication use, race, sex, and education level. The interactive effects of M2 positive friend support, and vm-HRV, interleukin-6 (IL-6), or C-Reactive Protein (CRP) on the relationship between age and cognition were examined at M2 and change in cognition influenced by friend support and neurocardiac risk factors at M3 using separate PROCESS macro models 3 and 1, respectively.
Results: At M2, as age increased, cognitive functioning decreased. For younger participants, those with lower vm-HRV but higher friendship quality had better cognitive functioning than those with lower friendship quality (p<.05). No significant effects were found with IL-6 or CRP. However, M2 CRP predicted greater cognitive decline at M3 (p<.05), and IL-6 interacted with friendship quality to predict the change in cognitive function between M2 and M3 (p<.01). Specifically, among those with higher friendship quality, higher M2 IL-6 predicted poorer cognitive functioning, while those with lower friendship quality, M2 IL-6 was not related to M3 cognition.
Conclusion: Our findings suggest that a differential approach for preserving cognitive health is necessary; may be improved by balancing the reduction of risk factors with strengthening protective factors based on age and present physical and social health. We recommend further investigations into the integration and potential covariation of protective and risk factors among different age cohorts to serve the increasingly diverse and aging population.

24) Abstract 1270

DYADIC INVESTIGATIONS OF ADULT ATTACHMENT AND SLEEP IN ADULT CANCER PATIENTS AND THEIR CAREGIVERS

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Compromised sleep is a critical concern for both adult cancer patients and their bedpartner caregivers. Optimal sleep, which can be achieved when one feels physically and emotionally safe with their sleep partner, can be conceptualized as an interpersonal behavior grounded in adult attachment theory. The current study tested this theoretical premise individually and dyadically.
Adult colorectal cancer patients (n = 81, 55.5 years old, 34.6% female, 6.5 months post-diagnosis, 72.9% advanced stage) and their heterosexual bedpartner caregivers (n = 81, 53.7 years old) participated. Attachment dimensions of anxiety and dependence (MAQ) were self-reported. Participants also completed the Consensus Sleep Diary and wore a wrist Actigraph daily for 14 consecutive days, from which total sleep time (TST in hours), sleep onset latency (SOL in minutes), and waking after sleep onset (WASO in minutes) were derived. Actigraph-measured intradaily variation (IV: 0-2), interdaily stability (IS: 0-1), and sleep regularity index (SRI: 0-100%) were also calculated.
Both patients and caregivers reported lower levels of attachment anxiety and higher levels of attachment dependence. Self-reported sleep patterns were normative, whereas actigraph-measured sleep patterns were suboptimal. Actor-Partner Interdependence Modeling revealed that greater attachment dependence was associated with one's own longer actigraph-measured SOL for patients only (B = 0.25, p = .02). In addition, patients' greater attachment anxiety was associated with reduced variability in their caregivers' activity patterns (higher IS), while caregivers' greater attachment anxiety was associated with their patients' longer actigraph-measured SOL (Bs ≥ 0.26, ps < .04).
Findings highlight distinct intra- and inter-personal associations of close-relationship characteristics with sleep. Findings suggest that during the initial illness adjustment period, attachment dependence may facilitate appropriate stress response, whereas attachment anxiety, hypervigilant to cues of abandonment, may hinder adequate adjustment. Developing dyadic sleep interventions tailored to consider individual differences in relational characteristics between bedpartners is warranted. Interpersonal factors differentially attributing to objective compromised or optimal sleep health should also be further investigated.

25) Abstract 1271
BICULTURAL IDENTITY INTEGRATION, DEPRESSIVE SYMPTOMS, AND EATING BEHAVIOR PROBLEMS AMONG ETHNIC MINORITY UNDERGRADUATES

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Bicultural identity integration (BII), the way a person is able to manage multiple cultural identities, is associated with negative health outcomes among ethnic minority adults and college students. Adjusting to the demands of the university environment places college students at risk for mental health problems. For racial/ethnic minority students, the stress of integrating multiple cultures can further increase the risk of developing mental health problems, such as maladaptive eating behaviors and depression. The primary goals of the present study were to better understand the relation between BII and maladaptive eating behaviors, and whether this association is mediated by depressive symptoms. In this study, the participants completed online questionnaires assessing demographics, BII, depressive symptoms, and maladaptive eating behaviors. The current

study included 497 Asian and Latino undergraduate college students. The age range of the participants were from 18 through 46 years old with an average age of 20.81. Higher BII was associated with fewer depressive symptoms (r = - 0.10, p < .05) . Moreover, overall BII was significantly associated with the emotional eating subscale of maladaptive eating behaviors, and depressive symptoms were a significant partial mediator in this association (c = - 0.17, p = .01, 95%CI$_{boot}$ [- 0.30, - 0.04]). Other subscales of the eating behavior scale did not emerge as significant. The results of this study can help inform counseling services about the need to address BII to promote healthy eating behaviors and mental health wellbeing among ethnic minority undergraduates.

26) Abstract 1272
ABSENT RELATIONS OF RELIGIOUS COPING TO TELOMERE LENGTH IN AFRICAN AMERICAN AND WHITE WOMEN AND MEN

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Religion is a salient source of comfort and strength, particularly among African Americans and women. Recent research has addressed the potential protective effects of religiosity on telomere length (TL), a "psychobiomarker" that may, in part, capture disproportionate stress exposure via a measure of cellular aging. However, overall findings are mixed. Most notably, religious coping – a dimension of religiosity previously associated with various health-protective effects – was rarely examined, nor was potential variation by self-identified race and sex assessed. Given their greater reliance on religion and faith when compared to their racial and gender counterparts, it was hypothesized that African American women would reap the most benefit from higher levels of religious coping with respect to TL. Accordingly, the current study investigated whether religious coping is linked to TL and if these relations were moderated by race and sex. Participants were 252 African American and White urban-dwelling, socioeconomically diverse adults (ages 30-65 years, mean age = 48.31 years; 49.2% women; 51.6% below 125% of the poverty line; 31.3% < high school education) from wave one of the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study. TL was determined via quantitative polymerase chain reaction, confirmed by Southern blot, and reported in kilobases. Religious coping was measured using the Brief COPE Inventory's subscale. Multivariable regression analyses (including backward elimination) examined interactive associations of religious coping, race, and sex to TL, adjusting for age, poverty status, and educational attainment. Results revealed no significant interactive or independent relations of religious coping to TL. Additional exploratory analyses examined religious affiliation status (n = 51.2%) as a proxy variable for religiosity and religious coping, but similarly found no significant associations. These findings suggest an absence of relation between religious coping, or religious affiliation, and TL in the present sample. However, it remains possible that these relations may be revealed in future studies using more comprehensive assessments of religious coping and/or other measures of religiosity, considering additional intersectional identities, and addressing prospective change.

27) Abstract 1273
ARE OVERWEIGHT INDIVIDUALS EXPOSED TO LOWER EXERCISE INTENSITY LEVELS IN STUDIES EXAMINING ACUTE EXERCISE-INDUCED MOOD RESPONSES? AN ANALYSIS OF THE EXISTING LITERATURE

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Introduction

An extensive literature has examined the effects of acute exercise on various psychological and biobehavioral measures, but the literature remains mixed on the potential benefits of a single bout of exercise. Evidence suggests that an individual's weight status may influence the association between exercise intensity and post-exercise mood responses. It is important to understand the state of the literature in terms of these factors. As part of a systematic review, we examined whether overweight individuals are exposed to less intense exercise protocols than normal weight individuals.
Methods
Studies were retrieved from a PubMed search with 3,955 articles being screened for inclusion. Studies must have measured mood before and after the acute exercise bout and studies were required to report intensity of exercise and assess body-mass index (BMI). The final sample consisted of k=47 articles. BMI>25 defined overweight status.
Results
Overweight individuals were the focus of 32% of the studies. For intensity, 77% of studies were in the low to moderate range and 23% in the high intensity range. Intensity of exercise was not related to BMI status (X^2=0.63, p=0.43). Overweight participants participated in high intensity exercise in 20% of the studies and normal weight individuals 25% of the time. The point-biserial correlation between BMI and exercise intensity was 0.006 (p=0.97). In studies that involved sedentary overweight participants, 33% participated in high intensity exercise, compared to 11% in non-sedentary overweight and 23% in non-sedentary normal weight.
Conclusion
This study demonstrates that participant characteristics are not necessarily taken into account when investigating the acute effects of exercise on mood. This pattern may be one reason why the literature has been mixed on this point. Moderate intensity exercise is suggested in order to enhance the mood benefits of an acute exercise bout. This would be especially true for those that are overweight. Individuals that are overweight have to work harder to achieve the same workload as their normal weight counterparts. Future investigations on the mood benefits of acute exercise will provide more consistent results if task characteristics (e.g., intensity of exercise) are adjusted to participant characteristics (e.g., weight status).

28) Abstract 1281
BIOLOGICAL PREDICTOR OF BURNOUT: THE HAIR CORTISOL CHANGE AT COVID-19 PANDEMIC ONSET PREDICTS BURNOUT SYMPTOMS AMONG HEALTHCARE PROFESSIONALS

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Context: Since March 2020, healthcare workers have been under continued stress due to the COVID-19 pandemic. Biological variables have been largely neglected in studies exploring burnout and psychopathology, such as depression, anxiety, and posttraumatic stress disorder among healthcare workers dealing with COVID-19.
Methods: Of 467 Quebec, Canada healthcare workers who responded to our electronic survey three months after the beginning of the pandemic, 372 (which corresponds to 80%) furnished a sample of their hair. The survey included questionnaires on mental health outcomes and associated factors. The length of the hair sample was 3 to 6 cm, providing an estimation of the cortisol, a stress hormone, secreted in the three months preceding the pandemic and the three months following its onset. We applied a multivariable regression model and a receiver operating characteristic curve (ROC curve) to examine hair cortisol as an early indicator of burnout and mental health, combined with individual, occupational, social, and organizational factors.
Results: As we anticipated, hair cortisol levels soared after the beginning of the pandemic (relative change: +38% [SD = 67%]). Burnout symptoms and cortisol were significantly associated, healthcare workers in the second quarter experiencing lower burnout odds. There was no association between cortisol change and depression, anxiety, and posttraumatic stress disorder symptoms. Introducing cortisol in our burnout model with individual-occupational-socio-organizational factors strengthens its predictability pronouncedly.
Conclusion: A modest relative change in hair cortisol levels (second quarter of change) forecasted burnout in this population. A non-invasive biological indicator of stress exposure, hair cortisol levels, could profit from additional clinical or research efforts. The final aim would be to prevent and control burnout in health personnel facing a significant stress factor.

29) Abstract 1298
BEREAVEMENT IN THE COVID-19 PANDEMIC: THE GRIEF EXPERIENCE OF AFRICAN AMERICAN & LATINO COMMUNITIES.

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Background: The COVID-19 pandemic death rate for African American and Latinx communities is twice as high as White Americans, leaving more loved ones to cope with the difficulties of bereavement. With already existing challenges, the COVID-19 pandemic has emphasized the need to understand the disproportionate struggles of people of color. Methods: To study the impact, we conducted the Survey of Bereavement After Covid-Related Death. In the current study, 267 participants answered online surveys, measuring loss characteristics, demographics, depression, grief, and an option for open-ended comments. Results: Grief and depression scores were predicted by kinship relationship, participant age, and time since loss, but were not predicted by gender, race, or ethnicity in regression analyses (grief: F = 6.38, p < .001; depression: F = 5.30, p < .001). However, the sample was not representative of the current population, with fewer African Americans and Hispanic/Latinx individuals than in the community. Conclusion: Pandemic grief severity and depression following bereavement is predicted by factors seen in pre-pandemic grief research. However, the study revealed that there are still significant challenges among recruiting underrepresented populations in academic research, indicating that further research is necessary.

30) Abstract 1299
MEANING AS AN ANTIDOTE TO INTOLERANCE OF UNCERTAINTY

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Intolerance of Uncertainty (IU) is a characteristic that informs how people think, feel, and behave in response to uncertainty. Research suggests IU is a risk factor for psychopathology (Carleton, 2012). To address the effects of IU, we must understand mechanisms by which IU contributes to reduced resilience to distress. Research suggests people who report their lives as meaningful tend to experience better health than those who experience their lives as lacking meaning (Roepke et al., 2014). Of the three dimensions of meaning in life (coherence, purpose, and significance; Martela & Steger, 2016), *coherence*, which refers to the ability to make sense of experiences (Heintzelman & King, 2013) may be particularly relevant to IU. The purpose of this study was to explore the relationship between trait IU, trait meaning, and daily uncertainty, meaning, negative affect (NA), anxiety, and somatic symptoms, and determine whether *sense of meaning in life*, specifically *coherence,* protects against the effects of IU.
Sixty-two participants (46.8% female, 77.4% White) participated in a 1-week EMA study. Subjects completed baseline measures of trait meaning and IU and subsequently completed daily EMAs assessing anxiety, NA, somatic symptoms, uncertainty, and meaning. Data were analyzed via SEM in MPlus 8.0 (Muthen & Muthen, 2012-2021).
Analyses revealed higher trait IU was significantly associated with more daily anxiety, NA, and uncertainty and approached significance in predicting somatic symptoms, whereas higher trait meaning was significantly associated with less anxiety, NA, and uncertainty. The relationship between daily uncertainty and NA was strongest for participants high in IU, and this relationship was attenuated by *coherence; coherence* moderated the relationship between uncertainty and negative affect for participants high in IU. Consistent with predictions, higher trait IU was associated with increased anxiety, uncertainty, and NA. This aligns with research suggesting trait IU and daily uncertainty compound reactions to daily distress and contribute to psychopathology. Moreover, this study provides evidence that *meaning in life*, specifically *coherence,* counteracts deleterious effects of IU and uncertainty on well-being. Treatments that enhance meaning life, specifically *coherence*, may diminish the impact of IU to promote resilience to distress around uncertainty.

31) Abstract 1302
HIGHER LONELINESS PREDICTS GREATER POSITIVE AND NEGATIVE EMOTION VARIABILITY IN EVERYDAY LIFE

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Loneliness refers to the subjective state that occurs when a person's desired social relationships are perceived to be lacking in quantity and quality. Loneliness has been recognized as a critical public health risk that widely affects health, from mental and physical illnesses to all-cause mortality. One avenue by which loneliness may influence health is through emotional processes and experiences. Although loneliness has been linked with less favorable levels of emotions [less positive emotion (PE), more negative emotion (NE)], the extent to which loneliness is related to emotional fluctuations in everyday life

has not been well investigated. Emotions fluctuate heavily within person, and short-term changes in emotion may reflect how people emotionally respond to stimuli from their surroundings and regulate their emotions. Importantly, higher emotional variability is associated with significantly worse mental and physical health outcomes. The present study aims to move beyond a static approach of studying emotions and loneliness by examining the extent to which loneliness is associated with variability in PE and NE, over and above the effect of mean levels of emotions.

The present study used a diverse sample of participants (N=252; aged 25-65; 65% female; 69% black; 24% Hispanic). Loneliness was measured at baseline with a short version of the PROMIS Health Organization Social Isolation scale. PE and NE were assessed via ecological momentary assessments five times per day for two weeks. As indicators of emotional variability, the person-level mean squared successive differences scores were calculated for PE and NE. Results showed that loneliness was positively associated with variability in PE ($p<.01$) and NE ($p<.01$). Significant associations were maintained [PE ($p<.01$) and NE ($p<.05$)] even after controlling for the mean level of PE and NE, as well as for all other covariates. The present study demonstrates that lonelier individuals experienced greater within-person fluctuations in emotions than people who felt less lonely, independent of mean-level of emotions, objective social isolation or depressive symptoms. Future longitudinal studies could investigate higher emotional variability in daily life as a potential link explaining how loneliness ultimately harms psychological well-being.

32) Abstract 1310
THE ROLE OF ENVIRONMENTAL STRESS BURDEN ON METABOLIC HEALTH OF OVERWEIGHT MINORITY CHILDREN AND ADOLESCENTS IN LOS ANGELES

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Recent studies suggests that environmental burdens, such as air pollution and toxic agents in water and soil, have been shown to be associated with metabolic disease, including stress physiology and obesity. The role of these environmental burdens may be greater in those with existing predispositions for these health outcomes. This is especially true for racial and ethnic minority groups (Latinx and African American) who are disproportionately affected by environmental exposures. Despite limited literature on the effect of environmental exposures and metabolic health in children, there is an increasing concern to explore this population, as obesity and type 2 diabetes rates in children are rapidly increasing. The purpose of this study is to examine associations between metabolic health (biological stress and obesity measures) by level of pollution burden as designated by the CalEnviroScreen 3.0 (CES 3.0) score. Children and adolescents (N=133, M_{age}= 14.6 ± 2.8 years); 60% male; 60.6% Latinx) were studied from the Diabetes Risk due to Ectopic Adiposity in Minority Youth (DREAM) study. Participants provided fasting blood samples for morning serum cortisol measures and body fat was assessed by DEXA scan and visceral adipose tissue via 3-Tesla MRI scan. Self-reported mailing addresses were used to determine census track number and associated pollution burden scores derived from the CES. The less environmentally burdened group had pollution burden scores <75th percentile while the greater environmentally burdened group had pollution burden scores ≥75th percentile. Unadjusted correlations and t-tests were performed. On average, children who live in areas with higher pollution burden (<75%) have a significantly higher serum cortisol level compared to children who live in areas with lower pollution burden (<75%) (10.76 vs. 9.46ug/dL; p<0.001). Pollution burden scores were positively correlated with visceral fat volume (r=.224, p=0.010). Children who reside in greater higher

environmentally burden communities had higher average serum cortisol and abdominal adiposity compared to those who lived in lower environmentally burden communities. Our results suggest adverse metabolic effects in children living in an environmentally burden region. This highlights a need to further examine environmental burdens as risk factor for metabolic health in children.

33) Abstract 1314
SOCIAL RELATIONSHIPS AND SLEEP: WITHIN- AND BETWEEN-PERSON ASSOCIATIONS

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Growing evidence suggests a link between social relationships and improved sleep across the lifespan. Earlier studies have shown global associations between single measures of social relationships (e.g. loneliness) and single measures of sleep (e.g. quality, duration). Less work has explored how (1) multiple characteristics of social relationships simultaneously relate with sleep, and (2) how day-to-day fluctuations in social relationships impact sleep and vice-versa. ***We aim to advance earlier work by modeling the within-person and between-person daily associations of multiple social relationship measures with nightly sleep characteristics.*** Participants included 361-387 healthy adults aged 40-64 (61% female, 21% Black, Indigenous, and People of Color) who completed an ambulatory monitoring protocol in which they provided hourly reports of social interactions, emotional support, loneliness (over 4 days,) and daily measures of sleep quality, and Actigraphy-derived measures of sleep (7-10 days). Multilevel models with covariates for age, sex, race, education, and body mass index were used to investigate between- and within-person bi-directional associations between daily social interaction measures (loneliness, emotional support, social interaction frequency) and nightly sleep (duration, efficiency, sleep quality).

Across the monitoring period, people who reported lower loneliness and higher emotional support, on average, also endorsed better nightly sleep quality (γ = -0.35, $p < .001$;γ = 0.19, $p < .001$). Controlling for average depressive symptomatology attenuated the between-person link between loneliness and sleep quality (γ = -0.16, p = .09). Within-person, relatively lonely days were associated with improved sleep efficiency the following night (γ = 1.04, p = .02). Likewise, nights with relatively poorer sleep quality were followed by days with increased emotional support (γ = -0.04, p = .01).

Average daily loneliness and emotional support are associated with average daily sleep quality during midlife. Within-person, sleep deficits appear to be compensated for by improved social interactions the next day, and vice versa. Results provide insight into the timescale through which social relationships and sleep may relate. Supported by AG041778 (PI: Kamarck) and T32HL007560.

34) Abstract 1317
AFFECTIVE NEURAL CORRELATES IN JOINT HYPERMOBILITY AND ANXIETY

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Introduction

Joint hypermobility represents underlying variant connective tissue. Hypermobile individuals in addition to experiencing musculoskeletal issues, such as joint pain and stiffness, appear to be overly represented among people experiencing anxiety. This is the first study to explore in brain the relationship between clinical anxiety and

joint hypermobility building on earlier work on healthy participants that implicates the amygdala and insula.

Method

Sixty-three participants including 30 participants with generalized anxiety disorder (GAD) and age and gender matched controls underwent fMRI. Eighteen patients with GAD and seven controls were classified as having Joint Hypermobility Syndrome (JHS) resulting in four groups. Participants were presented with angry, afraid, disgusted, neutral and happy faces and were asked to make an incidental judgement of whether they could see teeth or not.

Results

Anxious participants showed greater activity in the left amygdala and insula when viewing emotional faces compared to the non-anxious, as expected. Non-JHS participants showed greater activity in the inferior frontal gyrus, precuneus, pre-supplementary motor area, posterior and anterior cingulate gyrus and supramarginal gyrus compared to the JHS participants. In the JHS group, there was greater activation in the left amygdala, posterior insula and paracingulate gyrus in the anxious participants related to the non-anxious. Furthermore, within insula there was a significant interaction of degree of hypermobility on anxiety in that the hypermobility score correlated with insula activation in the anxious group, but not in the non-anxious participants. Functional connectivity changes when viewing emotional faces were examined through a series of psychophysiological interactions. JHS participants showed a greater psychophysiological interaction between the left amygdala and precuneus compared to non-JHS.

Discussion

These findings suggest a particular pattern of affective reactivity implicating emotional-processing brain regions such as the left amygdala and posterior insula in anxiety patients who have hypermobility and could provide further insight into personalised cognitive treatment targets.

35) Abstract 1331
TRANSLATIONAL SCIENCE TO IDENTIFY AND ADDRESS THE HEALTH NEEDS OF UNDOCUMENTED IMMIGRANTS
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Living under chronic stress stemming from uncertainty, constant threats, loss and social disadvantage, trauma, racism, discrimination, marginalization and stigmatization is a common experience for many undocumented immigrants. Yet, despite facing compounded chronic stress and adversity, undocumented immigrants are extremely resilient (Garcini, in press). A population-based phenomenon that has been used to document and explain the resilience of immigrants is the "immigrant paradox," which is based on health and social science research showing that recent immigrants, particularly those of Mexican origin, have better physical and mental health outcomes when compared to U.S.-born natives and more established immigrants. The irony in this phenomenon is that recent immigrants experience more desirable outcomes despite facing significant adversity and social disadvantage. Nonetheless, research has shown that the immigrant health advantage eventually deteriorates with longer time living in the U.S., possibly as a result of continued exposure to stress, and additional studies with hidden and/or hard-to-reach immigrant populations are needed to better understand the reversal of the aforementioned paradox. The detrimental effects resulting from chronic and prolonged exposure to distressing and adverse experiences are well documented, yet little is known as to how such exposures may affect the health of undocumented immigrants. Developing a better understanding of the risk and protective factors, as well as underlying mechanisms influencing the health of undocumented immigrants is needed to inform best practices, intervention, advocacy and policy efforts. With more than 10 years of clinical and research experience working with undocumented communities, this presentation will provide an overview of lessons learned in conducting studies with undocumented immigrants, including identifying barriers and

facilitators to participation, as well as considerations in the use of psychoneuroimmunology to the study of health in this hidden and hard-to-reach population. The presentation will also use examples of how findings in this line of research have been used to inform advocacy and policy efforts aimed at reducing stigma, health risk, and further harm with this marginalized population.

36) Abstract 1340
DIFFERENTIAL EFFECTS OF STRESS ON MIXED EMOTIONS IN PEOPLE WITH AND WITHOUT ANXIETY.
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Background: Stress has been hypothesized to decrease the likelihood of experiencing mixed emotions (ME), defined as co-occurring positive and negative affect. However, the exact nature of the relationship between stress and ME remains unclear, in part because the influence of individual differences associated with increased ME in daily life has not yet been examined during stress. Anxiety is closely related to neuroticism and characterized by emotion dysregulation, two characteristics linked to increased ME in daily life. **Aim:** To examine ME before and after acute stress in individuals with and without anxiety. **Method:** participants (M=19.49, SD=1.25 years; 63.8% female; 66.10% Caucasian; 16.9% Hispanic/Latino) were classified into groups: anxiety (n=241) and no anxiety (n=189) based on the Hospital Anxiety and Depression Scale cut-offs. All participants completed a standardized laboratory stress paradigm (resting baseline; mental arithmetic task with social evaluation). Emotions and subjective stress were assessed immediately after providing informed consent and directly following the stress paradigm. Cardiovascular activity (blood pressure and heart rate) was recorded throughout and averages were created for each phase (baseline, stress). **Results:** Stress differentially affected ME between groups. Participants in the No Anxiety group reported increased ME from baseline to post-stressor, while participants in the Anxiety group reported decreased ME. Post-hoc analyses revealed that participants in the Anxiety group reported more ME at baseline, but the groups did not differ post-stressor. In other words, people with and without anxiety reported similar levels of ME after a stressor but took different emotional journeys. Despite differences in emotional responses, participants with and without anxiety show similar increases in cardiovascular responses to the stressor. **Conclusion:** Stress altered ME in both groups, however, if people with and without anxiety were examined as a homogeneous group, stress would have appeared to have no effect on ME. Progress in understanding the impact of stress on emotional functioning across clinical and non-clinical groups will require embracing heterogeneity by accounting for differences in baseline mood.

37) Abstract 1344
DIFFERENTIAL EFFECTS OF SOCIAL SUPPORT AND GENDER ON HEALTH RECOVERY OF COLORECTAL CANCER PATIENTS
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Patients living with cancer are at risk for compromised physical functioning, which can be marked by higher levels of systemic inflammation and greater waist-to-hip ratios. Social support has been known to foster mental well-being, although less known is the extent to which it is associated with biomarkers of physical recovery across longer-term survivorship. The current study examines the longitudinal association of perceived social support and gender with changes in C-reactive protein (CRP) levels and waist-to-hip ratio over the first two years since the cancer diagnosis.

Patients who were newly diagnosed with colorectal cancer (Stage I to IV) participated in a longitudinal study (60% female; 55.8 years old; 38% Hispanic; 3-month post-diagnosis at enrollment). Self-reported gender and perceived sources of social support (SSSS: positive

engaged and negative disengaged) were assessed around the time of diagnosis (T1). Blood samples were collected upon enrollment (T1: n=69) and 12 months later (T2: n=54), from which C-Reactive Protein (CRP) was assayed. Waist and hip circumferences were measured by study staff at T1 (n=100) and T2 (n=65). Age, body mass index (BMI), and CRP at T1 were covariates.

Patients reported moderate levels of positive social support and low levels of negative social support. CRP was elevated at T1 (8.4 mg/L), which decreased at T2 (5.5 mg/L). Waist-to-hip ratios were at high health risk at both times. Hierarchical regression modeling revealed that larger BMI related to higher CRP and waist-to-hip ratio at T2, and higher waist-to-hip ratio at T1 related to that at T2 ($t \geq 1.78$, $p \leq$ .08). Greater perceived negative disengaged social support at T1 predicted lower waist-to-hip ratio at T2 ($t = -3.31$, $p < .002$) and lower CRP at T2 only for male patients ($t = -3.06$, $p < .014$). Findings highlight that negative disengaged social support around the time of cancer diagnosis buffers male patients' long-term physical functioning. Mechanisms underlying the differential effects of close relationship factors and gender on systemic inflammation remain to be further investigated. Interventions targeting nuances of positive engaged and negative disengaged social support to mitigate chronic inflammation in cancer patients are warranted.

38) Abstract 1350
ARE INDIVIDUAL DIFFERENCES IN SUBJECTIVE SOCIAL STATUS ASSOCIATED WITH SOCIAL SUBORDINATION IN DAILY LIFE

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Introduction: Socioeconomic health disparities are well established and subjective social status (SSS) appears to be at least as good at predicting physical health compared to objective indicators of SES. SSS is a cognitive averaging of traditional indicators of SES and also explicitly incorporates social rank relative to others. Individual differences in SSS may be associated with poor health due to repeated exposure to social subordination in daily life. Previous research has established that social subordination is associated with increased stress-related disease risk and changes in perceived and actual social rank produce stress-related biological responses implicated in disease.
Methods: This was an ecological momentary assessment study of 96 young adults. Participants completed a baseline assessment of trait SSS for self as well as family of origin, because they were emerging adults. For one day, participants completed hourly questionnaires assessing social interactions, including their own social rank and the social rank of interaction partners using the same visual analogue scale of a ladder typical of trait measures of SSS.
Results: Participants who reported higher trait SSS reported higher rank in social interactions in daily life on average (r=.54 and .48, both p<.001, for own and family SSS). Higher trait SSS was also associated with a larger (positive) average difference between participants' ratings of their own status relative to an interaction partner (r=.23 and .24, both p<.05, for own and family SSS). Higher family SSS, but not own SSS, was also associated with reporting a larger proportion of total interactions in which participants perceived their own rank as higher than an interaction partner (r=.24, p=.018) and a smaller proportion of interactions in which participants perceived their own rank as lower than an interaction partner (r=-.28, p=.006).
Conclusion: Higher trait SSS was associated with higher perceived rank in daily life. Higher SSS was also associated with fewer experiences of social subordination (lower rank relative to an interaction partner) and a greater relative difference in social rank between self and partner in daily life social exchanges, which should confer health benefits. Recurring experiences of social subordination in everyday interactions may be one viable mechanism through which SSS influences health.

39) Abstract 1356
INDIVIDUAL AND COMBINED ASSOCIATIONS BETWEEN DIET QUALITY, PERCEIVED STRESS AND INCIDENT CARDIOVASCULAR DISEASES IN AUSTRALIAN WOMEN

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Background: Previous research suggests diet and perceived stress are associated with the risk of cardiovascular diseases (CVD), but studies investigating their combined association are lacking.
Objectives: To assess associations between both stress and diet quality (individually and combined) and CVD, using two diet quality scores.
Methods: Data from the Australian Longitudinal Study on Women's Health (ALSWH) including 9867 women (52±2 y) without a history of CVD were analysed. Perceived stress concerning 10 different life domains was collected using regular surveys and categorised into low and high. Diet quality scores were calculated by the Dietary Guideline Index 2013 (DGI-2013) and the more food based Dutch Healthy Diet Index 2015 (DHD15-index), and categorized into quartiles. Higher diet quality scores indicated better adherence to the guidelines. Incident CVD was calculated from self-reported physicians' diagnosis. The associations between perceived stress, diet quality and CVD incidence were assessed by Cox proportional hazards models adjusted for multiple confounders.
Results: During 15 years of follow-up 1024 (10.4%) women reported CVD events. High compared to low perceived stress was significantly independently associated with higher CVD incidence (HR=1,60, 95%CI: 1,36-1,87). Regarding the DGI-2013 score, no associations with CVD were found. People in the lowest compared to the highest quartile of the DHD15-index score had a 1,19 (0,99-1,44) times higher risk of CVD. Regarding the combined association, people with high stress and the lowest DGI-2013 or DHD15-index scores compared to those with low stress and the highest diet quality scores had a 1.45 (1.07-1.96) or 1.84 (1.36-2.50) times higher risk of CVD respectively.
Conclusion: Low diet quality and perceived stress combined are associated with a higher risk of CVD. Perceived stress was associated with a higher risk of CVD independent from all other risk factors. It is recommended to further investigate the added value of including perceived stress scores to clusters of risk factors predicting CVD.

40) Abstract 1377
CONNECTION TO NATURE ATTENUATES THE ASSOCIATION BETWEEN GRIEF AND DECREASED MENTAL HEALTH

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Grief predicts decreased mental health over time (Ott, 2003). Furthermore, a sense of connection to the natural world is correlated with greater physical and mental health (Dean et al., 2018). We hypothesized, therefore, that feeling connection with nature buffers the association of grief with depression and anxiety. We sampled eighty-six mTurk workers, 18 Facebook users, and 6 Reddit users who self-disclosed the passing of a close individual from COVID-19. Participants completed an online questionnaire which included measures of grief (Shear & Essock, 2006; Guarnaccia & Hayslip, 1998), depression (PHO, 2019), anxiety (Spitzer et al., 2006), and nature connectedness (CNS; Mayer & Frantz, 2004). Connection to nature moderated the effect of grief on depression when controlling for gender, age, and days since the passing of the loved one, $b = -1.61$, $SE = .77$, $t(91) = -2.09$, $p = .04$. Similarly, connection to nature marginally moderated the effect of grief on anxiety, $b = -.99$, $SE = .56$, $t(93) = -1.77$, $p = .08$. Simple slope analyses indicated that grief was associated with anxiety/depression only for people low (1 SD

below the mean) in connection to nature, $bs \geq 1.54$, $SEs \leq .58$, $ts \geq 3.59$, $ps < .001$, but not for people high (1 SD above the mean) in connection to nature, $bs \leq .47$, $SEs \geq .42$, $ts \leq 1.12$, $ps \geq .27$. Self-reported time spent in nature did not moderate the relationship between grief and anxiety or depression, $bs \leq .21$, $SEs \geq .17$, $ts \leq .91$, $ps \geq .36$. Consequently, connection to nature—not actual time spent in natural settings—impacts mental health outcomes related to grief. Further research is needed to demonstrate that connection to nature buffers the effects of long-term mental health outcomes following bereavement.

41) Abstract 1390
SALIVARY CORTISOL AND ALPHA-AMYLASE RESPONSES TO PSYCHOSOCIAL STRESS IN FREQUENT CANNABIS USERS

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Background. Despite the rapid increase in cannabis use in the United States, research on the health-related risks of regular use remains elusive. One crucial area of research for health outcomes is the neuroendocrine system, as neuroendocrine dysregulation has been associated with numerous poor health outcomes (e.g., cardiovascular disease, mood disorders, and cognitive impairments). The current study examines hypothalamic-pituitary-adrenal (HPA) axis and autonomic nervous system (ANS) reactivity and recovery following an acute psychosocial stressor in frequent cannabis users and non-users. Given previous research on the association between HPA-ANS discoordination and poor health outcomes, HPA-ANS coordination is also investigated as a function of cannabis use.

Method. Seventy-five young adults (53% female; 16% Caucasian) underwent a psychosocial stress task. Cannabis use status (44% users) was used to predict HPA axis and ANS reactivity and recovery across the task, indexed by salivary cortisol and salivary alpha-amylase (sAA), respectively. Saliva samples assayed for cortisol were collected immediately before the stressor, 20 minutes after the stressor (stress reactivity), and 40 minutes after the stressor (recovery). Samples assayed for sAA were collected before the stressor, 5 minutes after the stressor (stress reactivity), and 20 minutes after the stressor (recovery).

Results. Results from a multilevel piecewise growth model predicting HPA axis activity revealed that cannabis users exhibited attenuated increases in cortisol in response to the stressor and attenuated decreases in cortisol during recovery relative to non-users. A separate growth model predicting ANS activity indicated that during recovery, cannabis users exhibited greater reductions in sAA levels relative to non-users. There were no significant effects suggesting differences in cortisol and sAA coordination across the stressor as a function of cannabis use.

Conclusion. To our knowledge, this is the first study to investigate the effects of frequent cannabis use in the absence of tobacco co-use on neuroendocrine markers in response to a stress task and the first study to examine HPA-ANS coordination among cannabis users. These findings indicated that cannabis users may exhibit blunted HPA axis responses to acute stress, but quicker ANS recovery following a stressor.

42) Abstract 1391
AMBULATORY ASSESSMENT OF STRESS- AND RESILIENCE-RELATED MECHANISMS IN EVERYDAY LIFE OF CAREGIVERS OF PEOPLE LIVING WITH DEMENTIA (EMA-DEM): A STUDY PROTOCOL

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Objectives: Informal caregivers (ICs) of people living with dementia (PwD) are particularly vulnerable to the development of stress-related physical and mental illness. ICs report high amounts of caregiver burden accompanied by a variety of psychosomatic health complaints. However, only a small proportion of caregivers use support services for themselves leaving them undetected in the health care system for long time. It is of utmost importance to identify which of these ICs are of particular risk to the development of adverse health outcomes. We therefore set out to explore the biopsychological mechanisms underlying stress and resilience in the daily life of ICs of PwD by means of an exploratory ambulatory assessment study set in daily life.

Methods: A total of 70 ICs of PwD (currently n = 6) are examined on 14 consecutive days. Six times per day, they are asked for self-reports on stress, resilience, respective coping strategies as well as behavioural symptoms of the PwD. These reports are complemented by biopsychological measurements: each assessment is accompanied by the collection of a saliva sample for the analysis of cortisol and alpha-amylase. Additionally, heart rate variability, measures of physical activity and sleep patterns are continuously recorded via an activity monitoring device (movisens). At the beginning and end of the assessment period an interview is conducted on site where ICs and the respective PwD are examined by a comprehensive psychometric test battery on resilience, depression, and coping among others. As longer-term biopsychological measures, we determine the salivary microbiome in ICs at these two time points and the concentration of hair cortisol from both participants at the end of the assessment.

Results: Preliminary results of this ongoing study will be presented at the conference. Predictors of biopsychological stress and resilience will be examined considering characteristics of the IC, the respective PwD and their dyadic interplay in daily life.

Discussion: This study will provide more insights into mechanisms of stress and resilience in the daily life of caregivers and PwD. This knowledge will help to identify those ICs at risk and will provide avenues for the development of individually tailored interventions. This is particularly relevant, as ICs tend to be a population often overseen in the health care system.

43) Abstract 1418
INTOLERANCE OF UNCERTAINTY MODERATES THE ASSOCIATIONS BETWEEN FEAR OF DEPRESSION RECURRENCE AND ANXIETY

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Major depressive disorder is a chronic psychiatric condition with high rates of relapse that increase with the number of past depressive episodes experienced. Identifying predictors of relapse is critical in preventing future depressive episodes. Intolerance of uncertainty (IU) is a transdiagnostic trait indicating negative beliefs about uncertainty and its consequences. It is an important risk factor for anxiety and depressive disorders. Fear of illness recurrence, defined as worry about the possibility of an illness returning, is frequently studied in health conditions such as cancer, and has been associated with decreased mental health and engagement in health behaviors. The present study is the first to measure fear of *depression recurrence* (FODR) in a sample of remitted depressed individuals and its associations with symptoms of psychopathology and quality of life. The aim of this study was to examine associations between FODR and symptoms of psychopathology (general psychological distress, depression, and anxiety) and domains of quality of life (physical, psychological, social, and environmental), as well as whether IU moderates these associations. Thirty remitted depressed individuals completed an online questionnaire measuring the study variables, followed by a qualitative interview on their experiences with depression and potential fears about its return. FODR was not associated with depressive symptoms or general psychological distress, nor were there any moderating effects of IU.

However, IU moderated the associations between FODR and anxiety (R^2_{change}=.11, F(1, 26)=4.78, p=.038), such that FODR was positively associated with anxiety only for people with high levels of IU. While there were no significant moderations influencing domains of quality of life, there was a significant negative association between FODR and psychological quality of life. The findings show that FODR has real-life consequences in that it is associated with reduced perceptions of quality of life. Although FODR was unrelated to depression, it was associated with increased anxiety among those who struggle with uncertainty. Thus, the combination of FODR and IU appears to be an important predictor of residual symptoms and perhaps risk for relapse. Future research might study both as targets for preventative interventions following treatment for depression.

44) Abstract 1435
SCHIZOTYPY SYMPTOMS IN COVID-19 PATIENTS WHO FULLY RECOVERED AND THOSE WHO DEVELOPED LONG COVID

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Background: The novel coronavirus (COVID-19) can cross the blood-brain barrier resulting in neuroinflammation that can cause significant damage to the peripheral and central nervous systems. Inflammation has been linked to psychotic symptoms, which have been observed following influenzas and SARS-CoV-1. Maternal influenza while in utero is also linked to later development of psychotic disorders. Some who do not develop psychosis display subclinical symptoms called schizotypy, which includes odd behavior, perceptual aberrations, and thought, speech and social impairments. The present study compared schizotypal symptoms in persons who contracted COVID-19 and recovered, to those who developed long COVID. **Method:** Individuals who contracted COVID-19 were recruited via social media and completed self-report measures of premorbid health, COVID-19 positivity, symptoms, and recovery, along with the schizotypal personality questionnaire (SPQ) online using Qualtrics. **Results:** One-third of the sample (*N*=88) recovered within one month of acute illness, and two-thirds (*N* = 153) remained symptomatic > 3 months later. A 2 (recovered, long COVID) x 2 (male, female) ANCOVA controlling for age indicated that there were no differences between those that recovered within one month and those with long COVID on SPQ scores (*F*(1, 154) = 3.00, *p* = .085). There were also no differences between the groups regarding SPQ subscales. There was an interaction effect between sex and total people that contracted COVID-19 on total SPQ scores (*F*(1, 154) = 12.69, *p* = .001). Compared to normative data, those who contracted COVID-19 scored higher in social anxiety (*t*(161) = 6.39, *p* = .001), constricted affect (*t*(159) = 2.54, *p* = .012), no close friends (*t*(161) = 5.03, *p* = .001), and ideas of reference (*t*(161) = -5.26, *p* = .001). **Discussion**: Results suggest that increased social anxiety, constricted affect, lack of close friends, and ideas of reference are present in those with COVID-19, which may reflect pandemic effects on disease pathophysiology.

45) Abstract 1455
ASSOCIATIONS BETWEEN PARENT CHILDHOOD SOCIOECONOMIC STATUS AND OFFSPRING HEALTH OUTCOMES: POSSIBLE MODERATION BY PARTICIPATION IN A CO-PARENTING INTERVENTION

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Background: Lower socioeconomic status (SES) is linked to poorer health, including across generations, such that parents' childhood SES impacts their children's health. **Objective:** To investigate whether parent childhood SES predicts their children's health (body mass index (BMI), Interleukin-6 (IL-6)) and whether this association is moderated by participation in a perinatal co-parenting intervention. **Methods:** During home visits, part of a randomized controlled trial to test the effects of a co-parenting intervention, 110 parents (110 mothers aged 30.22 ± 3.98 years; 110 fathers aged 32.17 ± 4.96 years) reported on their childhood SES (homeownership), current SES, and demographics. Their children's (aged 7.9±0.60 years; 54% male) height and weight were measured, and dried blood spot samples were collected for measuring IL-6. Main effects of the intervention group and parents' childhood SES were assessed using multiple linear regression analyses in SPSS. Moderation analyses were conducted using the PROCESS macro for SPSS. All models adjusted for child age, sex, current SES, BMI (when predicting IL-6), and the other parent's childhood SES. **Results:** There were no main effects of parents' childhood SES or parenting intervention on child BMI or IL-6 (all ps > .10). There was a significant interaction between fathers' (not mothers') childhood SES and intervention group in predicting youth BMI (= -38.60, p = .02, 95% CI = -70.90, -6.31) such that fathers from lower childhood SES backgrounds who were in the intervention group had children with lower BMI compared to fathers from lower childhood SES backgrounds who were in the control group. Conversely, mothers' (not fathers') childhood SES interacted with the intervention group to impact youth IL-6 (B = .711, p = .04, 95% CI = 0.02, 1.39) such that mothers from lower childhood SES backgrounds who were in the intervention group had children with greater IL-6 levels compared to mothers from lower childhood SES backgrounds who were in the control group. **Conclusion:** Despite the absence of main effects, we found evidence of a moderation of the association between parent childhood SES and youth health based on participation in a perinatal co-parenting intervention. However, our hypotheses were only partially supported and future research should examine whether differential influences exist for mothers' vs. fathers' childhood SES.

46) Abstract 1470
SOCIAL INTERACTION PATTERNS DURING DAILY LIFE ARE ASSOCIATED WITH AMBULATORY BLOOD PRESSURE AND CARDIOMETABOLIC RISK

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The interpersonal circumplex, which examines patterns of dominance and affiliation in social interactions, has been used as a framework to understand how the cumulative impact of social interaction patterns might contribute to cardiovascular risk. In this study, we applied this framework to the analysis of social interactions in a naturalistic setting. In a sample of 391 healthy, middle-aged adults (40-64, 61 % female, 23 % nonwhite, SHINE: Study of Health and Social Interactions in the Natural Environment), we examined self-reported social interactions and ambulatory blood pressure (ABP) on an hourly basis over four days using ecological momentary assessment (EMA). Each hour, participants (Ps) rated recent social interactions on 4 scales, assessing current dominance and affiliation of self and other, along with posture, activity, and other covariates. Clinic BP, glucose, triglycerides, HDL cholesterol, and waist circumference were standardized and averaged, to derive an index of cardiometabolic risk (CMR). Acutely (within-person), interactions with dominant people (dominant/forceful vs. submissive/meek) were associated with larger ambulatory blood pressure (ABP) (SBP b=.29, F (1, 9686) = 7.86, p =.005). More chronically, participants who rated themselves as less affiliative (cold/hostile vs. warm/friendly), on average, during their social interactions, showed higher ABP (DBP b= 2.07, F (1, 379) = 4.52, p=.03), and exhibited greater CMR (b=.13, F (1, 379) = 5.59, p=.02). Dominant participants who

perceived themselves as being surrounded by dominant others in interactions exhibited elevated CMR (F for interaction (1, 379) = 10.21, p=.00015). These data support the potential utility of the interpersonal circumplex model for identifying daily life social interaction patterns that may be associated with cardiometabolic risk.
Supported by AG041778.

47) Abstract 1491
ADOLESCENT GIRLS' EARLY LIFE STRESS AND BODY MASS INDEX: DIFFERENTIAL EFFECTS OF ANGER AND ANXIETY IN RESPONSE TO REJECTION

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Early life stress (ELS), defined as environmental, social, and household stressors experienced before age 18, is linked to childhood obesity. As children enter adolescence and face the developmentally salient stressor of interpersonal rejection, the amount of ELS experienced may interact with individual differences in rejection sensitivity. The multiplicative effect of greater ELS and greater rejection sensitivity can activate stress-related behavioral and physiological changes (e.g., appetite-regulating hormones) resulting in higher body mass index (BMI). Understanding if and how rejection sensitivity influences the effect of ELS on BMI is particularly important to study in adolescent girls, as they experience greater ELS and greater stress sensitization than boys. Thus, ELS may differentially interact with affective responses to rejection to impact adolescent girls' cardiometabolic health. To our knowledge, no studies examining the association between adolescent girls' history of ELS and BMI have tested the potential moderating effect of rejection sensitivity. To this end, we hypothesized that, among girls with greater ELS, greater rejection sensitivity at baseline would predict higher BMI one year later. A sample of 78 girls (44% racial/ethnic minorities; age: M=13.1 years; BMI: M=23.2 kg/m^2) completed study procedures. During an initial visit, the Psychosocial Schedule assessed cumulative ELS and the Children's Rejection Sensitivity Questionnaire assessed expectations of anxiety and anger in response to rejection. At a 12-month follow-up visit, height and weight were measured to derive BMI. There were significant main effects of ELS and expectations of anger and anxiety on BMI, meeting the criteria to test for moderation. There was a significant interaction between expectations of anger and ELS (B=-.08, SE=.03, *p*=.002; R^2=.24, F(3,74)=7.67, *p*<.001), but not between expectations of anxiety and ELS. Simple slopes analyses revealed, among girls with greater ELS, BMI did not vary by expectations of anger. However, among girls with lower ELS, expecting greater anger was associated with higher BMI. Furthering this line of research will improve a developmentally-informed understanding of how rejection sensitivity may influence the association between ELS and cardiometabolic health risk during the sensitive period of adolescence.

48) Abstract 1492
MAINTAINING PHYSICAL ACTIVITY DURING COVID-19: THE INFLUENCE OF PSYCHOSOCIAL VARIABLES IN INDIVIDUALS WITH BACK PAIN

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Purpose
Stressor events, such as COVID-19, may trigger adaptive or maladaptive pain management strategies among individuals with persistent low back pain (LBP). Emerging research shows individuals with lower fear avoidance, depression and anxiety, and greater positive affect and quality of life can better maintain positive pain management strategies during stressor events. For individuals with persistent LBP, physical activity (PA) has been shown to be a beneficial pain management strategy. This study investigated psychosocial variables of individuals with LBP who demonstrated adaptive pain management strategies during COVID-19, indicated by the maintenance of physical activity.

Methods
Twenty-five individuals with persistent LBP (age 22.4 (3.4) years, 7m, 18f) from an existing longitudinal cohort participated. Participants completed a baseline survey prior to COVID-19. This survey quantified demographics, pain severity, frequency, and duration. Other baseline measures were the Physical Activity Scale, the WHOQOL-Bref physical, psychological, social, and environmental quality of life subscales, Fear Avoidance Beliefs Questionnaire, Hospital Anxiety and Depression Scale, and Trait Affect scale. Participants then completed follow-up surveys for 18 months. During COVID-19 lockdown, the impact of lockdown on PA was assessed. The cohort was dichotomized into individuals reporting the same or more PA (MPA) and those reporting less PA (LPA) and baseline characteristics were compared between groups.

Results
The LPA group contained 17 individuals and the MPA group contained 8 individuals. There was no significant demographic difference between groups. The MPA group had greater duration of LBP symptoms (p=0.015, d =1.16). The MPA group trended towards higher physical quality of life (p=0.101, d=0.79) and higher environmental quality of life (p=0.057, d=0.96) at baseline. Individuals in the MPA group had lower negative affect (fatigue domain) scores than the LPA group (p=0.038, d=0.86). Depression scores were lower in the MPA group (p=0.006, d=1.12).

Conclusions
Individuals with persistent LBP who had greater duration of symptoms, better physical and environmental quality of life, lower negative affect, and less depression were more likely to maintain or increase physical activity during COVID-19. These characteristics may facilitate positive adaptation to a stressor event.

49) Abstract 1500
THE EFFECT OF CHILDHOOD TRAUMA ON HIGH-FREQUENCY HEART RATE VARIABILITY USING THE MIDLIFE IN THE UNITED STATES DATA SET

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Although adverse childhood events (ACEs) are established risk factors for illness in adulthood, the pathophysiologic mechanisms that account for this relationship remain poorly understood. One candidate mechanism is dysregulated autonomic nervous system functioning. High-frequency heart rate variability (HF-HRV), a marker of cardiac vagal regulation, has been inversely associated with a growing number of diseases and markers of dysregulation. Prior studies have attempted to investigate the relationship between ACEs and HRV but used low-frequency HRV, an index that reflects cardiac sympathetic modulation, as well as HF-HRV as an indicator of parasympathetic nervous system (PNS) activity. Using data from the Biomarker Project of the Midlife in the United States (MIDUS) data set, we analyzed the relationship between childhood trauma, as measured by the Childhood Trauma Questionnaire (CTQ), and HF-HRV, hypothesizing an inverse relationship between these two variables.

Data were analyzed using hierarchical linear regressions. In model 1, HF-HRV controlled for respiratory rate (rHF-HRV) was regressed against the total CTQ score. Subsequent models added demographic variables (model 2), modifiable risk factors (model 3), and medications (model 4). Missing data accounted for 0.7% to 2.8% of all data. In model 1, the total CTQ score was not significantly related to rHF-HRV (β=-0.001, p = 0.700). However, after controlling for

demographic variables, the hypothesized inverse relationship between CTQ and rHF-HRV emerged (β=-0.006, p = 0.016), and this relationship was maintained in all subsequent models (β=-0.007, p = 0.008 and β=-0.006, p=0.019, respectively).
This study suggests that childhood trauma has a statistically significant inverse relationship to adult HF-HRV, an important biomarker for PNS activity, after accounting for demographic and other variables. These findings indicate that the relationship between rHF-HRV and childhood trauma is consistent. Future research is warranted to understand the pathophysiologic relationship between early life trauma and parasympathetic activity. Additionally, this study did not analyze the specific subscales of the CTQ, which may clarify the effect of specific forms of trauma that are associated with reduced parasympathetic activity.

50) Abstract 1505
RACIAL DIFFERENCES IN THE ASSOCIATION BETWEEN RESTING HRV AND TRAIT RUMINATION

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Research suggests that there are racial differences in both trait rumination and cardiovascular health, such that racial minorities (i.e., non-White individuals) ruminate more and have worse cardiovascular health. Rumination is a maladaptive emotion regulation strategy that can have detrimental influences on physical and mental health. Furthermore, rumination is also a stress response and has been linked to depressive symptoms in racial minorities. Heart rate variability (HRV) serves as a biomarker of cardiovascular health and has been linked with rumination. Indeed, racial differences have been observed in resting HRV, such that non-White individuals may have higher HRV than non-White individuals (e.g., Black Americans), which is paradoxical considering health disparities. The following study thus examined racial differences in the association between HRV and ruminative tendencies in White and non-White undergraduates (n = 491, 168 non-White individuals, mean age = 24). First, resting (high frequency) HRV was assessed via a five-minute baseline period via an electrocardiogram. This was followed by individuals' self-reported 22-item Ruminative Responses Scale (using three subscales: depression, brooding, reflection) responses as an index of trait rumination. Results showed higher rumination in non-White individuals compared to White individuals (t (489) = -2.46, p = .016) with no significant differences in resting HRV (t (489) = -0.62, p = .537). Lower resting HRV was associated with higher rumination (r = -.15, p <.001) in the full sample. When stratified by race, this negative association was statistically reliable in non-White (r = -.27, p <.001), but not in White (r = -.09, p = .098), individuals. These data partially support prior evidence on racial differences in both rumination and HRV, and further suggest that higher HRV is particularly important for racial minorities in avoiding rumination, as such tendencies may amplify the impact of unfair treatment such as discrimination (Williams et al., 2019). Additionally, lower ruminative tendencies may be particularly beneficial for HRV in racial minorities. Future studies should seek understanding of directionality, in addition to the role of unfair treatment, in the link between resting HRV and rumination in racial minorities.

51) Abstract 1508
YOGA-BASED STRESS AND QUALITY OF LIFE MANAGEMENT DURING PREGNANCY

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Background - Pregnancy is a vulnerable period associated with mental and physical challenges for expectant mothers. Anxiety, stress, and depression are usually associated with pregnancy which exerts adverse effects on both mother and child. The neuropsychological status of women during gestation can contribute to the various maternal or fetal outcomes.
Methods - Uncomplicated pregnant women were recruited between the 15th -20th weeks and they were randomized into the Yoga group and the Control group. The yoga group was given online Yoga classes throughout pregnancy and four questionnaires viz Perceived Stress Scale (PSS), Depression Anxiety Stress Scale (DASS), Vedic Triguna Inventory, World Health Organization- Quality of Life (WHO-QOL-Bref) were used to assess the stress, anxiety depression, and Vedic personalities at the baseline and followup at 32nd week to see the effect of Yoga on these parameters.
Results - PSS and DASS scores decreased in the Yoga group as compared to the Control group while the score of all four domains of QOL questionnaires increased in the Yoga group. Vedic personality scores were also altered in both the control and Yoga groups.
Implications and Conclusion - Yoga can improve quality of life and decrease pregnancy-associated stress and anxiety during pregnancy which may increase fetal and maternal outcomes.

52) Abstract 1518
TITLE:THE INFLUENCE OF STATE RUMINATION ON CARDIOVASCULAR HABITUATION TO REPEATED STRESS

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Background: Rumination, that is mentally dwelling on past-centred negative, unwanted, and persistent thoughts, has been reliably linked to exaggerated cardiovascular responses to, and prolonged cardiovascular recovery from, a single psychological stressor. However, research examining cardiovascular reactivity in the context of repeated stress has been recommended to assess patterns of cardiovascular habituation over time. Previous research has shown that *trait* rumination (the tendency to ruminate) prevents some individuals from successfully adapting to repeated stress. The aim of this study was therefore to replicate this effect but
with *state* rumination (the extent to which an individual engages in event-specific ruminative thinking) on cardiovascular habituation to repeated acute psychological stress.
Method: This study utilised previously collected data from the Pittsburgh Cold Study 3. Two hundred and thirteen participants completed 2 separate, identical laboratory sessions, consisting of a 20-minute baseline and 15-minute stress task (Trier Social Stress Test; TSST). Systolic/diastolic blood pressure and heart rate were monitored throughout. Participants completed a set of questions that assessed rumination in response to their stress experience of the first TSST.
Results: Results revealed that those who engaged in low levels of state rumination successfully adapted to the repeated stressor. This was in comparison to those who engaged in high levels of state rumination and displayed significantly poorer habituation from the first to the second stress exposure.
Conclusion: Our findings implicate rumination as a possible mechanism compromising an individual's capacity to adequately habituate to repeated stress and as a result develop adverse cardiovascular health.
Key Words: Rumination, cardiovascular responses, psychological stress, repeated stress, cardiovascular habituation.

53) Abstract 1520
SO WHAT I'M STRESSED? PRELIMINARY THEMES IN CANCER CAREGIVERS REACTION TO EMERGING STRESS BIOMARKERS

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Background: Psychosomatic Medicine as a field has focused much of its attention on biomarkers of physiologic stress. Many tests of these biomarker have also been commercialized and are now available to the public. In addition, caregivers of cancer patients often indicate high levels of subjective distress and have been the focus of stress physiology research. However, no research to date has investigated whether caregivers' reaction to stress biomarker information could impact their willingness to address their distress.

Methods: Here, we report on an ongoing qualitative study (target recruitment goal: $N = 20$) conducting individual interviews with cancer caregivers to explore their key attitudes towards, and subjective experience of, stress biomarker data. A total of 9 caregivers of patients (M age = 58.6 years; SD = 8.4) with metastatic brain tumors (glioblastoma) were interviewed regarding 4 commercially available biomarkers (telomere length; hair cortisol, activity levels and heart rate variability). Once presented with the stress biomarker data, caregivers were asked to discuss their subjective reaction as if it was their own data as well as their motivation and willingness to seek support after receiving such information. We identified and extracted preliminary themes from the initial cohort of caregivers.

Results: Initial themes focus on caregivers' ability to manage stress, engagement with supportive services, their emotional reactions to biomarker data and biomarker's sensitivity to change. Notably, caregivers focused on how sharing biomarker data could actually increase their subjective stress and the relevance of these biomarkers was often directly related to biomarkers' sensitivity to change (e.g., whether something could be done).

Conclusions: Ongoing analyses will add to our understanding of the ways that caregivers interpret and react to emerging biomarker information. Findings will set the stage for the utility of stress biomarker information and whether it can impact individual willingness to address their distress in a clinical population often overburdened (e.g., cancer caregivers). These results also suggest the potential need for scalable and readily-accessed interventions to minimize the reported burden of receiving biomarker data indicating high levels of stress.

54) Abstract 1540
PREDICTORS OF PERSISTENT SOMATIC SYMPTOMS IN THE GENERAL POPULATION: A SYSTEMATIC REVIEW OF COHORT STUDIES.

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Introduction

Up to 10% of the general population experiences persistent somatic symptoms (PSS) without a clear biomedical explanation. Numerous studies in a variety of health domains are dedicated to identifying characteristics that are associated with PSS. The present study aimed to summarize predictors for PSS in the general population and provide an overview of health domains to which risk factors belong.

Methods

We performed a systematic search to identify cohort studies that longitudinally examined factors associated with PSS-onset in the general population. PSS was defined as physical symptoms without well-documented biomedical explanation, with a duration of >3 months. Potential predictors had to precede PSS onset and were categorized according to the dynamic biopsychosocial model. To determine the predictive value of a factor, five levels of evidence were discerned based on the number of studies and the percentage of consistent findings.

Results

A total of 112 articles were eligible for analysis. In these studies, 27 symptom and syndrome categories of PSS were used, with a primary focus on fibromyalgia/chronic widespread pain (21.3%) and irritable bowel syndrome (21.3%). Significant associations are seen in >250 factors investigated in the 112 studies, from all domains of the dynamic biopsychosocial model – i.e., the biological, psychological, interpersonal, contextual, and health behavioral domains. Of these >250 factors, 48 were investigated by at least 2 articles. Most studies investigated biological factors (79%). Strong evidence identifies biological (e.g., infections, body weight, headaches), psychological (e.g., depression, sleep problems, anxiety), contextual (i.e., socioeconomic status), and health behavioral (i.e., physical activity) factors as predictors of PSS.

Discussion

Evidence shows that factors preceding PSS-onset are related to a variety of health domains. While studies have historically aimed to find a specific biomarker or psychological parameter, the present study indicates that the reduction of predictors of PSS to specific factors or a specific domain may be too restrictive. To predict PSS, future research should focus on developing screening tools and prediction models that combine factors from all health domains.

55) Abstract 1544
COMPARISON OF STROKE/TIA INDUCED PTSD SYMPTOMS IN PATIENTS WITH AND WITHOUT PRIOR HISTORY OF STROKE

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Background: Re-exposure to traumatic events can be associated with increased risk of posttraumatic stress symptoms (PTSS) from subsequent trauma,yet less is known about PTSS risk in patients with recurrent medical events. We examined whether patients with a prior stroke were at increased risk of elevated PTSS after a recurrent stroke compared to those without a prior stroke. As the psychological distress related to medical events may be increased in younger patients (e.g. for an "off-schedule" event), we tested for an interaction with age.

Methods: The sample was 300 patients enrolled from Reactions to Acute Care (ReACH) Stroke Study, an observational cohort assessing PTSS in stroke patients. Data were analyzed via linear regression modeling. PTSS were assessed via the PCL-5 at 1-month, keyed to stroke event at enrollment. Primary predictor was history of stroke (1 = yes, 0 = no). Three models were tested: main effect only, covariate-adjusted main effect, and covariate-adjusted including the multiplicative interaction of history of stroke with age. Covariates were age, race, ethnicity, gender, stroke severity (via NIH stroke scale), prior PTSS and depression.

Results: Patients' mean age was 61.26 years (SD = 14.87); 56.0% female, 47.0% Hispanic/Latinx, 23.7% White, 20.3% Black, 9.0% other. 23.0% had a prior stroke. Median severity for current stroke was 2 [IQR 1, 4]. In the unadjusted analysis, prior stroke was associated with greater PTSS keyed to the index stroke event, $B = 5.33$, $se = 1.92$, $p = .006$. This was marginal in the covariate-adjusted analysis, $B = 2.68$, $se = 1.55$, $p = .086$. The association differed significantly by age, $p = .004$. At younger age (-1 SD, approximately 46 years old), prior stroke was associated with greater PTSS, $B = 6.65$, $se = 2.06$, $p = .001$, but the association was nonsignificant for older patients (+1 SD, approximately 76 years old), $B = -1.79$, $se = 2.18$, $p = .41$).

Conclusions: The results indicate that like other types of traumatic events, re-exposure to stroke increases risk for PTSS from subsequent

stroke. This pattern differed by age: younger patients were at risk for elevated PTSS from recurrent stroke events. This suggests younger patients with a history of medical vulnerability or recurrent stroke events may have high need for early psychological treatment to prevent the development of clinically significant PTSS.

56) Abstract 1548
PILOT RESULTS OF IMMUNE AND STRESS REACTIVITY TO EXPERIMENTALLY-MANIPULATED WEIGHT STIGMA

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Weight stigma is pervasive, associated with physiological stress, and could partially explain the negative association of overweight/obesity with cardiometabolic health. This pilot study explored the extent to which experimentally-manipulated weight stigma impacted biomarkers of acute immune and stress reactivity.

Women (N=45, 69% white) with overweight/obesity (M=33.2±6.6 kg/m^2) were randomized to either weight stigma (n=23) or control (n=22) stress reactivity tasks (i.e., evaluative-speech task over weight stigma or neutral topic). Markers of immune (i.e., interleukin [IL]-6, tumor necrosis factor [TNF]-α, interferon [IFN]-γ) and stress (i.e., cortisol, osteocalcin) reactivity were measured at baseline and 30-, 60-, and 90-min post-task. The absolute change (baseline to peak) and area under the curve were calculated for all variables.

When analyzing both experimental stressors together, IL-6 (p=.069) and TNF-α (p=.116) non-significantly increased from baseline to peak post-task concentrations and were associated with small effect sizes (Cohen's d=.29 and .25, respectively). No change or effect was observed for IFN-γ after the speech tasks (p=.329). Cortisol significantly decreased from baseline to 90-min post-task with a large effect size (p<.001; Cohen's d=1.10). Osteocalcin non-significantly increased from baseline to peak, which approached a small effect (p=.236; Cohen's d=.18).

When comparing weight stigma versus control post-task area under the curve, no differences were observed for IL-6 or TNF-α reactivity (p=.660 and .879, respectively). A small effect consistent with increased IFN-γ area under the curve reactivity was observed in weight stigma versus control (Cohen's d=.30), but was not statistically significant (p=.390). Although not significant, cortisol in the weight stigma condition decreased to a lesser degree than control and reached a medium effect size (p=.111; d=.50). The control group displayed non-significantly (p=.369) greater osteocalcin area under the curve reactivity than the weight stigma condition (Cohen's d=.28, small effect).

Based on the small-to-medium effect sizes observed in this pilot study, the impact of weight stigma on acute immune and stress reactions (especially cortisol and IFN-γ) warrant further investigation in larger samples.

57) Abstract 1556
ACCESSING SELF-ESTEEM WHEN WRITING ABOUT TRAUMA PROTECTS AGAINST DEPRESSION IN A DIVERSE SAMPLE OF PEOPLE WITH HIV

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Methods: One hundred diverse PWH (41% women; 54% identified as gay or bisexual; 23% were Hispanic, 16% were white; 61% were African American or Afro Caribbean) completed four 30-minute expressive trauma writing sessions in the intervention arm of a randomized controlled trial of expressive writing. To minimize the effects of self-report bias, we utilized an unobtrusive measure of self-esteem rather than a self-report questionnaire. The trauma essays written as part of the intervention were coded by two people to assess the total number of self-esteem words. PTSD scores, depression,

CD4+ counts, viral load, and number of HIV symptoms were assessed at baseline, one-, and six-month follow-up.
Results: The results indicated that greater total positive self-esteem words were related to lower depression at 6-months, controlling for depression at study entry, age, race, and education (t(89) = -2.294, ß = -0.633, SE =0.276, p < 0.05, 95% CI [-1.182, -.085]). This finding was consistent with the stated hypothesis and indicated that self-esteem words were related to mental health outcomes. Total self-esteem words were not predictive of PTSD or HIV outcomes at 6-months.
Conclusion: This study illustrates the importance of accessing self-esteem when writing about and processing a traumatic event, in that it is protective against depression at 6-month follow-up. Future research could examine other constructs in expressive writing interventions that may be associated with better mental health outcomes.

58) Abstract 1563
ESCALATIONS IN EARLY COVID-19 DEATH COUNTS PREDICT DISTRESS VARIABILITY

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Research has shown a complicated relationship between the COVID-19 pandemic and well-being, particularly in its initial months when there was great uncertainty about the virus and its impact on daily life. While some work suggested increases in distress, other research shows fluctuations in levels of anxiety, stress, and depression as the pandemic progressed. The COVID-19 pandemic is not a monolithic experience but rather one with day-to-day variability perhaps accounting for these types of variations. Notably, each day individuals were exposed to updated information about its severity, including the number of deaths due to COVID-19. This paper tests if daily changes in COVID-19 severity as measured by reported deaths in February and March 2020 predicts daily distress and distress variability in emerging adults. Participants in California (n = 56; 81.8% female; M$_{age}$ = 20.53; Hispanic/Latinx 67.9%, White 58.2%, or Asian 16.4%) completed two consecutive weeks of ecological momentary assessment between February and March of 2020. A new cohort was enrolled weekly, providing a naturalistic experiment where participants were exposed to differing levels of daily and accumulated death counts. A brief distress scale was completed four times daily, resulting in 56 possible assessments. Daily averages and standard deviations were calculated for distress. Multilevel models tested cross-level relationships between COVID-19 deaths reported in California (accessed from California Department of Public Health), including daily deaths count and accumulated total death counts. Results indicated an inverse relationship between accumulated death counts and daily distress standard deviation (variability, b = -1.62, p = .03) suggesting a blunting effect as the COVID-19 pandemic escalates. No significant relationships were found for daily death counts nor mean distress. These findings point to a compounding of the severity COVID-19, highlighting its features as a chronic stressor and the need to understanding total versus acute exposure. Also, they support the use of variability metrics when studying individuals in stress environments. A blunted level of responding or numbness, even to negative cues over the course of a day could have serious implications for health, as this pattern prolonged over time indicates a lack of adaptation with sustained, low-grade increase in distress.

59) Abstract 1575
THE RELATIONSHIP BETWEEN PUBERTY TIMING AND BULLYING VICTIMIZATION AND PERPETRATION IN A LONGITUDINAL SAMPLE OF US ADOLESCENCE

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Bulling victimization and perpetration tend to peak in early
adolescence, and correspond in time with pubertal development.
There has been a mounting effort to reduce both bullying
victimization and perpetration given their long-term deleterious
effects on socio-emotional development and mental health. Many
scholars hypothesize that pubertal timing is involved in the etiology
of both bullying victimization and perpetration, however, much of
previous research has been cross-sectional, limiting our ability to
parse out the directionality of the relationship between bullying and
puberty timing. Here, we sought to better understand how pubertal
timing is related to bullying victimization and perpetration in a
longitudinal sample of 271 adolescents (47.2% female; 41% non-
Hispanic White, 28.8% Hispanic, 12.5% multi-ethnic) followed over
the pubertal transition. Participants completed the self-report Peterson
Pubertal Development Scale and self-reported on bullying
perpetration and victimization at three time points (T1: M_{age} =
9.61, SD = 0.726; T2: M_{age} = 11.98, SD = 0.873; T3: M_{age} =
14.37, SD = 1.322). Pearson's correlations indicated that higher
puberty progression at age 9.6 was significantly associated with being
a victim of bullying at age 12 in girls (r = 0.274, p < 0.05) but not in
boys. Higher puberty progression at 12 and 14.4 were not related to
being a victim at any age in girls or boys (r range: -0.106 to
0.195, p range: 0.058 to 0.714). Higher puberty development at 9.6
did not predict bullying perpetration at any age in boys or girls.
However, higher puberty development at age 12 was associated with
more bullying perpetration at age 12 in girls (r = 0.256, p < 0.05).
Furthermore, higher puberty progression at 14.4 years predicted more
bullying perpetration at 14.4 in girls (r = 0.246, p < 0.05) and boys
(r = 0.241, p < 0.05). These findings support the idea that there is a
bi-directional relationship between bullying and puberty progression,
with higher pubertal development predicting greater bullying
victimization in girls, and higher puberty progression being
associated with more bullying perpetration in boys and girls
especially in later adolescence. Our data suggest that bullying
prevention programs should take pubertal progression into account
and provide education that would reduce the targeting of early
developing girls especially.

60) Abstract 1585
EXAMINING THE ROLE OF DISCRIMINATION ON BAROREFLEX SUPPRESSION DURING STRESS

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Experiencing discrimination has negative consequences for health;
the physiological responses the body coordinates to overcome
stressors have been proposed to explain this link. The baroreflex —a
visceral control loop that supports circulatory and metabolic
requirements through increasing or decreasing heart rate, cardiac
contractility, and blood flow as part of sympathetic activation or
inhibition— can be suppressed by psychosocial stressors.
We examined the association of everyday and lifetime discrimination
with cardiovascular markers of baroreflex activity (i.e., systolic time
intervals: pre-ejection period [PEP] and left ventricular ejection time
[LVET]; volumetric measures of cardiac function: cardiac output
[CO], stroke volume [SV], heart rate [HR]; and sympathovagal
balance: low frequency/high frequency [LFHF]) in response to a
laboratory stressor while adjusting for covariates. Latinx and non-
Latinx young adults (M_{age} = 20.45, SD = 1.96; 59% female, 54%
Latinx), who took part in a larger study of stress reactivity, self-
reported on their experiences of discrimination, and had three

electrocardiogram (ECG) sensors placed on their torso to evaluate
cardiovascular activity during a 3-minute standing baseline and a 5-
minute speech task.
Multilevel models revealed two noteworthy results. First, everyday
discrimination was a significant predictor of LFHF (γ = .50, SE = .02,
95% CI [.017, .083], p =.003) and a marginally significant predictor
of SV (γ = 1.52, SE = .84, 95% CI [-.130, 3.178], p =.07). Second,
the main effect of lifetime discrimination was a significant predictor
of LFHF (γ = .50, SE = .02, 95% CI [.010, .084], p =.014). Further,
the interaction of Latinx ethnicity and lifetime discrimination was a
significant predictor of CO (γ = .25, SE = .11, 95% CI [.020,
.468], p =. 033). Everyday and lifetime discrimination were non-
significant predictors of HR, PEP, nor LVET. Findings highlight that
experiences of discrimination, whether chronic or acute, can have
repercussions for cardiovascular health via greater sympathetic
activation evidenced by higher CO and LFHF. Individuals who
experience discrimination more frequently may feel generally less
safe or may experience acute stressors as more threatening, which
may explain higher CO and LFHF.

61) Abstract 1587
PUBLIC PERCEPTIONS OF TEST TRACE PROTECT WALES: UNDERSTANDING AND IMPROVING SELF-ISOLATION ADHERENCE

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University, Swansea, United Kingdom, Alisha Davies, PhD, Kate
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Introduction: Despite the ongoing roll-out of the vaccination
programme in Wales, self-isolation remains a crucial strategy to
reduce transmission of COVID-19, especially as cases remain
high. Test, Trace, Protect (TTP) is Wales' contact tracing
programme where people are asked to isolate and provided with
information and resources. Public Health Wales ran a real-time text
message survey of contacts of cases of COVID-19 to provide insight
as people were starting a period of self-isolation after notification
from NHS Wales Test Trace Protect (Adherence Confidence Text
Survey (ACTS)). This research study was designed to investigate
what those being asked to self-isolate felt was good about their
experience with TTP and what do they feel could be done better
based on their text responses. **Method:** Text responses between
15th November 2020 and 2nd May 2021 (N = 12,092) were analysed
using an automated content analysis (ACA) and sentiment analysis
using the software *Leximancer*. Next, we conducted a qualitative
thematic analysis using the software *NVivo* to explore further the
findings of the ACA, as well as to look more deeply into some of the
reasons behind people's views of TTP at two time periods for
comparison, T1: 15th November- 5th December 2020 (n=2956) and
T2: 1st March – 31st 2021 (n = 515). **Results:** ACA revealed that
there were substantially more (roughly ten times as many) instances
of favorable (positive affective) (n=4,963) terms within the data than
unfavorable (negative affective) (n=425). NVivo analysis were in
keeping with this finding as the majority reported a positive
experience with TTP (T1 N = 1717, 58%; T2 N = 355, 69%). One of
the sources of confusion was the date of the end of required isolation
(T1 N= 101, 3.4%; T2 N = 11, 2.1%) though clarity improved from
T1 to T2. Another concern was the time it took to be contacted
following a positive test (T1 N = 205, 6.9%, T2 N = 14, 2.7%) again
improving with time. Less than 1% reported financial concerns at
both time periods. **Conclusions:** The Welsh population responding
to the text sent by PHW had a positive experience with
TTP. Automated content analysis is a viable method to process large
datasets of qualitative content such as text responses.

62) Abstract 1596
COVID-19 CONSPIRACY BELIEFS ARE LINKED TO POORER PSYCHOLOGICAL WELL-BEING AND COVID-19 PREVENTION BEHAVIOR

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Conspiracy theories are beliefs that a group of individuals is attempting to achieve sinister goals in secret. These beliefs usually result from fear and existential threat and are associated with decreased psychological and physical well-being. The COVID-19 pandemic has impacted many people in the United States and COVID-19 conspiracy beliefs have grown in popularity. Such beliefs may undermine personal and public health, as past research indicates that greater conspiratorial thinking is associated with lower frequency of psychological well-being and preventative health behaviors. This study examined whether greater belief in COVID-19 conspiracy theories would be linked to lower levels of psychological well-being (perceived stress and depression) and lower engagement in COVID-19 prevention behavior and COVID-19 vaccine receptivity in a sample of 1,728 U.S. adults recruited through the Amazon Mechanical Turk platform. Participants completed four online surveys over approximately one-year (April, July, September-October 2020, March-April 2021) to assess COVID-19 experiences and psychosocial and physical well-being. COVID-19 conspiracy beliefs were measured at waves two and four and well-being and COVID-19 prevention behaviors at every wave. Vaccine receptivity was assessed at wave 4. Greater belief in COVID-19 conspiracy theories predicted greater levels of perceived stress (wave 2 β=.11, p<.001; wave 4 β =.12, p<.001) and greater levels of depressive symptomatology (wave 2 β=.15, p<.001; wave 4 β =.12, p<.001) at both waves, in regression models including age, sex, and race covariates. Greater conspiracy belief also predicted lower frequency of engagement in COVID-19 prevention behaviors (wave 2 β=-.36, p<.001; wave 4 β =-.42, p<.001), less receptivity to COVID-19 vaccination (β =-.76, p<.001), and less willingness to be vaccinated (OR for *never getting vaccine* = 4.95 (95% CI = 3.90, 6.28) and OR for *might get vaccine* = 2.15 (95% CI = 1.85, 2.49) compared to those *already vaccinated* or *will vaccinate as soon as possible*). Given observed associations between COVID-19 conspiracy beliefs and decreased psychological well-being, lower engagement in COVID-19 prevention behaviors, and much lower receptivity towards vaccination, these beliefs appear to be important public health targets.

63) Abstract 1625
COVID-RELATED DISTRESS AND DISRUPTIONS IN OVARIAN CANCER SURVIVORS

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Background:
The objective of this study was to determine how levels of distress and disruption during the COVID-19 pandemic compared between ovarian cancer survivors and a community sample; how clinical and demographic characteristics of survivors were related to COVID-related distress and disruption; and if perceived stress, depression, and emotional well-being at cancer diagnosis predicted COVID-related distress during the first year of the pandemic.
Methods:
Ovarian cancer patients (N=90) who were part of 3 ongoing studies completed COVID surveys through mail and on REDCAP between 6/20 and 12/20. Responses were compared to those of community females (N=1110) who participated in a COVID survey mailed to an Iowa Statewide Voter Registration-based sample between 8/20 and 12/20. Pre-COVID data on perceived stress, depression, and emotional well-being (EWB) from ovarian cancer patients at the time of diagnosis was available for 30 long-term (≥4 yrs) and 60 shorter-term (<4 yrs) survivors. Hierarchical regressions examined whether psychosocial features at diagnosis, controlling for age, stage, total COVID disruption (healthcare, financial, and daily-life), and time since diagnosis, predicted COVID-related distress.
Results:
Compared to the community sample, ovarian cancer survivors reported lower levels of healthcare disruption (p=.016), financial hardship (p<.001), and distress (p=.009), but no difference in disruption of daily activities (p=.089). Among survivors, there were no differences in distress or total COVID-related disruptions based on stage or time since diagnosis (all p values ≥0.10). Younger survivors (<63 yr median) showed significantly greater distress (p=.009) and disruption (p=.001) than older survivors. Adjusting for covariates, perceived stress (β= .237, p=.006) and EWB (β= -.338, p<.001) at diagnosis were significant predictors of total COVID-related distress, whereas depression was not.
Conclusions:
Surprisingly, cancer survivors reported fewer COVID-related disruptions and distress compared to a community sample. Older patients reported less distress and disruptions during COVID, but stage and time since diagnosis were not associated with these factors. The relationship between distress and well-being at diagnosis and COVID-related distress suggests the possibility of identifying patients particularly at-risk during environmental challenges.

64) Abstract 1628
MEASURING FEAR OF CANCER RECURRENCE EXPERIENCED BY YOUTH: A PROTOCOL AND INITIAL QUALITATIVE FINDINGS

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BACKGROUND: Adult survivors of cancer frequently describe fear of cancer recurrence (FCR), or the worry that one's cancer will return. Excessive FCR is psychologically distressing, and may lead to reduced quality of life, lack of planning for the future, and increased healthcare system burden and associated costs. Although it is important to understand the burden of FCR among pediatric survivors of childhood cancer, research has been limited by the absence of a tool to measure FCR among pediatric survivors. Thus, the purpose of this project is to develop a measure of FCR for pediatric survivors of cancer. METHODS: The development of this measure is following published guidelines over three phases 1) focus groups and item development 2) item refinement 3) factor analyses, internal consistency reliability, and convergent validity. Phase 1 is complete, and phase 2 is currently underway. RESULTS: 14 survivors of childhood cancer participated in phase 1 (mean age at participation in years = 13.48, sd = 3.76; mean age at diagnosis in years = 6.45, sd = 5.42; mean time since treatment in years = 5.18, sd = 4.27). Phase 1 data will be analyzed using thematic content analysis. RESULTS: Preliminary data from focus groups suggests that: 1) younger children experience less FCR than older adolescents, 2) youth's FCR is influenced by caregivers and healthcare providers, and 3) triggers of FCR are often concrete signs or symptoms (e.g., a specific symptom associated with initial diagnosis). CONCLUSIONS: Preliminary data suggest a developmental lens is essential to understanding the impact of FCR on youth. Data collection and analyses are ongoing. Ultimately, results of this project will set the

foundation for future research and clinical initiatives to explore this construct in pediatric survivors of cancer.

65) Abstract 1639
### PTSS COVARIES WITH CHANGES IN CORTISOL: A HEIRARCHICAL LINEAR MODELING APPROACH

Alisa Huskey, Ph.D., Psychology, University of Arizona, Tucson, AZ, Georgia Hodes, Ph.D., Neuroscience, Bruce Friedman, Ph.D., Psychology, Virginia Tech, Blacksburg, VA

The circadian cycle of cortisol peaks in the morning to boost wakefulness and steadily declines throughout the day. Cortisol awakening response (CAR), a sharp rise of cortisol during the first 20 to 40 minutes after waking, has been found to be blunted in chronic stress, burnout, and depression (Pruessner et al., 2005). Cortisol reactivity to stress has been shown to mediate associative learning patterns, particularly in combination with posttraumatic stress symptoms (PTSS; Zuj et al., 2017). Previous findings also suggest that greater posttraumatic stress symptom (PTSS) severity is associated with lower ability to discriminate between safety and threat (Huskey, et al., 2022). In the current study, we wanted to determine whether PTSS and fear inhibition predict similar patterns of cortisol levels.

Participants completed the PTSD Checklist for DSM-5 criteria (PCL-5) and attended a lab visit. Salivary cortisol samples were collected over a 24-hour period. A Pavlovian discriminant conditioning paradigm was used to assess fear inhibition level by comparing eyeblink startle potentiation to a threat cue with startle potentiation to a safety-signal. CAR is the change in cortisol, measured using two samples collected directly after awaking and 30 minutes later. Hierarchical linear modeling (HLM) allowed was used to examine the changes in slope.

This sub-sample of participants (N=9; women=7, men=2) did not display cortisol reactivity to the conditioning paradigm, in that cortisol levels did not change from baseline throughout their laboratory visit. Regarding CAR, cortisol significantly increased from awakening to 30 minutes later (i.e., CAR; β_{20}=0.16, *S.E.*=0.06, *p*=.03). PTSS is associated with steeper CAR incline in the mornings (β_{21}=0.004, *S.E.*=0.002, *p*=.046), but the increase in CAR was not statistically significant. Fear inhibition is not significantly associated with CAR.

Hypotheses were not supported, in that reactivity to the threat conditioning paradigm did not occur and fear inhibition did not predict changes in CAR. Although PTSS was associated with CAR, the change in cortisol was no significant, suggesting that PTSS may increase CAR in only a few cases. Assessing cortisol using longitudinal modeling using HLM allowed us to examine the effects of single time point variables on changes in cortisol concentrations.

24-Hour Cortisol
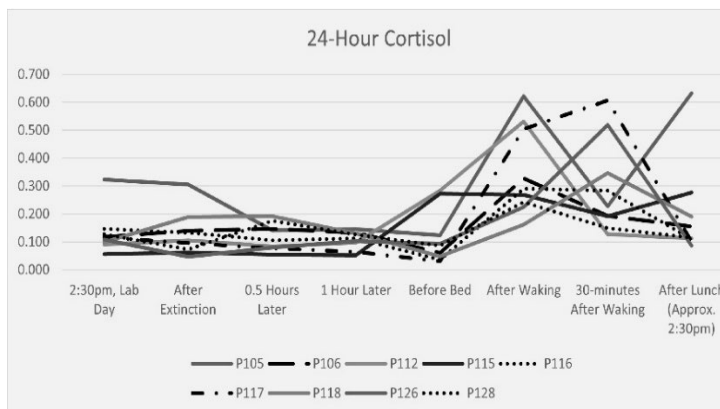
66) Abstract 1634
PSYCHOSOMATIC INTERVENTIONS FOR FUNCTIONAL POST-COVID SYNDROMES: OPEN-LABEL PLACEBO AND PACED BREATHING AS PATIENT-TAILORED INTERVENTIONS.

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Background: Up to 80% of patients suffering from persistent symptoms more than six months after a COVID-19 infection complain about a variety of psychosomatic symptoms with no organ cause. Most patients suffer from chronic fatigue, pain, depression or difficulty concentrating. Experimental studies showed that these symptoms could be significantly improved after an open administration of placebos ("open-label placebo") or with heart rate variability (HRV) biofeedback such as paced breathing. However, we insufficiently understand which patients benefit from which treatment.

Methods: Patients (m/f) without organic causes for the complaints are randomised to three groups: an open-label placebo intervention (OLP), a paced breathing training (PBT) or no additional treatment (TAU). To detect a mean effect using a 2x3 ANOVA, N=90 patients will be included, and predictor analyses are performed. The OLP group takes 2 placebos/day and receives the information that placebos can significantly improve symptoms, e.g. via the activation of "self-healing powers". The PBT group receives a standardized training to breath at 6 breaths/min for 10 min/day. At inclusion (T0) and after four (T1) and eight weeks (T2), treatment expectations, fatigue (FSMC), somatoform complaints, depressiveness, anxiety (PHQ), general health (SF-36) and quality of life, as well as cognitive performance using Corsi Span and Colour Stroop tests, will be assessed by questionnaires and tests, and an ECG will be recorded.

Results: Preliminary results point to effective reductions of fatigue and other symptoms for both interventions compared to TAU, dependent on patients' individual factors such as treatment expectations, symptom severity during Covid-19 infection and at inclusion. HRV data will be analysed at the end of the study. Preliminary results will be presented at the conference.

Conclusion: Patients with functional post-COVID syndromes can benefit from psychosomatic interventions aiming to improve treatment expectations and heart rate variability, depending on individual patients' factors. Patient-tailored interventions should be further investigated.

PAPER SESSIONS

Paper Session 1 - Mechanisms in psycho-oncology
Thursday 8:15-9:15

Abstract 1269
FATIGUE IN PATIENTS WITH BREAST CANCER IS ASSOCIATED WITH LEUKOCYTE METABOLIC ACTIVITY

Tamara E. Lacourt, Ph.D., Emily Tullos, MA, Psychiatry, Debu Tripathy, MD, Breast Medical Oncology, Cobi J. Heijnen, Ph.D., Symptom Research, UT MD Anderson Cancer Center, Houston, TX

Purpose: Fatigue due to cancer and its treatment - i.e., cancer-related fatigue or CRF - is very common and can persist for months to years after treatment completion. The biological mechanisms underlying both acute and persistent CRF are poorly understood. Deficiencies in cellular energy synthesis have been suggested, but evidence is inconclusive and mostly circumstantial. We assessed the capacity of leukocytes (as a proxy for general cell capacity) to produce energy through mitochondrial and glycolytic activity in a longitudinal study following early stage breast cancer patients from pre to post treatment. The main objective was to study associations between these biomarkers of cellular energy synthesis and CRF. **Methods:** Study assessments - including patient-reported fatigue and obtainment of a blood sample - were made prior to neoadjuvant chemotherapy (NACT), halfway through, immediately after, and 6 months after NACT. At the last time point, most patients had completed their primary treatment. Using Seahorse technology, leukocyte mitochondrial and glycolytic activity at basal and maximum levels were determined and the difference between basal and maximum was calculated for spare metabolic capacity. Overall and time-dependent associations of the metabolic outcomes with fatigue were calculated in multilevel models adjusted for demographics and distress. **Results:** 49 patients with leukocyte metabolic data for at least one time point were included (age M=48). We observed time-dependent associations with fatigue for basal and maximum mitochondrial activity, spare capacity, and maximum glycolytic activity (p for interaction effects <.05). Simple slope analyses showed that <u>pre-NACT, *higher* metabolic activity and capacity were associated with *higher* fatigue, while after treatment, *lower* metabolic activity and capacity were associated with higher fatigue.</u> **Discussion:** Lower cellular metabolic capacity may be an important contributor to persistent CRF after cancer treatment completion, opening entirely novel interventional strategies to alleviate or prevent persistent CRF. The pre-treatment association of higher metabolic capacity with higher fatigue may suggest that both factors reflect high distress experienced in the pre-treatment phase. Distress is a strong and consistent correlate of CRF and is known to activate cellular metabolic pathways.

Abstract 1253
EFFECT OF SELF-REGULATION ON SLEEP IN COLORECTAL CANCER PATIENTS: THE MEDIATING ROLE OF NEGATIVE AFFECT RECOVERY

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Emotional distress is known to compromise sleep in cancer patients. Deliberative and reflexive self-regulation have been differentially associated with stress adjustment. However, the mechanism through which the two modes of self-regulation contribute to cancer patient's sleep disturbance is less understood. This study examined the extent to which emotional stress recovery mediates the effects of benefit finding (deliberative) and impulsivity (reflexive) on daily sleep outcomes in cancer patients.

Colorectal cancer patients (N = 89, mean age = 55.5 years, 35.6% females, 64.4% Hispanic, 6 months post-diagnosis) completed a health-related stress task in the laboratory. During the experimental session, benefit finding (Benefit Finding Scale) and impulsivity (UPPS Impulsive Behavior Scale) were self-reported. Negative affect (Affect Balance Scale) was assessed immediately after stress offset and at the end of the stress recovery phase. Participants wore a wrist actigraph over 14 consecutive days, from which intradaily variability (IV: 0-2, higher = greater fragmentation), interdaily stability (IS: 0-1, higher = greater regularity), and sleep regularity index (SRI: 0-100%, higher = greater regularity) were derived. Age and gender were covariates.

Patients reported moderate levels of benefit finding and low levels of impulsivity. They also showed moderately fragmented sleep within a day (IV = .87) and variable sleep patterns across days (IS = .46, SRI = 36.4%). Structural equation modeling revealed that higher impulsivity predicted greater negative affect reduction upon stress offset ($B = .23$, $p = .01$) and that greater negative affect reduction predicted less IV ($B = -.10$, $p = .01$). Impulsivity had no direct effect on IV, IS, or SRI ($ps > .17$) but was indirectly associated with IV via negative affect recovery ($B = -.02$, $p = .04$). No significant effects were found for benefit finding.

Findings indicate negative affect recovery as one mechanism through which higher impulsivity associates with one's more consolidated sleep within a day. Evidence suggests that greater capacity to quickly recover from stress affords better sleep quality. Interventions aimed at improving sleep in cancer patients may consider incorporating components of emotion regulation training.

Abstract 1557
PHYSIOLOGICAL BENEFITS OF BREAST CANCER SURVIVORS' SATISFYING RELATIONSHIPS ACROSS TREATMENT: IMPLICATIONS FOR AGING

M. Rosie Shrout, PhD, Human Development and Family Studies, Purdue University, West Lafayette, IN, Annelise Madison, MA, Psychology, Ohio State University, Columbus, OH, Megan E. Renna, PhD, School of Psychology, University of Southern Mississsippi, Hattiesburg, MS, Janice E. Kiecolt-Glaser, PhD, Institute for Behavioral Medicine Research, Ohio State University, Columbus, OH

Breast cancer survivors are prone to weakened gut barriers, allowing bacteria to migrate into the blood stream. Gut permeability fuels inflammation, which, among survivors, can elevate risk for comorbid disease development, cancer recurrence, and a poor quality of life. Older adults also experience age-related gut barrier and immune system weakening, heightening inflammatory risks. However, survivors' satisfying relationships can provide health benefits particularly among older adults. Indeed, breast cancer survivors in satisfying relationships have better health outcomes compared to those in less satisfying relationships. This longitudinal study used a conceptual model addressing how intimate relationships are associated with health through changes in gut permeability and inflammation. Breast cancer survivors (n=139, stages 0–IIIC) completed a baseline visit before treatment and two follow-up visits 6 and 18 months after treatment ended. Women who had an abnormal breast cancer test followed by a benign diagnosis completed visits within a comparable timeframe (noncancer patient controls; n=69). All women completed questionnaires assessing their relationship satisfaction and provided blood samples to assess two bacterial endotoxin biomarkers, lipopolysaccharide-binding protein (LBP) and soluble CD14 (sCD14), as well as C-reactive protein (CRP) and interleukin 6 (IL-6). Within-person multilevel mediation analyses showed that when a survivor's relationship satisfaction was higher than usual, her own LBP and LBP/sCD14 were lower, which was associated with lower than her own average CRP and IL-6 (95% CIs [-0.0104, -0.0002]). IL-6 was also higher when older survivors, but not younger survivors, experienced higher than usual intestinal permeability (p=.001). These effects of satisfying relationships held after accounting for cancer-related, psychological, behavioral factors. Post-hoc analyses showed LBP, sCD14, and LBP/sCD14 were associated with CRP for the cancer survivors, but only LBP and

LBP/sCD14 were linked to CRP among the noncancer control patients. The gut environment is a new promising candidate for understanding a relationship's long-term health impact, particularly among those with elevated health risks. Survivors may reap multiple physiological benefits from satisfying relationships.

Paper Session 2 - Mechanisms of postpartum health of mother and child
Thursday 8:15-9:15

Abstract 1185
DIFFERENTIAL CONTRIBUTIONS OF PRENATAL SOCIODEMOGRAPHIC STRESSORS VERSUS PSYCHOLOGICAL STRESS TO INFANT TELOMERE

Rebecca E. Salomon, PhD, School of Nursing, University of North Carolina, Chapel Hill, Chapel Hill, NC, Sandra J. Weiss, PhD, Community Health Systems, School of Nursing at University of California San Francisco, San Francisco, CA

Stress is associated with increased risk of disease across the lifespan and is theorized to underlie many health inequalities. Telomeres may provide one mechanistic link between stress and health. Telomere length at birth is among the strongest predictors of adult telomere length, so understanding how pregnancy stress contributes to variability in infant telomere length has significant implications for later health. Yet a challenge in understanding effects of pregnancy 'stress' is attending to the differences between the stressors encountered versus the psychological stress experienced by the individual coping with stressors. Our objective was to determine the associations of both the number of sociodemographic stressors reported by a pregnant person and the extent of their psychological stress with their infant's telomere length. The sample included 61 mother/infant dyads from a larger longitudinal cohort study. During the third trimester, mothers completed the Crisis in Family Systems Interview to assess stressors, the 10-item Perceived Stress Scale, and a sociodemographic questionnaire. After birth, the infant's salivary sample was collected and used to extract the genomic DNA for telomere assay. Inter-assay variability was controlled for and normalizing procedures were employed in determining T/S ratios of telomere length. We used a multiple linear regression to determine the relationship of the two prenatal stress-related variables to telomere length. We found that infant telomere length was significantly predicted by exposure to pregnancy stressors ($\beta = 0.34$, $p = .03$) but not by maternal perceived stress ($\beta = -0.20$, $p = .17$). Our results indicate that maternal exposure to more sociodemographic stressors during pregnancy (e.g. financial, relationship, lack of safety in the community) predicted longer telomeres for infants in their first months of life. Results support a fetal programming hypothesis which has linked prenatal stress to varied infant outcomes. However, our findings suggest the potential for stress inoculation in utero, through which exposure to maternal stressors confers an initial biological advantage of longer telomeres in preparation for a postnatal environment replete with stressors. Our findings provide further evidence that sociodemographic stressors can affect individual biology even before birth.

Abstract 1192
RELATIONSHIPS BETWEEN MATERNAL EARLY LIFE STRESS EXPOSURE, PARENTING BEHAVIORS, AND INFANT HEART RATE VARIABLES

Corinne Sejourne, B.A., Blaine Ditto, Ph.D., Anna Weinberg, Ph.D., Psychology, McGill University, Montreal, QC, Canada

Background: In previous research, the experience of early life adversity in parents has been linked to negative physical and psychological outcomes in their offspring. This study aims to further the literature on the intergenerational effects of adversity by analyzing the relationships between maternal early life stress, parenting behaviors, and infant heart rate (HR) variables.

Methods: 46 mother-infant dyads were evaluated. Mothers completed the self-report Stress and Adversity Inventory (STRAIN) to capture information on early life stress exposure. Maternal parenting behaviors of sensitivity, intrusiveness and detachment were coded by experienced raters based on videos of mother and infant interactions during a period of free play. Infant heart rate data was captured using Polar heart rate monitors before, during, and after a stressor (a stranger approach task). Heart rate data were initially analyzed using the Kubiios program. All additional analyses were conducted in SPSS.

Results: Bivariate correlations and repeated-measures ANCOVAs were conducted to assess the relationships between variables. Greater maternal early life stress was associated with detached parenting styles ($r = 0.302$, $p = 0.047$). Additionally, the stranger approach precipitated an increase in infant HR (F (1.44, 64.78) = 5.78, $p = 0.01$, partial $\eta^2 = 0.114$). Further, higher infant HR, across all tasks, was associated with greater maternal early life stress (F (1, 42) = 6.36, $p = 0.016$, partial $\eta^2 = 0.132$) and more maternal detachment (F(1,44) = 6.59, $p = 0.014$, partial $\eta^2 = 0.13$). The HRV results were somewhat more complex. Specifically, maternal sensitivity and maternal detachment each interacted with time to predict HRV, such that infants of more sensitive (F(2.48, 101.81) = 3.17, $p = 0.036$, partial $\eta^2 = 0.072$) and less detached (F(2.56, 104.93) = 4.064, $p = 0.013$, partial $\eta^2 = 0.090$) mothers were less reactive to the stranger approach task.

Discussion: These findings demonstrate measurable links between maternal adversity, parenting behaviors and infant physiology. The results suggest that even at a very early age, not only are babies responsive to potential stressors, but also that the stress response may be influenced by maternal experiences and behaviors. More research is warranted to better understand the complexities of these relationships and their link to long-term outcomes.

Abstract 1361
CHILD HAIR CORTISOL AND POSITIVE PARENTING BEHAVIORS IN THE CONTEXT OF MATERNAL BORDERLINE PERSONALITY DISORDER

Jacqueline R. O'Brien, M.S., Deonna Ashley, B.A., Maureen Zalewski, PhD, Psychology, University of Oregon, Eugene, OR

Children of mothers with borderline personality disorder (BPD) are at heightened risk for disrupted stress physiology but the pathway through which this risk is conferred is unclear. This study used a clinical sample of mothers with elevated BPD symptoms and a control group to examine whether positive parenting behaviors mitigated the risk of disrupted child hair cortisol concentrations within the context of maternal BPD.

Mother-preschooler dyads (M_{age}= 42 months) participated in a two-site randomized control trial, where a subset of the sample (N=84) provided hair cortisol samples. Mothers who met criteria for at least three BPD symptoms in a clinical interview were categorized as BPD while mothers with no symptoms of BPD were categorized as non-disordered control. Observed parenting behaviors of maternal positivity and guidance were coded during a 5-minute mother-child interaction task. Mother and child hair samples (15-30mg) were collected from the posterior vertex using the 3cm closest to the scalp, measuring cortisol output from the preceding 3 months.

When controlling for relevant covariates, maternal BPD status was not significantly associated with maternal hair cortisol concentrations, b=-.111, t(45)=-.698, p=.489. In a series of parallel linear regressions examining the effects of maternal BPD status, parenting behaviors, and the interaction between maternal BPD status and parenting behaviors on child hair cortisol concentrations, no significant effects were found (p's> .05). Higher levels of maternal hair cortisol concentrations were found to significantly predict higher levels of child hair concentrations in models including maternal positivity (b=0.647, t(41)= 4.905, p< .001) and maternal guidance (b=0.527, t(41)=3.860, p< .001). There was also a significant interaction between maternal hair cortisol concentrations and positivity to predict child hair cortisol concentrations, such that as
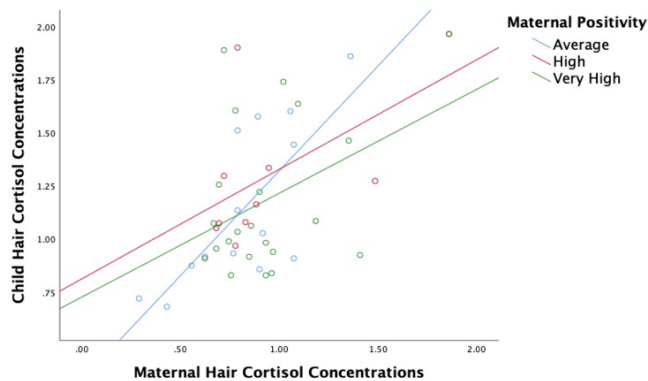
predicted, the positive association between maternal and child hair cortisol concentrations is weakened for mothers who display higher levels of positivity (see Figure 1).

Displays of maternal positivity may therefore be a protective factor mitigating the risk of disrupted stress physiology in families of mothers with BPD, and the role of parenting and dyadic stress physiology should continue to be explored as targets for intervention and prevention.

Abstract Title: Child Hair Cortisol and Positive Parenting Behaviors in the Context of Maternal Borderline Personality Disorder

Figure 1

Interaction Between Maternal Hair Cortisol and Positivity on Child Hair Cortisol

Note. Effect of maternal hair cortisol concentrations on child hair cortisol concentrations, as a function of level of maternal positivity displayed during a mother-preschooler interaction task. As predicted, the association between mother-child hair cortisol concentrations is weaker for dyads whose mothers displayed higher levels of positivity.

Paper Session 3 - Technological innovations in stress and trauma research
Thursday 8:15-9:15

Abstract 1519
EFFECT OF ACUTE PSYCHOSOCIAL STRESS ON BODY MOVEMENTS

Nicolas Rohleder, PhD, Chair of Health Psychology, Robert Richer, MSc, Veronika Koch, BSc, Arne Küderle, MSc, Victoria Müller, BSc, Machine Learning and Data Analytics Lab (MaD Lab), Vanessa Wirth, MSc, Marc Stamminger, PhD, Chair of Visual Computing, Bjoern M. Eskofier, PhD, Machine Learning and Data Analytics Lab (MaD Lab), Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, NA, Germany

Objective: Human inner states, including emotions such as anxiety and depression, are expressed in behavioral facets and can be interpreted by other individuals. Emotions are not only communicated through facial expressions, but also via body posture, and body movement. In depression, for example slow gait and slumped posture is frequently observed. While stress has been shown to affect facial emotion expression, less is known about stress effects on body movements.

Methods: Twenty healthy participants (90% female, M age=22.6 years ± 4.1) were exposed to the Trier Social Stress Test (TSST) and the friendly TSST (f-TSST) in a within-subjects experiment. Stress and affect was measured via self-report, as well as salivary cortisol taken repeatedly before and after stress. Body movements were measured with an inertial measurement unit-based motion capture suit (Perception Neuron, Noitom Ltd., Miami, FL, USA). Motion characteristics were computed for several body parts (head, upper extremities, lower extremities, chest, total body).

Results: Exposure to TSST induced significantly higher cortisol increases than f-TSST (test by time interaction: F=4.85, p=0.001).

Participants in the TSST displayed significantly lower movements compared to f-TSST (upper body [F=6.76; p=0.018], head [F=17.17; p<0.001], arm [F=16.23, p<0.001], total body [F=14.31; p=0.001]). Threat perception at the beginning of the TSST predicted decreases in total body movements (beta=-0.50; p=0.037). Decreases in specific body movements predicted higher cortisol responses (head: p=0.049; arms: p=0.001), and development of negative affect post TSST (head: p=0.023; arms: n.s.).

Discussion: We found that during TSST, participants showed significantly reduced body movements, more so in the upper body than in the lower body, as compared to f-TSST. This is in line with one previous study reporting increased freezing behavior during acute stress. Further, self-reported threat during the initial phase of the TSST predicted more exaggerated freezing. Greater reduction of motion in specific body parts during stress predicted higher cortisol responses and post-stress mood. These findings provide first indication of stress affecting body movements, and provide a basis for further research into expression of emotions in body movements, as well as development of motion-based stress detection systems.

Abstract 1398
DIGITAL BIOMARKERS FOR PREDICTING PTSD, DEPRESSION, AND BURNOUT IN EMERGENCY DEPARTMENT CLINICIANS

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Background: The importance to protect emergency department (ED) clinicians' mental health has been dramatically reinforced in the COVID-19 pandemic leading to a high prevalence of Posttraumatic Stress Disorder (PTSD) and other stress-associated adverse mental health effects in ED clinicians. This study proposes an innovative approach using digital phenotyping to develop Digital Biomarkers as predictors of stress pathologies. Furthermore, we determine how candidate digital biomarkers relate to physiological markers of chronic stress.

Methods: We used computer vision and voice analysis to extract facial, voice, speech, and movement characteristics from an unstructured clinical interview. Previously, we tested the approach to identify digital biomarkers in a cohort of trauma survivors to discriminate PTSD. Here, we adapted the approach to test its potential to develop digital biomarkers as predictors of stress pathologies in ED clinicians.

Results: Video- and audio-based markers were able to accurately discriminate PTSD (AUC=0.90) and depression status (AUC=0.86) in trauma survivors. Building on these results, we will present pilot findings from an ongoing longitudinal study of COVID-19 frontline workers.

Conclusion: Digital biomarkers identified in direct clinical observation during free speech may be used to classify stress pathologies in ED clinicians. Digital biomarkers could improve the scalability and sensitivity of clinical assessments using low burden, passive evaluations of well-being, which is critical among this high-risk population.

Abstract 1577
FACIAL EMOTION EXPRESSION AND PSYCHOLOGICAL BACKGROUND FACTORS AS RELATED TO THE INDUCIBILITY OF MYOCARDIAL ISCHEMIA DURING CARDIAC STRESS TESTING.

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(CoRPS); Department of Medical and Clinical Psychology, Tilburg University, ., NA, Netherlands, Willem J. Kop, Ph.D., Medical and Clinical Psychology, Tilburg University, Tilburg, NA, Netherlands

Objective: Negative emotional states, such as anger and anxiety, are associated with the onset of myocardial infarction and other acute clinical manifestations of ischemic heart disease. The likelihood of experiencing these short-term negative emotions has been associated with long-term psychological background factors such as depression, generalized anxiety, and personality factors. We examined the association of acute emotional states preceding cardiac stress testing (CST) with inducibility of myocardial ischemia and to what extent psychological background factors account for this association.

Methods: Emotional states were assessed in patients undergoing CST (N=210; mean age 66.9 years (standard deviation (±) =8.2 years); 43% women) using self-report measures and video recordings of facial emotion expression. Video recordings were analyzed for expressed anxiety, anger, sadness, and happiness prior to CST. Psychological background factors were assessed with validated questionnaires. Inducibility of ischemia was determined by single-photon emission computed tomography (spect). Data were analyzed using bivariate and multivariate logistic regression analyses and the strength of associations expressed as odds ratios (OR) with 95% confidence intervals.

Results: Ischemia occurred in 72 (34%) patients. Emotional states were not associated with subsequent inducibility of ischemia during CST (OR between 0.93 and 1.04; p-values >0.50). Psychological background factors were also not associated with ischemia (OR between 0.96 and 1.06 per scale unit; p values >0.20), and did not account for the associations of emotional states with ischemia.

Conclusions: Emotional states immediately before CST and psychological background factors were not associated with the inducibility of ischemia. These findings indicate that the well-documented association between negative emotions with acute clinical manifestations of ischemic heart disease requires a different explanation than a reduced threshold for inducible ischemia.

Abstract 1516
EXPLORING THE COLD FACE TEST AS A MECHANISM FOR REDUCING ACUTE PSYCHOSOCIAL STRESS RESPONSES

Robert Richer, MSc, Janis Zenkner, BSc, Arne Küderle, MSc, Machine Learning and Data Analytics Lab (MaD Lab), Nicolas Rohleder, PhD, Chair of Health Psychology, Bjoern M. Eskofier, PhD, Machine Learning and Data Analytics Lab (MaD Lab), Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen, NA, Germany

Objective: Chronic stress and its comorbidities have shown to be linked to dysregulations of the human stress systems, which could for example result from maladaptation to repeated acute stress. Therefore, improving recovery from acute stress can help to prevent the "wear and tear" of stress pathways. One possibility of physiologically interfering with an acute stress reaction might be inducing the diving response by means of applying a cold stimulus to the face. This causes an activation of the parasympathetic nervous system, via the trigeminal-vagal reflex arc, leading to strong decreases in heart rate. We hypothesize that this physiological reaction can also inhibit the hypothalamic-pituitary-adrenal (HPA) axis through connections of the autonomic nervous system and the HPA axis in the hippocampus and the amygdala. Therefore, we investigated the use of the Cold Face Test (CFT) protocol as an interventional method to reduce biological reactions to acute stress. Methods: Twenty-eight healthy participants (82% female) aged 20.1±2.5 years (M±SD) were exposed to acute psychosocial stress via the Montreal Imaging Stress Task (MIST). Participants were randomly assigned to a control group or an intervention group, where the CFT was applied for two minutes before each of the three repetitions of the MIST. Heart rate (HR) and heart rate variability (HRV) were measured before and during the stressor while salivary cortisol and self-reported mood was assessed before and after.

Results: While both groups were equally stressed during the MIST tasks, indicated by strong HR increases and HRV decreases, participants in the intervention group showed better recovery, indicated by significant HR(V) differences during the resting periods between the tasks. We additionally found a significantly (p < 0.05) lower cortisol response to the MIST and less overall cortisol secretion, both indicating a diving response-induced HPA axis inhibition.

Discussion: To the best of our knowledge, our experiment is the first to successfully use the CFT as a simple and easy to apply method to inhibit biological responses to acute stress for both the sympathetic nervous system and the HPA axis. Taken together, our findings have the potential to serve as the foundation for the development of wearable solutions to tackle acute stress responses using cold facial stimulation.

Paper Session 4 - Tackling individual differences in mechanisms and symptom presentation in several psychiatric samples
Thursday 8:15-9:15

Abstract 1506
THE "CULTURE" OF CUDDLING: ARE MICROBES LINKED TO SOCIAL BEHAVIOR?

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Introduction: Emerging research has revealed linkages between autism and lower relative abundances of commensal bacteria in the gut including *Akkermansia*. The current study explores whether there is a prosocial flip-side to the gut-brain-microbiome associations observed in autism, and specifically explores the potential relation between prosociality and microbial composition. This connection is especially plausible given decades of research connecting prosocial temperamental features such as lower levels of Cuddliness (one sub-category of Effortful Control/ self-regulation) in children later diagnosed with autism.

Methods: Next generation pyrosequencing was used to examine the links between children's gut microbial profiles and maternal ratings of prosocial temperament in 77 toddlers, ages 18-27 months of age (46.7% female, Mage= 23.14 months). As an overarching temperament category, Effortful Control, measures children's self-regulating capabilities with Cuddliness as a prosocial behavior used to regulate emotion. Thus, we hypothesized that children with higher levels of Effortful Control, specifically tied to Cuddliness (parent directed affection), and Sociability (peer directed friendliness) would have higher relative abundances of commensal bacterium.

Results: After adjusting for meat and vegetable consumption, body composition and breastfeeding duration in this and all subsequent analyses (adjusted $R2 = 0.05$, $p = 0.12$), results revealed a positive association between Cuddliness and *Akkermansia*, $\Delta R2 = 0.124$, $b = 0.35$, $SE = .01$, $p = 0.001$ but Sociality was not associated with *Akkermansia* ($b = 0.13$, $p = .26$).

Discussion: These findings complement prior research linking a low relative abundance of *Akkermansia* to neurological conditions featuring social deficits such as autism and suggests that commensal bacteria may be linked to prosocial behaviors used to regulate emotion. These results hint at a prosocial flip-side to existing research linking autism to microbial profiles in the gut.

Abstract 1120
THE RELEVANCE OF ATTACHMENT IN SOCIAL ANXIETY DISORDER WITH COMORBID MAJOR DEPRESSION

Christina Elling, M. Sc. Psychology, Department of Psychosomatic Medicine and Psychotherapy, Andreas J. Forstner, Jun.-Prof. Dr., Institute of Human Genetics, Laura-Effi Seib-Pfeifer, Dr., Department of Psychosomatic Medicine and Psychotherapy, Martin

Mücke, PD Dr., Centre for Rare Diseases Bonn (ZSEB), University Hospital Bonn, Bonn, NA, Germany, Jutta Stahl, Prof. Dr., Department of Individual Differences and Psychological Assessment, University of Cologne, Cologne, NA, Germany, Franziska Geiser, Prof. Dr. med. Dipl.-Psych., Department of Psychosomatic Medicine and Psychotherapy, University Hospital Bonn, Bonn, NA, Germany, Johannes Schumacher, Prof. Dr. med., Centre for Human Genetics, University of Marburg, Marburg, NA, Germany, Rupert Conrad, Prof. Dr. med. Dipl.-Psych., Department of Psychosomatic Medicine and Psychotherapy, University Hospital Bonn, Bonn, NA, Germany
Social anxiety disorder (SAD) shows a high comorbidity with major depressive disorder (MDD), which goes along with increased functional impairment. The relevance of childhood adversities and attachment styles in SAD with and without comorbid MDD has not been investigated. In a consecutive sample of 612 SCID-diagnosed participants n = 472 (62.3% women, 40.7 ± 13.8 years) showed SAD and comorbid MDD (SAD-MDD group) and n = 140 (47.9% women, 43.7 ± 14.7 years) showed just SAD (SAD group). Individuals filled in several self-report questionnaires such as the Social Phobia Inventory (SPIN), the Adverse Childhood Experience Questionnaire (ACE) and the Attachment Style Questionnaire (ASQ). In SAD-MDD group there were significantly higher scores on social anxiety as measured by the SPIN (p = .002, d = 0.30), a higher frequency of childhood adversities (p < .001, d = 0.35) and a significantly higher score on fearful attachment style (p < .001, d = 0.30). The association between fearful attachment style and social anxiety symptoms as measured by the SPIN (β = .292, p < .05) was moderated by group as opposed to the association between preoccupied attachment style and social anxiety symptoms (β = -.184, p = .124; R2adj = .168, p < .05). In the SAD-MDD group there was a partial mediation of the association between childhood adversities and social anxiety symptoms by fearful attachment style. Our findings demonstrate the relevance of fearful attachment style with regard to the relationship between negative childhood experiences and social anxiety symptoms in SAD-MDD. Therapeutic implications of these results are discussed and should be investigated in future studies.

Abstract 1098
IMPROVEMENTS IN CARDIOVASCULAR HEALTH OVER THE PERINATAL PERIOD PREDICTS LOWER POSTPARTUM DEPRESSIVE SYMPTOMS AMONG WOMEN WITH OVERWEIGHT AND OBESITY.

Shannon D. Donofry, PhD, Psychiatry and Behavioral Health Institute, Allegheny Health Network, Pittsburgh, PA, Rachel P. Kolko Conlon, PhD, Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA, Lisa J. Germeroth, PhD, Clinical Psychology, Mind Body Health, Arlington, VA, Christine Call, PhD, Michele D. Levine, PhD, Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA

Background: Adverse cardiovascular events during pregnancy (e.g., pre-eclampsia) occur at higher rates among women who begin pregnancy with overweight or obesity (body mass index [BMI]$\geq$25kg/m^2) and have been associated with elevated risk of postpartum depression. However, it is unclear whether changes in cardiovascular health (CVH) over the perinatal period relate to postpartum psychological functioning. The goal of the present study was to examine changes in CVH during pregnancy and postpartum as a predictor of postpartum psychological functioning among women with pre-pregnancy overweight and obesity.

Methods: Women (N=228; $M_{age} \pm SD$=28.43±5.38 years; M_{BMI}=34.16 ±7.14kg/m^2) were recruited at 12-20 weeks gestation (M=15.63±2.45 weeks) for a longitudinal study of health and well-being during the perinatal period. Participants completed the Center for Epidemiological Studies Depression Scale (CESD) and Perceived Stress Scale (PSS) and reported on health behaviors (diet quality, smoking history, and physical activity) during the first trimester and at 6-months postpartum. BMI and health behaviors were coded according to the American Heart Association's Life's Simple 7 to create a CVH score at both timepoints (possible range: 0-8, higher scores indicating better CVH). Linear regression analyses were performed to examine whether change in CVH from baseline to 6-months postpartum related to postpartum depressive symptoms and perceived stress. Baseline CVH, symptom scores, and demographic factors were included as covariates in all models.

Results: At 6-months postpartum, CESD scores were in the mild range (M=10.71±9.55), while PSS scores were in the moderate range (M=20.73±8.93). Improvements in CVH from baseline to 6-months postpartum was associated with reporting fewer depressive symptoms postpartum (β=-0.13, p=0.04). Women whose CVH scores worsened by >1SD scored 5.66 points higher on the CESD compared to those whose CVH scores improved by >1SD ($MCESD$=13.36±11.97 vs. 7.7±5.99). Change in CVH scores did not relate to postpartum perceived stress.

Conclusions: Improvements in CVH from the first trimester of pregnancy to 6-months postpartum were associated with lower postpartum depressive symptoms. These data suggest that intervening during pregnancy to promote CVH behaviors may improve psychological functioning during the postpartum period among high-risk women.

Abstract 1171
EFFECT OF CANNABIS USE ON SYMPTOM SEVERITY AND PAIN SENSITIVITY IN ADOLESCENT PATIENTS WITH NON-SUICIDAL SELF-INJURY

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Non-suicidal self-injury (NSSI) is a highly prevalent phenomenon in adolescence and a serious clinical problem. Up to now, both dysregulation of the stress response systems and altered pain sensitivity are known phenomena associated with NSSI. In recent years, cannabis use has been linked to NSSI but the involvement of the cannabinoid system, which has a profound role in the modulation of stress response as well as in pain perception, is still unclear concerning the pathophysiology of NSSI. This study addresses the relationship between cannabis use and symptom severity as well as pain sensitivity in a large sample of adolescents with NSSI. We recruited female adolescent patients (n = 191) meeting the DSM-V criteria for NSSI disorder and healthy controls (n = 47) from our outpatient clinic for risk-taking and self-harm behavior (AtR!Sk). NSSI symptom severity was measured using the Self-Injurious Thoughts and Behaviors Interview (SITBI-G). To investigate questions in relation to borderline personality disorder (BPD), the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) was conducted. All participants were asked about their cannabis use and pain sensitivity was assessed using induced heat pain. NSSI patients consumed significantly more cannabis compared healthy controls (χ^2 = 4.7839, p = .033). In the patient group there was a positive association between the frequency of cannabis use and the numbers of met BPD-criteria *(b = 0.74 p< .001)*. Surprisingly, increased cannabis use was associated with less episodes of self-harm *(b = -2.41 p = .002)* and the frequency of cannabis consume was positively associated with pain threshold *(b = 11.56 p= .047)*. As expected, our results confirm the link between cannabis use and NSSI and, based on these behavioral data concerning cannabis consumption, lend partial support for a potential involvement of the cannabinoid system in the pathophysiology of NSSI. The association between a lower number of self-injuries and greater cannabis use is an important new trace for further research.

However, it remains speculative whether increased cannabis usage can be considered a maladaptive coping strategy or if there is a causal neurobiological link between NSSI and the endocannabinoid system. The latter is particularly interesting, as it could be considered as a new therapeutic target for NSSI due to its easy accessibility for pharmacological modulation.

Sex and Differences
Thursday 8:15-9:15

Abstract 1617
SEX DIFFERENCES IN HUMAN MITOCHONDRIA ARE HETEROGENOUS

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Introduction: Mitochondrial energy production and their synthesis of sex and stress hormones contribute to the mind-body connection. However, we do not know how and to what extent mitochondria differ between women and men, representing a major gap in our knowledge of human diversity. Understanding sex-related heterogeneity is essential to develop inclusive methods of evaluating mitochondrial health, and to develop individualized, patient-tailored clinical care.
Methods: We first explored this question in a meta-analysis of sex-disaggregated data, following PRISMA guidelines (*FASEB J*, 2022;36:e22146). Sex differences were quantified as effect sizes (Hedge's g), with analysis of age and BMI as potential moderators. We then extended our approach to the molecular level via in-depth exploratory proteomics on two immune cell subtypes (monocytes and B cells) isolated from 21 individuals (11 women, 10 men). To examine sex beyond a binary construct, we quantified plasma estradiol or testosterone and performed non-parametric correlations (Spearman's r) with protein abundance. Gene ontology was used to identify pathways that differ either between binary sexes, or as a function of sex hormone concentrations.
Results: Our meta-analysis included data on 2,258 participants from 50 studies. Of 39 measures of mitochondrial biology, only two showed consistent binary sex differences: women had higher mitochondrial content in white adipose and leukocyte subtypes (g = 0.20, $\chi2$ p = 0.01), and men had higher reactive oxygen species production in skeletal muscle (g = 0.49, $\chi2$ p < 0.0001). At the molecular level, women's immune cell mitochondria showed higher protein transport and location processes, indicating communication; while men's mitochondria were optimized for mitochondrial gene expression and translation, indicating an emphasis on energy production. Mirroring this, testosterone was positively associated with mitochondrial gene expression and translation, and negatively associated with protein transport.
Discussion: Sex differences in human mitochondria appear specific to the domain of mitochondrial biology, tissue, and sex hormone examined. Prospective human studies able to distinguish hormonal and chromosomal sex influences will help bring into focus the full heterogeneity of human mitochondrial bioenergetics, and its contribution to health and psychosomatic processes.

Abstract 1624

SEX DIFFERENCES IN STRESS AND BODY MASS INDEX ASSOCIATION WITH KIDNEY DISEASE IN A COHORT OF AFRICAN AMERICANS

Thais Muratori Holanda, PhD, Dwayne E. Muhammad, BA, Claudia Alberico, PhD, Deepak Kumar, PhD, Biomedical/Biotechnology Research Institute (BBRI), North Carolina Central University (NCCU), Durham, NC, Mildred A. Pointer, PhD, Biology, Howard University, Washington DC, DC

Obesity is a leading health concern in the United States, contributing to cardiometabolic disease and mortality. Unlike other ethnic groups, there is a sex difference in kidney disease (KD) among African Americans (AA) where males are up to 14 times more likely to develop KD. This study aimed to evaluate the interaction of obesity and stress with KD in AA. We enrolled 102 AA (males, n=32; females, n=70) aged 18-75 from North Carolina Triangle region. Participants completed the Perceived Stress Scale; urine was collected to measure albumin and creatinine ratio (AC); and body mass index (BMI) used as an index of obesity. We observed no significant difference in age (38±3 vs 34±2), between males and females, respectively, but for BMI (27±1 vs 31±1) women showed significantly higher values (p=0.02). We found positive significant association between coping and AC for males (p=0.03) but not for females (p=0.35). Interestingly, in men, BMI was positively associated with AC (p=0.05) but the same association does not happen for women. These findings suggest obesity is driving males to KD, and the strategies they use to cope is contributing for this association. However, the way females cope is protecting them from KD even with higher BMI.

Abstract 1635
SEX AND GENDER CORRELATES OF SEXUALLY POLYMORPHIC COGNITION

Louis Cartier, B.Sc in cognitive neuroscience, Psychiatry and Addictology, University of Montréal, CRIUSMM, Montréal, QC, Canada, Sarah Kheloui, Master's degree in Biomedical Sciences, psychiatry option, Faculty of social sciences, University of Ottawa, Ottawa, ON, Canada, Fadila Moussaoui, College degree (DEC), Samuel Villeneuve, College degree (DEC), Psychology, University of Montréal, Montréal, QC, Canada, Ioana Cotocea, Master's degree in anthropology, Psychiatry and Addictology, University of Montréal, CRIUSMM, Montréal, QC, Canada, Amine Mohammedi, College degree (DEC), Psychology, Robert-Paul Juster, Post-doc, Psychiatry and Addictology, University of Montréal, Montréal, QC, Canada

Many studies have highlighted male-female differences in cognition. These are the basis of the concept of sexually polymorphic cognition (SPC) and stem from the interplay between biological (birthsex, sex hormones) and psychosocial (gender identity, gender-roles, sexual orientation) factors. Literature remains rather mixed with regards to the magnitude of effects.
Phase 1 of this study, conducted in 2020, collected data from 87 participants of diverse sexual orientation, and illustrated spatial abilities were better predicted by a male birthsex, while verbal fluency was better predicted by estradiol level. This opened the door for further studies on transgender people undergoing hormonal therapy.
Phase 2 of this study, conducted in 2021, collected qualitative data from 35 participants of gender diversity, and was aiming to identify the needs of the gender diversity community, and thereby verify whether our research methodology and the variables we consider most important are in line with the issues of this community.
This current phase describes a SPC battery designed to assess the influence of sex hormones on cognitive performance. The cognitive measures used in phase 1 have been refined and aligned with the needs of the gender diversity community. In parallel, we aim to assess the inter-related effects that birthsex and psychosocial gender-based factors exert on cognition.
Our sample includes 180 adult participants. Sub-groups are recruited based on birthsex, gender identity, and sexual orientation. Biological measures will be collected via salivary samples to include sex

hormones (testosterone, estradiol and progesterone) and cortisol. Psychosocial variables will be measured through questionnaires. Participants will be required to complete eight tasks in a two-hour testing session.

A pilot study of N = 17 was conducted, and our official protocol is at one third of his recruitment objective (N = 60). Among our recruited participants, no less than 21 are among gender diversity, 25 among sexual diversity and 14 among our control group, thus showing the feasibility of recruiting an underserved population. Our preliminary data hint that performance is better aligned with one's gender profile than one's birthsex. Further investigation will give us solid ground to delineate these influences in clinical populations in which sex hormones and cognition are altered.
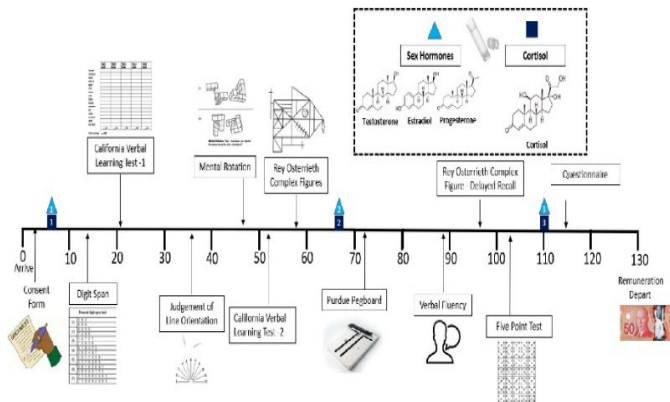
Paper Session 5 - New insights into associates of blunted cardiovascular and hormonal stress reactivity
Thursday 9:30-10:30

Abstract 1022
CARDIOVASCULAR REACTIVITY AND THE EMOTIONAL SALIENCE OF LABORATORY STRESSORS

Kyle J. Bourassa, PhD, Geriatrics Research, Education, and Clinical Center, Durham VA Health Care System, DURHAM, NC, David A. Ssbarra, PhD, Psychology, University of Arizona, Tucson, AZ
Both greater cardiovascular reactivity ("exaggerated") and lesser reactivity ("blunting") to laboratory stressors have been linked to poor health outcomes. Reactivity has been used to assess the risk for poor health among people who experience stressful life events, but there is a lack of consensus whether exaggerated or blunted cardiovascular reactivity (or both) are predictive of poorer health. This study examined whether differences in cardiovascular reactivity might be explained by differences in the emotional salience of laboratory tasks and individuals' trauma history in a sample of recently divorced adults ($N = 96$). Participants were assessed for trauma history, current distress related to their divorce, and cardiovascular reactivity during two stressful tasks—a serial subtraction math task and a divorce-recall task. Greater trauma history was associated with less blood pressure (BP) reactivity to the low emotional salience serial subtraction task for both systolic, $\beta = -0.41$ [-0.75, -0.15], $p < .001$, and diastolic BP, $\beta = -0.36$ [-0.55, -0.17], $p < .001$. There was no association between trauma history and BP for the higher emotional salience divorce-recall task. However, divorce-related distress moderated the association between trauma history and systolic, $\beta = 0.21$ [0.03, 0.40], $p = .025$, and diastolic BP reactivity, $\beta = 0.21$ [0.03, 0.39], $p = .026$, for the divorce-recall task. For participants with greater trauma history, divorce-related distress was associated with greater BP reactivity to the divorce-recall task, whereas participants with less trauma history did not show an association between psychological distress and BP reactivity. Among people with a history of traumatic experiences, a low salience stressor was associated with a blunted BP response, whereas a higher salience

stressor was associated with an exaggerated BP response. This pattern of findings was not present among people with less history of trauma. These results suggest that differences in the emotional salience of stressor tasks could help explain the disparate patterns of observed associations of health with exaggerated and blunted cardiovascular reactivity. Future studies examining cardiovascular reactivity would benefit from accounting for the emotional salience of tasks, particularly for groups that have experienced stressful life events or trauma.

Abstract 1286
BLUNTED CARDIOVASCULAR REACTIVITY TO PSYCHOLOGICAL STRESS AND PROSPECTIVE HEALTH: A SYSTEMATIC REVIEW

Adam O' Riordan, B.A, Siobhán Howard, PhD, Stephen Gallagher, PhD, Department of Psychology, University of Limerick, Limerick, Ireland
Background: Novel research demonstrates that lower or "blunted" cardiovascular reactions to stress are associated with a range of adverse outcomes. The aim of the current review was (1) to examine the prospective outcomes predicted by blunted cardiovascular reactivity and (2) to identify a range of blunted cardiovascular reactions that prospectively predict adverse outcomes.
Methods: Electronic databases were systematically searched (Medline, PsycArticles, PsycInfo, CINAHL, PubMed, Web of Science). The exposure was cardiovascular reactivity to acute psychological stress at baseline (systolic blood pressure, diastolic blood pressure or heart rate). The outcome was any health or behavioural outcome. A total of 22 studies were included in the review.
Results: Blunted reactivity predicted (1) adverse cardiovascular health, primarily in cardiac samples (e.g., myocardial infarction, carotid atherosclerosis) and (2) outcomes associated with motivational and behavioural dysregulation in healthy samples (e.g., obesity, smoking addiction, depression). The cardiovascular reactivity threshold levels that were predictive of adverse health outcomes ranged between -3.00 – 12.59bpm and -2.4 - 5.00mmhg, for heart rate and diastolic blood pressure respectively.
Conclusion: We posit that blunted reactions lower than, or equal to, the ranges reported here may be utilised by clinicians and researchers to identify individuals who are at increased risk of adverse cardiovascular health outcomes, as well as outcomes associated with motivational and behavioural dysregulation.

Abstract 1080
IS DEPRESSED MOOD ASSOCIATED WITH CORTISOL TRAJECTORIES IN RESPONSE TO ACUTE LABORATORY STRESSORS?

Gabrielle Decastro, BA, Psychology, Ohio University, Athens, OH, Andrew Manigault, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA, Courtney Taylor, MA, Peggy Zoccola, PhD, Psychology, Ohio University, Athens, OH, Sally Dickerson, PhD, Psychology, Pace University, New York, NY
Background
Major depressive disorder is associated with delayed cortisol recovery from acute stress, but most prior work on this topic relied on methods where cortisol responses to acute laboratory stressors are modeled as a single average response over time. This is problematic because subgroups of cortisol trajectories may exist. The present study thereby aimed to revisit the association between depressed mood and cortisol responses to acute stress using methods that can extract subclasses of cortisol response trajectories.
Aim
This project identified subgroups of cortisol acute response trajectories and assessed if depressed mood was associated with probability of trajectory membership.
Method
Previously collected data from thirteen studies were integrated for analysis. Each study included an acute stressor task and at least three

assessments of salivary cortisol. Analyzed participants (n = 1,134) were healthy adults. Depressed mood was measured using the Center for Epidemiological Studies Depression (CES-D) Scale. Group-based trajectory modeling was used to identify groups of cortisol response patterns. After determining the best-fitting model, average depressed mood was entered as a factor affecting probability of group membership. Gender, age, and social-evaluative threat condition (whether task performance could be negatively evaluated by others) were included as covariates.

Results

A five-group solution was considered the best fit, as shown in Figure 1. On average, higher depressed mood predicted probability of Group 1 (characterized by constant low cortisol) membership relative to Group 2 (characterized by constant moderate cortisol) membership, controlling for covariates (OR = 1.96, p = 0.004). Likewise, on average, higher depressed mood predicted probability of Group 1 membership relative to Group 3 (characterized by mildly peaked cortisol), controlling for the same covariates (OR = 2.48, p = 0.002). Depressed mood did not significantly predict probability of group membership of Group 4 or 5 relative to Group 1.

Conclusion

Results suggest that depressed mood is associated with low, blunted cortisol response trajectories to acute lab stressors in healthy adults. These findings have important implications for how depressed mood may affect physiological response patterns to acute stressors.
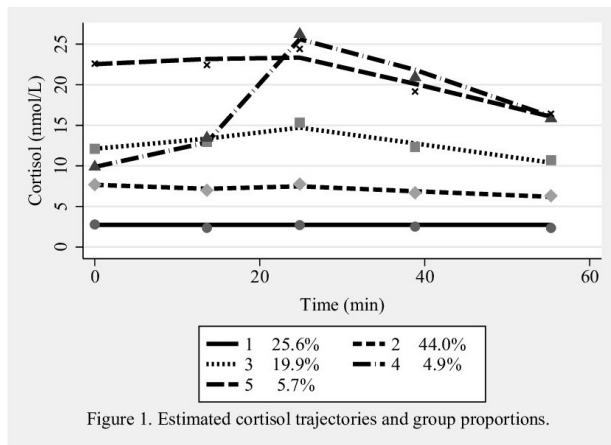

Figure 1. Estimated cortisol trajectories and group proportions.

Abstract 1433

ANXIOUS AND DEPRESSIVE SYMPTOMS, SOCIAL-EVALUATIVE THREAT, AND CORTISOL REACTIVITY

Megan G. Strickland, M.S., Psychology, Pace University, New York, NY, Emily D. Hooker, Ph.D., Department of Psychology and Neuroscience, The University of North Carolina at Chapel Hill, Chapel Hill, NC, Nils Myszkowski, Ph.D., Psychology, Pace University, New York, NY, Peggy M. Zoccola, Ph.D., Psychology, Ohio University, Athens, OH, Sally S. Dickerson, Ph.D., Psychology, Pace University, New York, NY

Current evidence suggests that exposure to social-evaluative threat (SET) can elicit greater physiological responses, particularly cortisol, compared to non-SET stressors. Previous research has found an individual's level of anxious and depressive symptoms predicts variability in cortisol responses to a psychosocial stressor. The current study integrates these two lines of research by testing if there are different relationships between anxious and/or depressive symptoms and cortisol reactivity in the presence or absence of SET. Healthy undergraduate students (N = 142, 65% female) were randomly assigned to one of two speech-stressor conditions. Social evaluation was manipulated by the presence (SET condition) or absence of two evaluators (non-SET condition). Salivary cortisol was collected before, during, and after the speech stressor. Cortisol reactivity was assessed by the quadratic slope term in the relation between cortisol and time. Anxious and depressive symptoms were measured through questionnaires in the beginning of the study

session. We hypothesized that higher levels of anxious and depressive symptoms, particularly for those in the SET condition, will be associated with different cortisol trajectories compared to those with lower levels of symptomatology. We found that social evaluation had a significant effect on cortisol reactivity, and that this effect was moderated by symptomology. Specifically, we found significant interactions between experimental condition (SET vs. non-SET), the quadratic form of time and anxious symptoms (β=-.011, t(1,750)=-2.05, p=.041) as well as depressive symptoms (β=-.02, t(1,750)=-2.10, p=.036). Participants in the non-SET condition that self-reported high anxious or depressive symptoms demonstrated blunted cortisol reactivity following the acute stressor. Participants in the SET condition that self-reported high anxious or depressive symptoms demonstrated exaggerated cortisol reactivity following the acute stressor. The findings indicate that SET impacts the relationship between cortisol reactivity and anxious and depressive symptoms. Previous studies have found conflicting results for the association between symptomatology and cortisol reactivity; the current study suggests that taking into account the social context of the stressor may be critical for understanding the nature of these relationships.

Paper Session 6 - Individual differences in responses to viral infection and vaccination
Thursday 9:30-10:30

Abstract 1417

ADOLESCENTS' PERCEIVED STRESS, DISCLOSURE PREFERENCES, AND RESPONSE TO VACCINATION

Leah Cha, Bachelor's of Science, Manuela L. Ceilia-Sanchez, Bachelor's of Science, Center for Family Research, Sarah L. Lyle, Master's in Experimental Psychology, Katherine B. Ehrlich, PhD in Developmental Psychology, Psychology, University of Georgia, Athens, GA

Prior research has found that higher levels of perceived stress were associated with diminished antibody response in older adults (Cohen et al., 2001), and disclosure of stressful life events has been shown to be an effective coping mechanism in attenuating the effects of stress (Smyth, 1998). However, little research has examined the effects of stress on the developing immune system and how coping strategies may mitigate the biological consequences of stress in adolescents. We extend this research by examining the effects of adolescents' perceived stress on antibody response to vaccination and whether adolescents' disclosure preferences moderate this link.

During the 2018 to 2019 influenza season, adolescents (n= 150, Mage = 14.6yrs) participated in two study visits. At Visit 1, participants completed the Perceived Stress Scale, and trained interviewers recorded adolescents' disclosure preferences in response to a question in the Life Stress Interview ("When something is bothering you, do you prefer to talk about it with someone or keep it to yourself?"). Additionally, adolescents provided blood samples and received the flu vaccine. Four weeks later, participants provided another blood sample. One month later, adolescents provided another blood sample. We assessed hemagglutination inhibition (HAI) antibody titers at both visits. For each strain, we corrected for pre-vaccination antibodies (Beyer et al., 2004) and used these values to form a standardized composite score representing adolescents' overall response to vaccination (Segerstrom et al., 2012).

Regression analyses using Hayes' PROCESS macro (Model 1) revealed a significant Perceived Stress × Disclosure Preference interaction (b = .44, SE = .20, p = .03). Posthoc probing of this interaction revealed that, for adolescents who prefer not to talk about their problems with someone, there was a positive association between perceived stress and antibody response (b = .24, SE = .11, p = .03). For adolescents who prefer to talk to someone, there was no link between perceived stress and antibody response (b = -.20, SE = .18, p = .26).

The findings of this study suggest that the effects of stress and coping on immune function in adolescents may not be as straightforward as

the adult literature suggests. These novel insights highlight the need for more research that focuses on different developmental periods.

Abstract 1384
FRIENDSHIP QUALITY AND RESPONSE TO VACCINATION: EXPLORING THE MODERATING EFFECTS OF PUBERTY AND SEX

Elizabeth R. Wiggins, B.S., Julie M. Brisson, B.A., Sarah M. Lyle, M.S., Kelsey L. Corallo, M.S., Katherine B. Ehrlich, Ph.D., Psychology, University of Georgia, Athens, GA

Chronic and acute stress have been linked with altered immune function, including variations in antibody production following vaccination (Morey et al., 2015). Despite growing research on the immunological effects of stress in adults, few studies have explored these links in children and adolescents. From a developmental perspective, peer relationships become particularly salient as children enter adolescence, which may have consequences for health (Somerville, 2013). Further, some research has revealed that sex differences, age, and reproductive status play a role in immune response across the lifespan (Klein & Flanagan, 2016). The present study examines the effects of friendship criticism on antibody response in youth, and whether this relation varies as a function of pubertal status and sex.

Adolescents ($n = 99$, $M_{age} = 15.0$ yrs; 56 girls) participated in two study visits during the 2019-2020 influenza season. At Visit 1, participants reported on their friendship quality through the Network of Relationships Inventory, completed the Child Pubertal Scale, provided a blood sample, and received the flu vaccine (FluZone™). Four weeks later, participants provided another blood sample. Hemagglutination inhibition (HAI) antibody titers were examined pre- and post-vaccination. We corrected for pre-vaccination antibodies for each strain (Beyer et al., 2004). We used these corrected values to form a standardized composite score of four strains to represent general vaccine response (Segerstrom et al., 2012).

We used Hayes' PROCESS macro (Model 2) to evaluate the link between friendship criticism and antibody response to vaccination, and whether that association was moderated by puberty or sex (see Table 1). Conditional effects of friendship criticism for boys and girls at varying levels of puberty revealed a negative association between friendship criticism and antibody response for girls in the earlier stages of puberty ($b = -.67$, $SE = .32$, $p < .04$).

These findings suggest that greater friendship criticism may dampen immune response following vaccination among girls who are just entering puberty. These analyses lead us to rethink how stress affects adolescents' adaptive immunity and whether this pattern may differ by sex and change across the lifespan.

Abstract 1250
CYTOMEGALOVIRUS AND TOXOPLASMA GONDII SEROSTATUS ASSOCIATED WITH PROBLEMS IN SELF-REGULATION BUT NOT EXECUTIVE FUNCTION AMONG OLDER ADULTS

Suzanne C. Segerstrom, PhD, MPH, Department of Psychology, University of Kentucky, Lexington, KY, Rebecca G. Reed, PhD, Department of Psychology, University of Pittsburgh, Pittsburgh, PA, Justin E. Karr, PhD, Department of Psychology, University of Kentucky, Lexington, KY

Objective. Cytomegalovirus (CMV) and *Toxoplasma gondii* are organisms that may infect the brain and have cognitive and behavioral consequences. We hypothesized that these latent infections would be prospectively associated with poorer cognition and more problems in self-regulation among older adults.
Methods. Older adults (N = 138, M_{age} = 75.5 years) had CMV and *T. gondii* serostatus tested, crystallized intelligence estimated, and executive function (EF) and self-regulation assessed in visits occurring every six months (M_{visits} = 16).
Results. CMV+ people (79%) had significantly poorer self-regulation vs. CMV- people (21%) (Behavioral Regulation: g =

0.108, 95% CI [0.009,0.206]; Metacognition: g = 0.117, 95% CI [0.005,0.229]), but not intelligence or EF. *T. gondii+* people (24%) were not significantly different from *T. gondii-* people (76%) on any outcome. However, men who were *T. gondii+* had better self-regulation vs. men who were *T. gondii-*, and the opposite was true of women (Behavioral Regulation interaction g = 0.267 [0.093, 0.441]).
Conclusions. CMV latent infection was associated with more problems in self-regulation, and the magnitude of this difference was clinically significant. *T. gondii* latent infection was associated with more problems, but only for women. Latent infection might associate with self-regulation but not EF because of factors influencing self-regulation but not neuropsychological test performance, such as values and emotion. Efforts to link latent infection with executive functions might in future include the application of those functions to self-regulation in daily life.
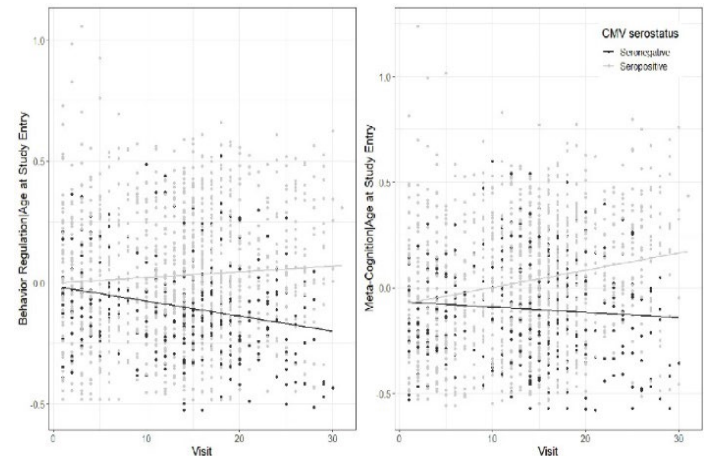
Abstract 1408
LIFETIME UNFAIR TREATMENT AND ANTIBODY RESPONSE TO PERTUSSIS VACCINATION IN PREGNANT WOMEN

Manuela L. Celia-Sanchez, Bachelor's of Science, Leah Cha, Bachelor's of Science, Center for Family Research, University of Georgia, Athens, GA, Gregory E. Miller, PhD, Psychology, Northwestern University, Evanston, IL, Katherine B. Ehrlich, PhD, Psychology, University of Georgia, Athens, GA

Pregnancy and vaccinations are characterized by changes in the immune system. In pregnancy, changes are associated with the immune systems' interaction with the fetus (Mor, Aldo, & Alvero, 2017). The CDC recommends vaccination during pregnancy, which provides passive immunity to neonates (Swamy & Beigi, 2015). However, little is known about how lifetime stress affects immune response to vaccination during pregnancy. Previous findings with non-pregnant populations suggest that stress can be immunosuppressive (Powell et al., 2011). The present study examines the relationship between expecting mothers' unfair treatment and antibody response to pertussis vaccination (Tdap) during pregnancy.

Pregnant women (N = 106, M_{age} = 32.5 yrs) participated in data collection spanning their pregnancy into delivery during 2018-2021. At Visit 1 (second trimester), participants reported on their lifetime unfair treatment and provided a blood sample. At Visit 2 (following Tdap vaccination, during the third trimester), they provided another blood sample. Umbilical cord blood samples were collected at delivery. Expecting mothers received the Tdap vaccine an average of 31.3 days before Visit 2. Blood samples were processed using standard protocols for assaying pertussis antibodies.

Regression analyses were conducted using Hayes' PROCESS macro (Model 4; see Figure 1) to examine whether mothers' response to vaccination mediated the hypothesized link between their experiences of unfair treatment and antibody transfer to the fetus. Analyses revealed that the total effect of mothers' lifetime unfair treatment on cord blood antibodies was significant (b = .06, p = .03). The effect of

unfair treatment on mothers' response to vaccination was also significant (b = .21, p = .01). Finally, the indirect effect of mothers' antibody production on neonates' antibody levels was also significant (b = .065, 95% CI [.01 - .12]).

Challenging common perceptions about the immunosuppressive effects of psychosocial stress on response to vaccination, these analyses suggest that increased lifetime unfair treatment in women is associated with greater pertussis antibody production following the Tdap vaccine, and in turn, greater transfer to the neonate. These findings are consistent with the notion that activated immune responses may be adaptive in the short term.

Paper Session 7 - Health effects of structural adversity
Thursday 9:30-10:30
Abstract 1104
DAILY THOUGHTS ABOUT HISTORICAL LOSS PREDICTS PHYSICAL ACTIVITY LEVEL, AND SYMPTOMS OF ANXIETY, AND DEPRESSION IN AMERICAN INDIANS FROM THE BLACKFEET COMMUNITY

Taylor D. Kampf, Bachelors of Science, Neha John-Henderson, Doctor of Philosophy, Benjamin Oosterhoff, Doctor of Philosophy, Psychology, Montana State University, Bozeman, MT

Background: Historical trauma experienced by American Indians (AIs) is theorized to contribute to enduring disparities in physical and mental health. **Purpose**: The purpose of the present study is to examine whether frequency of daily thoughts about historical loss predicts daily physical activity, and daily symptoms of anxiety, and depression in AI adults. **Methods:** 100 AI adults were recruited from the Blackfeet Indian Reservation to participate in the present study using a Community Based Participatory Research (CBPR) approach. Data was collected over a 1-week monitoring period using Ecological Momentary Assessment (EMA). Participants wore wrist-accelerometers to measure physical activity and reported on symptoms of depression and anxiety at the end of each monitoring day on their mobile devices. **Results:** Linear mixed-effect modeling was used to examine the relations between daily thoughts about historical loss and moderate/vigorous physical activity (MVPA), depression symptoms, and anxiety symptoms after controlling for relevant covariates. Between-subjects analyses indicated that greater historical loss scores were associated with lower MVPA (B = -6.21, SE=1.99, 95%CI: -10.10 – -2.31), higher depression symptoms (B = .62, SE = .09, 95%CI: .46 – .79), and higher anxiety symptoms (B = .26, SE = .06, 95%CI: .13 – .39). Within-subjects analyses indicated that on days when participants reported greater thinking about historical loss relative to their weekly average, they had lower levels of MVPA (B = -.87, SE = .31, 95%CI: -1.48 – -0.27), higher depression symptoms (B=.49, SE=.03, 95%CI: 0.44 – 0.54), and higher anxiety symptoms (B=.09, SE=.03, 95%CI: .04 – .14) relative to their weekly average. **Conclusions:** Based on the results, more frequent thoughts about historical loss in AI adults may have implications for physical activity, a behavior linked to physical health, and for symptoms of depression and anxiety, which have clear implications for mental health.

Abstract 1431
COMPOSITION MATTERS: LATENT CLASSES OF SOCIAL INTEGRATION AND 15-YEAR MORTALITY IN BLACK, INDIGENOUS, OLDER ADULTS OF COLOR

Melissa A. Flores, Ph.D., Riley M. O'Neill, B.S., Giovanni A. Marquez, B.S., Psychology, The University of Arizona, Tucson, AZ, Amelia Ibarra Mevans, B.A., Psychology, University of Sonora, Hermosillo, Mexico, Savannah M. Boyd, M.S., Department of Psychology, The University of Arizona, Tucson, AZ

Objective. There is a critical need for health models highlighting cultural and social integrative strengths amongst Black, Indigenous, People of Color (BIPOC). However, little is known about the structure of social support in these populations, especially amongst

aging adults. Moreover, a systems-perspective capturing several dimensions of an environment is critical for BIPOC populations given the myriad social/economic factors they navigate. Our objective was to understand the multidimensional structure of social support amongst BIPOC older adults and its association with 15-year mortality using latent class analysis (LCA). As LCAs are data-driven, we did not make a hypothesis with regard to the number of latent classes. However, we hypothesized that respondents with holistically less social integration would have greater odds of death in comparison to those with more. **Methods.** LCA was used to identify patterns of social support structure (i.e. social integration) in a BIPOC subsample of the National Social Health and Aging Project (*N* = 779). Social integration was modeled using 11 item indicators (see Table 1). Socioeconomic and health covariates of latent classes and distal mortality were estimated using a 3-step approach. **Results.** Model fit indices supported a four-class solution (see Figure 1) to which we gave the following names: "One Close Family Member", "Medium, Tight-knit Network of Family Ties", "Large but Diffuse Network of Friend/Family Ties", and "Large, Tight-knit Network of Family Ties". In adjusted models, the relative odds of death amongst respondents with One Close Family Member were slightly greater than those with a Medium, Tight-knit Network of Family Ties, OR=1.04, 95% CI(1.01, 1.08), *p*=.02. The relative odds of death amongst respondents with a Large but Diffuse Network of Friend/Family Ties were greater than those with a Medium, Tight-knit Network of Family Ties OR=1.19, 95% CI(1.09, 1.30), *p*=.04. No other class differences in the odds for mortality were found. **Conclusions.** Our hypothesis that "more social integration is better" was not supported. BIPOC older adults with a Medium, Tight-knit Network of Family Ties had greater longevity than those with a Large but Diffuse Network of Friend/Family Ties. This finding suggests that optimal social integration may maximize benefits and minimize burden with downstream effects on longevity.

Abstract ID#: 1431

Table 1.
Descriptive statistics for indicators of latent classes of social integration in BIPOC older adults.

Indicator	Mean(SD)	Min.	Max.
UCLA Loneliness Scale	1.44(0.51)	1.0	3.0
Network density	0.54(0.30)	0.0	1.0
Network size	4.27(1.92)	1.0	14.0
Number family ties one speaks to in times of stress	3.20(1.81)	0.0	11.0
Number friend ties one speaks to in times of stress	0.85(1.14)	0.0	7.0
Number of relatives with which one feels close	2.96(1.17)	0.0	5.0
Frequency of volunteer work in the last year	1.87(2.08)	0.0	6.0
Number of nearby neighbors known by name	1.45(0.81)	0.0	3.0
Frequency of socializing with nearby neighbors	2.44(1.38)	1.0	5.0
Number of years living in current neighborhood	21.43(16.68)	0.0	83.0
Coupled (0 = not coupled; 1 = married or coupled)	53.3% (n =415)	--	--

SD = standard deviation; Min = minimum; Max = Maximum

Figure 1.
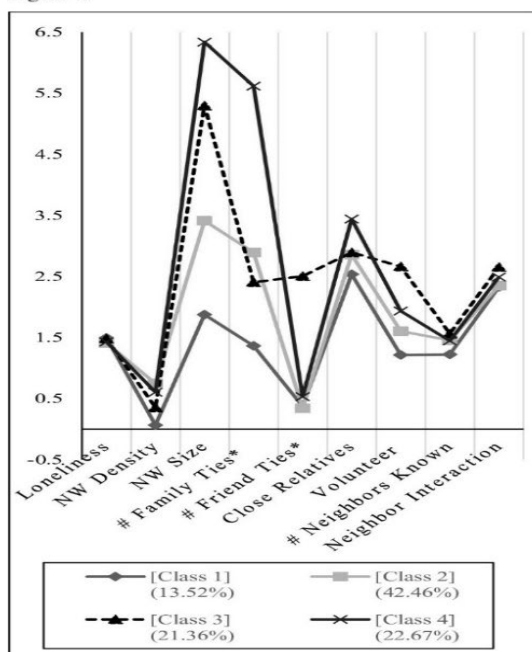
Note. Four latent class solution of social integration in Black, Indigenous, Older Adults of Color (N = 779). Classes are defined as follows: Class 1: *"One Close Family Member"*; Class 2: *"Medium, Tight-knit Network of Family Ties"*; Class 3: *"Large but Diffuse Network of Friend/Family Ties"*; and Class 4: *"Large, Tight-knit Network of Family Ties"*. Two measures including coupled status and length of time residing in a neighborhood are not shown given their contrasting scales with measures in the figure.

Abstract 1233
MID-LIFE DEPRESSIVE SYMPTOMS AND COGNITIVE FUNCTIONING: CROSS-SECTIONAL AND LONGITUDINAL RELATIONSHIPS DIFFER BY RACIAL MINORITY STATUS

Michael J. Persin, BS, Department of Psychology and Counseling, University of Texas at Tyler, Tyler, TX, Ameante Payen, MA, Health Psychology PhD Program, University of North Carolina at Charlotte, Charlotte, NC, James R. Bateman, MD, MPH, Department of Neurology, Wake Forest School of Medicine, Winston-Salem, NC, Brittany C. Price, MA, Maria Alessi, MA, Health Psychology PhD Program, Jeanette M. Bennett, PhD, Department of Psychological Science, University of North Carolina at Charlotte, Charlotte, NC

Background: Among older adults, good cognitive function supports higher quality of life and extends independence. One approach is to identify modifiable risk factors and characteristics that accelerate aging. Depression has been linked to poorer cognitive function. However, the causal or directional relationship between depressive symptoms and cognitive decline is not clear. Most evidence to date is cross-sectional and from homogeneous, predominantly white, populations. Utilizing publicly available data from MIDUS II (M2) and III (M3), this study examined the relationship and its directionality between depressive symptoms and cognitive functioning in community dwelling mid-life adults as well as whether the results differed by racial minority status.

Methods: The participants were 749 adults (418 men, 331 women) who identified as white (N= 624) or minority (N=125) with a mean age of 55.48 ± 11.52 years at M2, completed the Brief Test of Adult Cognition by Telephone (BTACT) and CES-D at M2, and did not endorse antidepressant use. To examine change over time, M2 values of the M3 outcome variable were included in the model as well as age, gender, and education level at M3.
PROCESS macro model 1 was used to examine the interactive effects of M2 depressive symptoms and racial minority status on BTACT

global z-score at M2 and M3 as well as reciprocal relationship (e.g., cognition predicting depression).

Results: Regardless of race, greater depressive symptoms were associated with poorer cognitive functioning, although the relationship was stronger among minorities (white: $b = -.01$, $p = .04$; minority: $b = -.03$, $p<.001$). However, among minorities, M2 depressive symptoms were associated with worse global cognitive scores from M2 to M3 ($b = -.01$, $p = .03$), but not for white participants ($b = .00$, $p = .46$). M2 cognitive functioning did not predict M3 depressive symptoms, controlling for M2 values.

Conclusion: Mid-life depression, a modifiable factor, predicted poorer cognitive functioning concurrently; however, only predicted cognitive decline 10 years later among racial minorities. In this sample, cognitive functioning did not predict future depressive symptoms. Taken together, these findings support routine screening of and effective treatment for mid-life depression as a modifiable risk factor for future cognitive decline, especially among racial minorities.

Abstract 1511
TOWARDS DIMENSIONAL UNDERSTANDING OF ADVERSITY

Maria Usacheva, MS, Human Ecology, University of California - Davis, Davis, CA, Susan Timmer, PhD, Pediatrics, UC Davis Children's Hospital, Sacramento, CA

Background: Understanding early life adversity is critical, due to known negative effects on children, traditionally examined under cumulative risk models. Limited by assumption of equal weight of risks, regardless of type, severity, or duration of stress exposure, current measures of risk assessment group families by similar risks (i.e., living doubled up), failing to capture qualitative differences in lived experiences. In contrast, we propose a dimensional approach to adversity, offering nuanced understanding of individual blueprints of stress exposure. A review of similarities in indicators of risk and corresponding developmental outcomes under dimensional models of adversity, yielded three non-overlapping dimensions of adversity: unpredictability, threat, and deprivation.

Method: To validate this 3-dimensional model of adversity, a Confirmatory Factor Analysis indexing dimensions of threat, deprivation, and unpredictability was run on Time 3 (T3) data from the Fragile Families Study ($N = 1642$). The 3-factorial structure was used as a measurement part in structural equation modeling. It was extended by adding dimension-specific child outcomes to the structural part of the model.

Results: The 3-factorial structure was adequately captured by 13 indicators for threat, 19 for deprivation, and 14 for unpredictability ($\chi^2 = 13029.40$, $p = 0.00$, RMSEA = 0.61, CFI = 0.61). As expected from literature review, T3 deprivation predicted T4 child physical health ($\beta = 0.25$, $p = 0.00$); T3 threat predicted T4 aggression ($\beta = 0.26$, $p = 0.00$); and T3 unpredictability predicted T6 risky behaviors ($\beta = 0.11$, $p = 0.01$).

Discussion: Proposed theoretical model underscores the need for new dimensional measures of risk, needed to create person-centered, multidimensional adversity profiles, which would further allow to 1) differentiate families in nominally similar but qualitatively different situations (i.e., doubled-up families high on threat, unpredictability, and deprivation vs. those high on deprivation but not threat or unpredictability, etc.); 2) tailor linkage to services based on individual families' strengths and needs; 3) evaluate risks based on probabilities of specific developmental outcomes at specific time points, aiding in development of new programs and practices; and 4) facilitate a shift from intervention to prevention in public health policy and clinical practice.

Abstract 1490
RACIAL DISPARITIES IN LONGITUDINAL CHANGES IN METABOLIC SYNDROME SEVERITY ACROSS TWO DECADES BETWEEN BLACK AND WHITE WOMEN: EARLY LIFE SOCIOECONOMIC STATUS AND HEIGHTENED VIGILANCE AS CORRELATES

Agus Surachman, PhD, Center for Health and Community, Nancy Adler, PhD, Psychiatry, University of California San Francisco, San Francisco, CA, Barbara Laraia, PhD, School of Public Health, University of California Berkeley, Berkeley, CA, Elissa Epel, PhD, Psychiatry, University of California San Francisco, San Francisco, CA

Background: Systemic racism is linked to racial disparities in health through differences in socioeconomic status (SES) and non-SES-related factors. The goal of this analysis was to examine whether early life SES and non-SES-related factors, including everyday discrimination and heightened vigilance, were associated with longitudinal changes in metabolic syndrome (MetS) severity among Black and white women.

Methods: Data were from 531 participants who self-identified as non-Hispanic Black (*n*=263) and non-Hispanic white (*n*=268) in the National Growth and Health Study (NGHS). Information about parental education, a proxy of childhood SES, was collected during the baseline survey when participants were 9. Information regarding MetS severity were collected during year-7 (*M* age=16), year-10 (*M* age=19), and year-30 (*M* age = 39) follow-up studies. Current SES, everyday discrimination, and heightened vigilance were also collected during the year-30 follow-up study. The associations between early life SES, everyday discrimination, heightened vigilance, and longitudinal changes of MetS severity were tested using multilevel modeling.

Results: Black compared to white participants showed significantly higher levels of MetS severity during year-30, but not during year-7 and year-10 follow-up studies. Controlling for baseline body mass index, smoking status, and marital status, Black participants showed a faster increase in MetS severity across two decades. Early life SES (*b*=.03, *SE*=.01, *p*<.05), independent of current SES, was associated with Black-white disparities in MetS severity longitudinal changes. Furthermore, higher heightened vigilance (*b*=-.01, *SE*=.005, *p*<.05), but not everyday discrimination, was associated with a faster increase in MetS severity among Black relative to white women. Results remained in a full model that included both early life SES and non-SES-related factors.

Discussion: In this sample of early midlife women, non-Hispanic Black relative to non-Hispanic white participants showed signs of accelerated aging, indicated by a faster increase in MetS severity across two decades. These disparities can be attributed to both racial differences in SES and non-SES-related factors, especially early life SES and heightened vigilance.
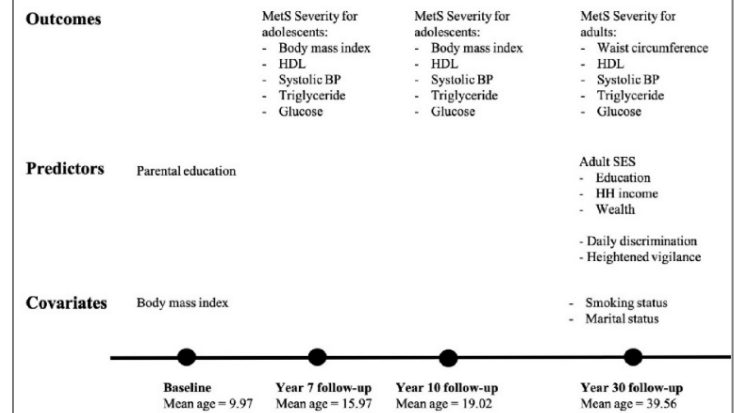

Figure 1. Summary of variables included in the current analysis and the time when they were collected

Table 1. Descriptive statistics of key variables in the current analysis (N = 531)

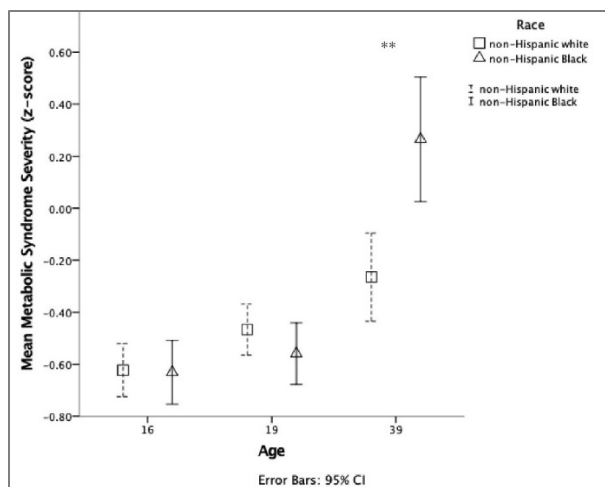|	Non-Hispanic Black (*n* = 263)	Non-Hispanic white (*n* = 268)	*t*/χ^2
Sociodemographic characteristics at year 30 follow-up			
Mean age (*SD*)	39.55 (1.20)	39.56 (1.35)	0.91
% Marital status			79.23***
Single/never married	45.1	11.6	
Married/living with partner	39.2	73.4	
Separated/divorced/widowed	15.7	15.0	
Number of biological children	1.54 (1.34)	1.53 (1.17)	0.91
Early life socioeconomic status (measured at baseline)			
% Highest parental education			34.07***
HS or less	23.3	19.4	
Some college	55.7	36.2	
College or more	21.0	44.4	
Current socioeconomic status (year 30 follow-up)			
% Participant's highest education			43.67***
HS or less	27.1	15.7	
Some college	50.4	34.3	
College or more	22.5	50.0	
% Own a house	23.5	57.9	63.04***
% Own cars	33.7	50.3	23.72
% Received EITC in the past 12 mo	34.8	21.5	10.11**
% Received food stamps in the past 12 mo	29.3	13.9	17.99***
% Children participate in the National School Lunch Program (NSLP)	39.1	16.9	28.21***
Discrimination			
Mean everyday discrimination scale	2.21 (1.00)	2.05 (0.87)	1.98*
% Discriminated based on race	73.0	13.1	124.71***
% Discriminated based on shade of skin color	37.9	5.4	52.97***
Health status			
BMI at baseline	19.23	18.37	2.59*
% Current smoking status			10.25**
Currently smoking	20.2	17.6	
Smoked in the past	18.7	30.7	
Never smoke	61.1	51.7	
Metabolic Syndrome Severity Index			
Year 7 (mean age = 16)	-0.63 (0.76)	-0.62 (0.66)	0.09
Year 10 (mean age = 19)	-0.56 (0.85)	-0.47 (0.74)	1.19
Year 30 (mean age = 39)	0.27 (1.44)	-0.27 (0.92)	3.57**

Figure 2. Longitudinal changes of MetS severity among non-Hispanic Black and non-Hispanic white women in the NGHS across two decades

Abstract 1035
ANTICIPATORY RACISM THREAT, RACIAL DISCRIMINATION, AND 'WEATHERING' AMONG AFRICAN AMERICAN WOMEN

Amanda D. Perez, PHD, Amani Allen, PHD, Suzanne Dufault, PHD, Public Health, University of California, Berkeley, Berkeley, CA, Erica Spears, PHD, Monitoring, Evaluation and Learning, Louisiana Public Health Institute, New Orleans, LA

Previous research shows accelerated physiological aging-weathering-among African-American (AA) women relative to other groups, but the factors explaining this phenomenon are not well understood. While most studies examine actual stress experiences, anticipating a stressor has also been shown to initiate the biological stress response. AA women have previously reported a pervasive sense of vigilance in anticipation of potential racism experiences. We examined whether anticipatory racism threat (aRT) modifies the association between racial discrimination and two indicators of weathering: allostatic load (AL) and telomere length (TL). Data are from the AA Women's Heart & Health Study, a community sample of 208 midlife AA women residing in five Bay Area counties. Data collection was from March 2012-March 2013. Racial discrimination was measured using the Experiences of Discrimination scale. aRT was measured using three sub-scales: stereotype awareness, racism-related worry, and confirmation concern. AL was measured as a composite of 15 biomarkers indicating functioning across physiologic systems (HPA-axis, sympatho-adrenal-medullary axis, cardiometabolic, inflammation) associated with stress-related pathophysiological processes. TL was measured using the relative telomere length ratio. Path analysis was used to test for interactions. Those reporting high racial discrimination and low stereotype awareness had higher AL (p = 0.01, 95% CI=-.28, -.04) and shorter TL (p = .02, 95% CI= .01, .10). Conversely, those reporting high racial discrimination and high stereotype awareness had lower AL and longer TL. There was a imprecise yet potentially meaningful relationship between racial discrimination and racism-related worry. Those reporting high racial discrimination and low levels of racism-related worry also had higher AL (p = 0.16, CI = -0.56, 0.09), yet they also had longer TL (p = 0.08, CI = -0.10, 0.01). Conversely, those reporting high racial discrimination and high levels of racism-related worry had lower AL and shorter TL. Our findings affirm the need to consider anticipatory racism threat as an important aspect of the lived experience of race among AA women, potentially exacerbating the negative effects of racial discrimination on health. We discuss the implications of these findings and the importance of within group studies for valid risk assessment.

Abstract 1458
INTERACTIVE EFFECTS OF CHILDHOOD SOCIOECONOMIC STATUS, FAMILY ENVIRONMENT, AND RACE ON SYSTEMIC INFLAMMATION IN ADULTHOOD

Brianna N. Natale, M.S., Stephen B. Manuck, Ph.D., Peter J. Gianaros, Ph.D., Anna L. Marsland, Ph.D., Psychology, University of Pittsburgh, Pittsburgh, PA

Aspects of the childhood family environment, such as supportive family relationships, may protect against adverse health outcomes that associate with low socioeconomic status (SES) in early life. Here, we examine the interaction between childhood SES and family relationships in relation to adult inflammation. Given racial disparities in health, we also conducted exploratory analyses examining the role of race.

Participants were 1,360 adults in Adult Health and Behavior study (52% female, 17% Black) who retrospectively reported childhood SES via the Hollingshead Index (parental education, occupational grade) and childhood family environment via the Family Environment Scale (cohesion, conflict subscales). Measurements of circulating CRP and IL-6 were obtained at 2 time points (T1 M age=44; T2 M age=59; M=14 years apart).

Results of linear regression analyses adjusted for age, sex, adult SES, and BMI showed an interaction between childhood SES and family environment (cohesion minus conflict) for CRP at T2 ($B(SE)$=-0.00(0.00), p=0.013), with a more supportive family environment being health-promotive for those of higher childhood SES. This interaction was non-significant for CRP at T1, IL-6 at either time, or change across time in either measure. However, when examining 3-way interactions with race, a significant childhood SES x family environment x race interaction was found for CRP at both timepoints (T1: $B(SE)$=-0.00(0.00), p=0.040; T2: $B(SE)$=-0.00(0.00), p=0.047), with a similar trend for change in CRP ($B(SE)$=-0.00(0.00), p=0.057). Findings were largely replicated on analysis of IL-6. Black participants who reported higher family conflict relative to cohesion and socioeconomic advantage in childhood showed the highest levels of CRP at both timepoints and larger increase over the 14-year follow-up. There were no significant relationships between childhood SES, family environment, and inflammation for White participants. These findings suggest that Blacks who endorse socioeconomic advantage in childhood, but a less supportive family environment are at increased risk for systemic inflammation in later life, possibly contributing to racial disparities in health outcomes. Future work should consider the contribution of discrimination and other exposures that differentially impact racial groups.

Abstract 1028
FIRST-GENERATION COLLEGE STUDENTS HAVE GREATER SYSTEMIC INFLAMMATION THAN CONTINUING-GENERATION COLLEGE STUDENTS FOLLOWING THE INITIAL COLLEGE TRANSITION

Emily J. Jones, PhD, Department of Psychiatry, University of Pittsburgh, Pittsburgh, PA, Hannah M C. Schreier, PhD, Department of Biobehavioral Health, The Pennsylvania State University, University Park, PA

Background. First-generation college students ("first-gens") are college students whose parents do not have 4-year degrees. Compared to their peers who have at least one parent with a college degree ("continuing-gens"), first-gens are often at a disadvantage socially and academically. However, whether first-gens are at risk physiologically is unknown despite the well-established link between greater educational attainment and better long-term health. **Purpose**. To examine whether first-gens have higher levels of cardiovascular disease (CVD) risk markers relative to "continuing-gens" during the transition to college. **Methods**. A panel of CVD risk markers was assessed among 87 emerging adults (41 first-gens) twice over their first year of college. **Results**. Compared to continuing-gens, first-

gens had higher circulating levels of C-reactive protein (CRP; B=.294, SE=.130, p=.026) and interleukin-6 (IL-6; B=.205, SE=.077, p=.009) during the fall but not spring semester (ps > .05). Associations were independent of family home ownership and childhood adversity, even though first-gens were more likely to live in homes their parents rented and reported riskier home environments. Lower childhood subjective social status (SSS), however, accounted for higher levels of circulating CRP and IL-6 among first-gens as evidenced by an indirect effect of college generation status on systemic inflammation through childhood SSS (CRP: a_1b_1=.151, bootstrapped SE=.074, 95% boot CI [.025, .312]); IL-6: a_1b_1=.093, bootstrapped SE=.041, bootstrapped 95% CI [.019, .180]). There were no differences in metabolic risk markers and latent virus regulation as a function of college generation status in either semester (all ps>.05). **Conclusions**. This is the first study to find that first-gens have higher levels of systemic inflammation than continuing-gens following the college transition and that differences in childhood SSS may underlie group differences in inflammation. First-gens may benefit from university resources that address social class differences, which should be provided early on so that first-gens can reap the health-relevant benefits of higher education, at least in the short-term.

Paper Session 9 - Somatic and social health effects of emotions, stress and rumination
Thursday 13:45-14:45

Abstract 1042
SOCIOECONOMIC STATUS, STRESS, RUMINATION, AND SOMATIC SYMPTOMS IN OLDER AFRICAN AMERICAN ADULTS
Jacqueline Rodriguez-Stanley, M.A., Psychology, Samuele Zilioli, PhD, Psychology/ Family Medicine and Public Health Sciences, Wayne State University, Detroit, MI
Objective. Somatic symptoms such as headache, cough/congestion, and body ache are frustrating and can limit daily activities. As healthy individuals grow older, somatic symptoms become more common. In addition to age, factors such as race and socioeconomic status (SES) are also associated with physical symptoms. Stress has been hypothesized as a mechanism connecting such factors to physical symptoms. However, some of these factors, such SES, can also be thought of as moderators interacting with stress to predict health. This study tested two theoretically driven competing models to understand the associations between SES, stress, rumination, and somatic symptoms among older African American adults. The Preservative Cognition Hypothesis states that repeatedly thinking about a past stressor perpetuates physiological responses of that stressor. Here, we tested whether daily stress and rumination (i.e., repetitive and intrusive negative thought) mediated the association between SES and somatic symptoms. Drawing from the Reserve Capacity Model, we also examined whether rumination would predict lower physical symptoms among lower SES experiencing greater stress, but not higher SES experiencing greater stress or those reporting lower stress regardless of SES. Methods.Data came from the Health among Older Adults Living in Detroit (HOLD) study, a healthy aging study among older African American adults, (N = 201, M = 67.3 yrs., SD = 8.3, range 50 - 89). Self-reported income and education were attained at the beginning of the study. Participants completed five days of at-home daily dairies during which they reported daily perceived stress, frequency of rumination that resulted from that day's most salient stressor, and twelve somatic symptoms. Results. In the serial mediation model, there was an indirect effect of both high daily stress and rumination linking low SES to high daily somatic symptoms (b = -.03, SE = .01, 95% CI [-.050, -.010]). Results held after controlling for age, gender, depression, and BMI (b = -.01, SE = .01, 95% CI [-.019, -.002]). In the moderated mediation model, there was no indirect effect of stress on somatic symptoms through rumination at the different levels of SES. Conclusion. Data

from current study indicate that low SES is linked to more somatic symptoms through high stress and rumination among older African American adults.

Abstract 1546
DISCRIMINATION MODERATES THE EFFECTS OF ANGER EXPRESSION ON SOCIAL INTERACTIONS IN THE MOMENT
Elizabeth Brondolo, Ph.D., Psychology, St. John's University, Jamaica, NY, Matthew Zawadzki, Ph.D., Psychological Sciences, University of California Merced, Merced, CA, Jennifer E. Graham-Engeland, Ph.D., Biobehavioral Health, Penn State university, University Park, PA, Maryam Hussain, Ph.D., Psychology, University of California Merced, Merced, CA, Emily Fair, MA, Biobehavioral heallth, Penn State University, University Park, PA, Patrick Louie A. Robles, MPH, Center for Personalized Health, Feinstein Institutes of Medical Research, Manhasset, NY
Background: Strategies used to express anger (i.e., holding anger in, expressing anger harshly, or expressing anger calmly) have been linked to health, likely in part because the way that anger is expressed affects the quality of social relationships. However, little is known about how social context, including cultural expectations and chronic exposure to unjust and anger-evoking events (e.g., discrimination), influences anger expression and its consequences. We examined the effects of momentary variations in anger expression on the quality of subsequent social interactions across a day and examined variations as a function of race/ethnicity and exposure to racial discrimination.
Method: Participants (644 Black and Hispanic participants, aged 23-65, M = 39.20, SD = 9.51; 51.55% men) completed an electronic diary every 20 minutes during waking hours for one day. If they experienced any anger and/or any interpersonal mistreatment, participants indicated if they held their anger in, spoke out harshly, or talked calmly. We tested if type of anger expression in a prior moment (time t-1) predicted the valence of the social interaction at the next moment (time t) 20 minutes later.
Results: Race/ethnicity moderated the relation of anger expression style to the quality of subsequent social interactions. For Black participants, social interactions were perceived as more **positive** at time t when they spoke harshly at time **t-1** (b = .34, SE = .14, p = .014). In contrast, for Hispanic participants, social interactions were perceived as more **negative** at time t when they spoke harshly at time t-1 (b = -.43, SE = .11, p < .001). Discrimination may explain this difference. Among Black participants, harsh expression at t-1 predicted more positive social interactions at time t, but only for those reporting higher levels of discrimination (b = .44, SE = .14, p = .002). However, Black participants only reported using harsh anger expression in 8.6% of observations and were almost twice as like to suppress their emotions (14.5%) instead. Discrimination did not moderate effects of harsh expression for Hispanic participants (b = .13, SE = .13, p = .342).
Conclusions: Discrimination and chronic injustice may drive anger and influence anger expression, changing the interpersonal contingencies associated with both harsh and calm anger expression styles.

Abstract 1341
TRAIT ANGER IS UNIQUELY ASSOCIATED WITH SIX YEAR CHANGE IN PULSE PRESSURE
William D. Eckerle, BS, Departments of Clinical and Biological-Health Psychology, Matthew Muldoon, PhD, Cardiology Division, Department of Medicine, Tom Kamarck, PhD, Departments of Clinical and Biological-Health Psychology, University of Pittsburgh, Pittsburgh, PA
In still evolving literatures, anger and symptoms depression and anxiety each convey increased risk of cardiovascular disease (CVD). Previously, we found that trait anger and depressive symptoms, but not anxiety, were predictive of six-year change in carotid-intima media thickness, a measure of preclinical atherosclerosis. As arterial stiffness is another important marker of vascular aging and

cardiovascular risk, we sought to determine if these emotions similarly predicted changes in arterial stiffness over six years. 245 participants (mean age, sex and race breakdown) completed measures of trait affect and were administered at baseline and 6 years later as part of the Pittsburgh Healthy Heart Project. Participants completed the Spielberger Trait Anger and Expression Inventory, Beck Depression Inventory, and Beck Anxiety Inventory at baseline and follow-up visits. Participants completed six days of ambulatory BP monitoring at baseline and another 3-day monitoring protocol at 6 year follow-up. Given the longitudinal nature of the study, participants completed regular medical history interviews to document and later control for changes in antihypertensive medication and other drugs. Pulse pressure (mean SBP minus DBP) was used as an index of arterial stiffness and was measured as the difference between 6-year and baseline values. After characteristics and the use of anti-hypertensives, trait anger, but not depression or anxiety, was associated with increased change in PP over time ($b = 11.17$, $SE = 5.5$, $t = 2.03$, $p = .043$). Interestingly, trait anger was not significantly associated with change in systolic blood pressure or diastolic blood pressure alone ($p's > .08$) suggesting that the association between anger and PP was driven by changes in both SBP and DBP.

These data suggest that anger may a have a relatively unique relationship with age-related changes in pulse pressure, commonly used as a marker for arterial stiffness. Future research should include more precise measures of arterial function and should aim to explore the unique pathophysiologic correlates of this association.
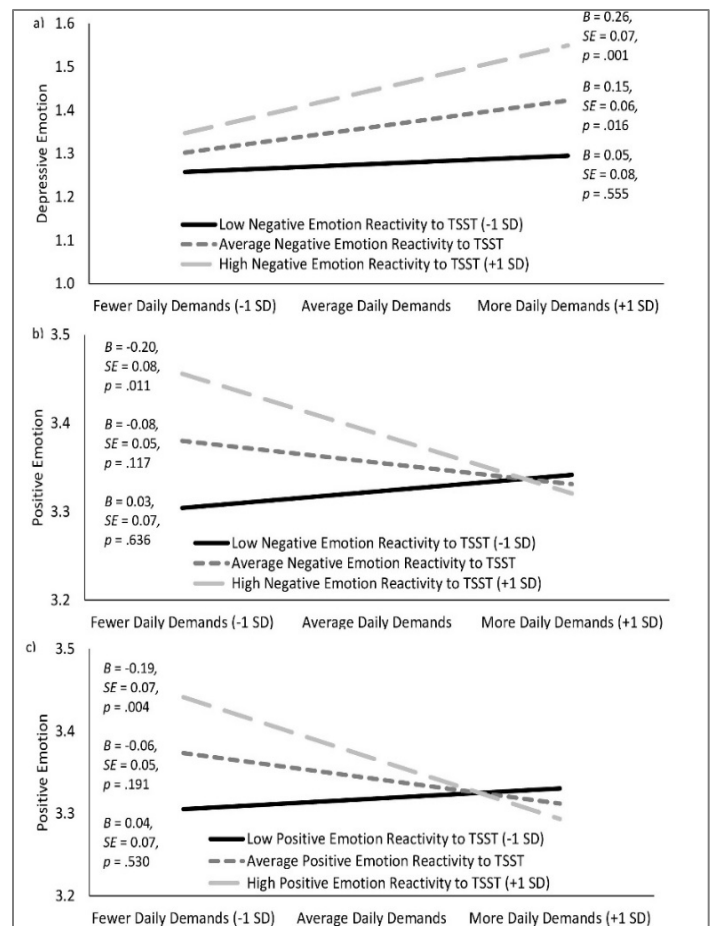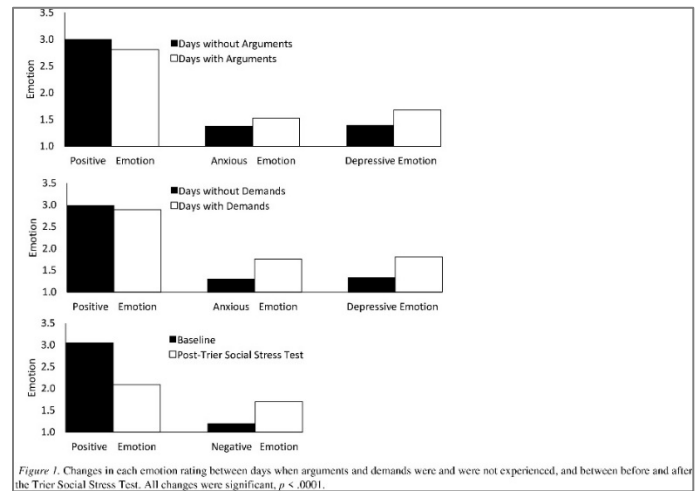Supported by HL56346.

Abstract 1127
DAILY AND ACUTE EMOTION REACTIVITY TO SOCIAL STRESS
Danny Rahal, MA, Psychology, UCLA, Los Angeles, CA, Jessica J. Chiang, PhD, Psychology, Georgetown University, Washington D.C., DC

Greater emotion reactivity to stress is a risk factor for poorer mental and physical health (e.g., Chiang et al., 2019; Nock et al., 2008). Although the Trier Social Stress Test (TSST; Kirschbaum et al., 1993) is a well-validated laboratory-based social stressor that elicits psychobiological reactivity (Dickerson & Kemeny, 2004), no study has tested whether emotion reactivity to the TSST relates to emotion reactivity to daily interpersonal stressors in natural, real-world contexts. Therefore, the present study tested whether individuals who show greater emotion reactivity to the TSST also show greater emotion reactivity to daily interpersonal stressors. A subsample of 82 late adolescents (Mage=18.35, SD=0.51; 56.1% female; 65.9% Latino, 34.2% European American) from a larger study completed the TSST, in which they prepared and presented a speech and then completed a mental arithmetic task for two confederate evaluators. They rated negative and positive emotion at baseline and immediately after the task, and reactivity was calculated as a difference score (Post-Task–Baseline). They also completed 15 daily checklists, in which they reported whether they experienced arguments and demands from family and friends, as well as their positive, depressive, and anxious emotion (Fig. 1). Multilevel models (days within participants) predicted emotion from daily stressors, and included a cross-level TSST Emotion Reactivity X Daily Stressor interaction to test whether TSST reactivity related to reactivity to daily arguments and demands. Participants who showed greater negative emotion reactivity to the TSST reported more depressive emotion on days when they experienced more arguments than on days when they did not (B=0.16, SE=0.08, p=.042; Fig. 2a). In turn, both participants who showed greater negative emotion reactivity (B=-0.22, SE=0.07, p=.002) and greater positive emotion reactivity to the TSST (B=0.14, SE=0.07, p=.031) showed lower positive emotion on days when they experienced more demands (Fig. 2b,c). Anxious emotion reactivity to the TSST was related to neither daily reactivity to arguments nor demands. Taken together, results suggest that the

TSST shows ecological validity for assessment of positive and depressive emotion reactivity to daily interpersonal stressors.

Figure 1. Changes in each emotion rating between days when arguments and demands were and were not experienced, and between before and after the Trier Social Stress Test. All changes were significant, $p < .0001$.

Figure 2. Depressive emotion as a function of daily arguments and negative emotion reactivity to the TSST (a) and positive emotion as a function of daily demands and negative emotion reactivity to the TSST (b) and positive emotion reactivity (c). Models controlled for gender (0=male, 1=female), ethnicity (0=Latino, 1=European American), age, parents' education, and previous day's emotion (mean-centered).

Paper Session 10 - Outcomes from interventions on psychological health
Thursday 13:45-14:45
Abstract 1428
EFFECTS OF A PERI-OPERATIVE MULTI-MODAL
INTERVENTION ON STRESS, PAIN, SLEEP DISTURBANCE,
AND NOISE PERCEPTION IN PATIENTS UNDERGOING
CORONARY ARTERY BYPASS GRAFT SURGERY:
RESULTS FROM THE RANDOMIZED-CONTROLLED I-
COPE TRIAL

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BACKGROUND Coronary artery bypass graft (CABG) surgery is
the most frequently performed cardiac surgery in patients with
coronary heart disease (CHD). Following CABG, patients are
exposed to intensive care unit (ICU)- and other treatment-related
stressors (e.g., noise, changes in day-night rhythm, lack of intimacy,
post-operative complications), which can lead to higher perception of
pain, sleep disturbances, and acute stress disorders.
METHODS In the three-arm, monocentric I-COPE (Intervention for
CABG to Optimize Patient Experience) trial, CHD patients
undergoing elective CABG were randomized to receive standard
medical care (SMC, n=30), a psychological intervention to optimize
treatment expectations (IA group, n=30), or a multi-component
intervention (IB group, n=30), which included both the psychological
intervention and a treatment package (light therapy, noise reduction,
music, and if desired, 360° images through virtual reality) to promote
recovery during and after ICU treatment. Using multilevel mixed
linear models, we assessed the impact of these interventions on pain,
sleep disturbance, stress, and perception of noise levels, as measured
with visual analog scales (VAS) on the 2nd, 4th, 6th, and 8th post-
operative day.
RESULTS Eighty-eight (mean age 64.8±12.5 years, 21.6% females)
participants were included in the analyses, and the results are shown
in Figure 1. The multi-modal intervention (IB) led to medium-sized
greater reductions of pain perception compared to SMC (IB vs. SMC,
change from day 2 to day 8, effect size: ES=-0.62, 95% CI [-3.00,
0.54]), reductions in sleep disturbance (IB vs. SMC, effect size: ES=-
0.81, 95% CI [-4.26, 0.22]), and in stress perception (IB vs. SMC,
effect size: ES=-0.19, 95% CI [-2.38, 1.56]). However, neither of
these changes were statistically significant.
CONCLUSIONS A peri-operative multi-component intervention
targeting ICU-related stressors, including light therapy, noise
reduction, music, and virtual reality, can be implemented in the
routine medical treatment in CABG patients but failed to show
superiority on the perception of post-operative pain, stress, and sleep
disturbances over standard medical care in a small sample. Thus,
further research is needed to investigate these trends in larger-sized
samples.

Abstract 1223
BLENDED COLLABORATIVE CARE FOR TREATING
SYSTOLIC HEART FAILURE AND COMORBID
DEPRESSION: AN UPDATE FROM THE HOPEFUL HEART
TRIAL

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Background: Heart failure (HF) is common and often comorbid with
depression. When depression is present, it is associated with poor
health related quality of life and increased re-hospitalizations in
mortality even after adjusting for the severity of HF. The NHLBI-
funded Hopeful Heart Trial examined the impact of a "blended"
collaborative care program for treating both heart failure and
depression in patients with HF on HRQoL, mood symptoms,
rehospitalizations, and health care costs.
Methods: From 3/14 to 10/17, we screened inpatients with HFrEF
(EF ≤45%) and NYHA class II-IV symptoms for depression with the
Patient Health Questionnaire (PHQ-2) at 8 Pittsburgh hospitals. We
telephoned screen-positive patients (PHQ-2 (+))2-weeks post-
discharge to administer the PHQ-9 and randomized those who scored
≥10 (N=629) to either their PCP´s "usual care" (UC) or to one of two
nurse-delivered 12-month collaborative care programs for treating:
(1) depression and HF ("blended"); or (2) HF alone (enhanced UC
(eUC)). Study nurses met weekly with clinician-investigators for case
review and provided treatment advice to patients and their PCPs. We
randomly selected a comparison cohort (N=127) of non-depressed
HF patients (PHQ-2(-)/PHQ-9 <5). At baseline, we collected
sociodemographic and clinical data, and monitored outcomes through
periodic blinded telephone assessments. We collected 12-month
claims data from Medicare and two large insurers.
Results: Of the 756 HF patients (mean age: 64, 56% male, 73%
White, mean EF 28%), those depressed had at baseline worse mental
HRQoL (SF-12 MCS, mean: 40.1 vs. 60.5), physical function
(KCCQ-12: 40.4 vs. 76.8), and mood (HRS-D: 16.8 vs. 2.0) than
those non-depressed (all P<0.001), but were otherwise similar
medically. At 12-months follow-up, "blended" care patients reported
a 0.34 ES improvement on the SF-12 MCS, our primary outcome
measure vs. UC (95% CI: 0.13-0.56; P=0.002), but scored similarly
as those randomized to eUC (0.09 ES; P=0.33).
Conclusions: "Blended" collaborative care for treating both
depression and HF can improve mental HRQoL more than
physicians' UC at 12-months following hospitalization. We will
present insurance claims and utilization data in our symposia, and
discuss how "blended" care strategies such as ours can provide
effective first-line care for co-morbid mental health conditions to
medically complex patients.

Abstract 1231
THE EFFECTS OF OMEGA-3 SUPPLEMENTATION ON
PSYCHOLOGICAL FUNCTIONING OF MEN UNDERGOING
RADICAL PROSTATECTOMY FOR PROSTATE CANCER: A
RANDOMIZED CONTROLLED TRIAL

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François Pelletier, M.A., Karine Robitaille, Ph.D., Axe oncologie,
CHU de Québec-Université Laval Research Center, Québec, QC,
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In the general population, epidemiological and randomized controlled
trials (RCT) have suggested that a higher omega-3 polyunsaturated
fatty acids (PUFAs) intake is associated with lower psychological
symptoms, particularly depression. The available evidence, mostly of
a cross-sectional nature, also suggests a link between PUFAs intake
and cancer-related symptoms. However, more RCTs are needed to
establish a causal relationship. As part of a larger phase IIB double-
blind, placebo-controlled trial, the goal of this study was to compare
the effects of eicosapentænoic acid monoacylglyceride (MAG-EPA;
active treatment) supplementation and high oleic acid sunflower oil
(HOSO; placebo) on levels of depression and other symptoms

(anxiety, fear of cancer recurrence, insomnia, fatigue, perceived cognitive impairments). Participants were ≥ 18 years old and scheduled to receive radical prostatectomy (RP) for prostate cancer with a Gleason score ≥ 7 (grade group ≥ 2). They were randomized to MAG-EPA (6 capsules, 3g daily; *n*=65) or HOSO (6 capsules, 3g daily; *n*=65) at their pre-operative visit (4 to 10 weeks prior to their RP), which they received for up to one year post-RP. Study measures were collected at baseline (before RP), and 3, 6, 9, and 12 months following RP: Hospital Anxiety and Depression Scale (HADS), Fear of Cancer Recurrence Inventory (FCRI), Insomnia Severity Index (ISI), Fatigue Symptom Inventory (FSI), and Functional Assessment of Cancer Therapy – Cognitive Function (FACT-Cog). After controlling for some confounding variables (e.g., tumor aggressiveness at baseline), ANOVAs with repeated measures revealed significant time effects on HADS-depression, $F_{(4,195)}$= 3.13, $p<.05$, HADS-anxiety, $F_{(4,119)}=13.77$, $p<.0001$, FCRI, $F_{(4,168)}=14.03$, $p<.0001$, ISI, $F_{(4,194)}=4.86$, $p<.001$, FSI-N$_o$ of days, $F_{(4,147)}=2.48$, $p<.05$, and FACT-Cog-impact scores, $F_{(4,124)}=3.03$, $p<.05$. However, the only significant group-by-time interaction was found on FACT-Cog-Impact scores, $F_{(4,124)}=3.39$, $p<.05$, with a change over time significant only in placebo patients. Results indicated significant changes over time of several symptoms, mainly at the beginning of the study. However, MAG-EPA patients did not show significantly greater changes than placebo patients. Omega-3 supplementation does not seem to improve psychological functioning of men with prostate cancer treated with RP.

Abstract 1552
MINDFULNESS-BASED STRESS REDUCTION INCREASES STIMULATED IL-6 PRODUCTION AMONG LONELY OLDER ADULTS: A RANDOMIZED CONTROLLED TRIAL

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Background: Loneliness is a potent psychosocial stressor that predicts poor health and mortality among older adults, possibly in part by accelerating age-related declines in immunocompetence. Mindfulness interventions have shown promise for reducing loneliness and improving markers of physical health. In a sample of lonely older adults, this study tested whether mindfulness training enhances stimulated IL-6 production, a measure of innate immune responsivity.
Methods: Lonely older adults (65-85 years; N=190) were randomized to an 8-week Mindfulness-Based Stress Reduction (MBSR) or control Health Enhancement Program (HEP) intervention. LPS-stimulated production of IL-6 was measured in vitro at pre-intervention, post-intervention, and 3-month follow-up. Mixed-effects linear models tested time (pre, post, follow-up) by condition (MBSR vs. HEP) effects.
Results: As predicted, a significant time × condition effect on stimulated IL-6 production was observed across pre, post, and follow-up timepoints. Significant MBSR vs. HEP differences emerged from pre- to post-intervention (p=.009, d=.38) and from pre-intervention to 3-month follow-up (p=.017, d=.35), with larger increases in IL-6 production following MBSR compared to HEP.
Conclusions: Results show that mindfulness training may be effective for boosting innate immunocompetence among lonely older adults. Given that immunocompetence tends to decline with age, mindfulness training may help to counteract the effects of aging and loneliness on infection risk and recovery from injury.

Abstract 1584
THE DIFFERENTIAL INFLUENCES OF POSITIVE PSYCHOLOGICAL FACTORS ON UPPER RESPIRATORY INFECTIONS IN AFRICAN AND EUROPEAN AMERICANS

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Positive psychological factors have been shown to have salubrious effects on physical health, including increased resistance to infectious illness. That said, the bulk of this work has utilized European-American (EA) samples or ignored possible race interactions potentially limiting the cross-cultural value of these findings. This is especially salient now given the large disparities in pandemic infectious illness outcomes across race, namely between African-Americans (AAs) and EAs. Therefore, we examined whether positive self-evaluations were equally protective against upper respiratory infection for 271 African (AA) and 700 European-American (EA) participants in a series of viral exposure studies. Participants were assessed at baseline for psychological functioning and physical health, then quarantined in a hotel where they were exposed experimentally to a respiratory virus and monitored for infection and symptom expression. Regression analyses revealed significant interactions between race and multiple positive psychological measures. Several positive factors, such as positive emotional style [$b = 0.08$, 95% CI$_{boot}$(-.008, .163), $p = .05$], self-esteem [$b = 0.58$, 95% CI$_{boot}$(.18, 1.04), $p < .01$], and self-reported health [$b = 0.66$, 95% CI$_{boot}$(.012, 1.43), $p = .049$] were associated with reduced illness upon experimental virus exposure for EAs, but in AAs positive factors did not appear helpful. These findings suggest that the effects of traditional positive psychological constructs on physical wellness may not generalize across races. This work points to the need to explore what self-reported affect truly indexes in different races and how proposed physiological and behavioral mechanisms connecting affect to health may vary across populations.
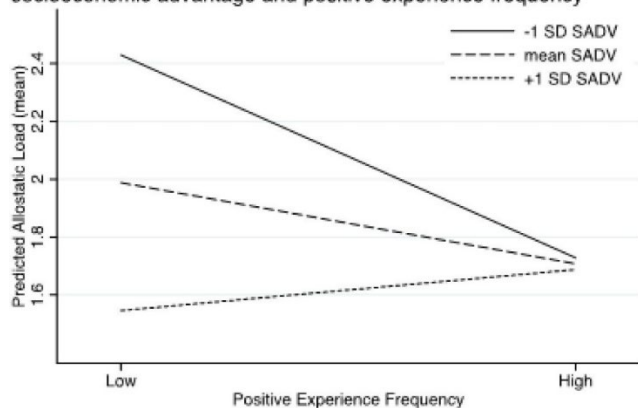
Abstract 1497
DO POSITIVE LIFE EXPERIENCES MODERATE THE ASSOCIATION BETWEEN SOCIOECONOMIC STATUS AND PHYSIOLOGICAL WELL-BEING? FREQUENCY OF POSITIVE EXPERIENCES AS A GREATER RESILIENCE FACTOR FOR THE LESS ADVANTAGED

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A large body of research has investigated the mechanisms through which socioeconomic status is linked to health and well-being across the life course. In addition to greater experience of stressors and greater deficits in psychosocial and other resources, our prior work suggests that less exposure to positive life experiences (POSEXP) may be one pathway through which those with less socioeconomic advantage (SADV) experience poorer physiological well-being. The current study extends this work by examining whether POSEXP associated with enjoyment in life (e.g., spending time in nature, socializing, relaxation) might moderate associations between SADV and allostatic load (AL), a multi-system index of physiological dysregulation. Analyses utilized data from the second wave of the Midlife in the U.S. (MIDUS) Study and MIDUS Refresher cohort (n=2,096, age 26–86, 54.8% female, 72.9% non-Hispanic white). A life course SADV score was constructed as a composite of childhood (parents' education and subjective financial) and adult (education level, income, and subjective financial) indicators (possible score 0 – 16). Average monthly frequency (0 - did not experience, 1 - 1 to 6 times, 2 - 7+ times) of 49 positive life experiences was assessed with the Positive Events Schedule. AL was constructed as a summary

index of the percent of biomarker indicators that fell into high-risk zones for 24 biomarkers across 7 physiological systems (possible score 0 – 7). Generalized estimating equations accounting for family clustering and including age, race, and gender covariates were used to assess association of SADV and POSEXP, and their interaction, with AL. Replicating prior findings, greater SADV (b = -.059***) and POSEXP (b = -.347***) were associated with lower AL. In addition, POSEXP was found to interact with SADV in predicting AL scores, such that greater POSEXP frequency was linked to lower AL for those with low SADV but not for those with high levels of SADV (see Figure 1). These findings suggest that less socioeconomically advantaged individuals, who may also have less access to positive life experiences, may reap the highest physiological benefit from such experiences. Enhancing opportunities for positive experience engagement may be modifiable routes to better physiological well-being in the less advantaged.

Figure 1. Predicted allostatic load scores as a function of cumulative socioeconomic advantage and positive experience frequency

Abstract 1308
SLEEP QUALITY, DURATION, AND EFFICIENCY AS PREDICTORS OF NEXT-MORNING EXPECTATIONS FOR STRESSORS AND POSITIVE EVENTS

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Background: Insufficient sleep—defined as shorter duration, poorer quality, and/or lower efficiency—has been linked to worse health and well-being outcomes, such as disruptions to emotional and stress processes and increased risks for developing chronic conditions. Although research supports the role of sleep as both an antecedent and consequence of daily psychosocial experiences, more consistent evidence suggests sleep is a stronger predictor of next-day affect, stressors, and positive events (PE) than vice versa. However, the mechanisms are unclear regarding *why* sleep is associated with exposure to stressors and PE on the following day. It is plausible that sleep may influence morning expectations for the day's stressors and PE, which then sets the stage for further cognitive, behavioral, and social (dis)engagement that bring about the occurrence of these events. Thus, the current study aims to examine the association between sleep and next-day stressor and PE anticipation.

Methods: In this pre-registered study, participants (N = 354) ages 19 to 74 (67% female, 70% White), completed daily diaries twice a day for up to 10 consecutive weekdays. Self-reported sleep and stressor and PE anticipation were assessed in the morning.

Results: Results from multilevel models suggested that nights with longer, better, or more efficient sleep were associated with lower next-day stressor anticipation (sleep duration: Est. = -0.01, $p < .05$; sleep efficiency: Est. = -.002, $p < .05$; sleep quality: Est. = -0.06, $p <$

.001). Interestingly, only sleep quality was related to higher anticipation of PE (Est. = 0.04, $p < .001$); no link was found with sleep duration or sleep efficiency.

Conclusion: The findings suggest that insufficient sleep may be more consequential to anticipation of future stressors than of positive events. Poorer, shorter, and less efficient sleep predicted more negative expectations for the day, whereas better-than-usual sleep quality was associated with greater positive expectations for the day. Future research could examine the mechanisms linking sleep-related anticipation of daily events to subsequent exposure to these events (e.g., via appraisals, situation selection).

Abstract 1427
THE EFFECT OF MUSIC ON STRESS RECOVERY

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Background: Stress is a common phenomenon in daily life and stress responses are usually considered adaptive processes. However, if stressors occur repeatedly or individuals fail to adequately recover from a stressor, negative health consequences might arise. Music is a widely used method to deal with stress experiences. Although there is a vast amount of research on the effect of music on stress responses, there is much less attention paid to how music plays a role in stress recovery. This study aimed to explore the effect of music on stress recovery using both subjective measurements and physiological indices.

Methods: One hundred and five healthy female participants (M_{age} = 23.62, SD_{age} = 2.78, $Range_{age}$ 18-30) underwent the Trier Social Stress Test (TSST). They were randomly allocated to four groups: group 1 (n = 25) listened to a researcher-selected piece of relaxing music; group 2 (n = 27) listened to self-selected relaxing music; group 3 (n = 26) listened to the sound of rippling water; and group 4 (n = 27) remained in silence. After 10 min of intervention, participants remained in the lab for 50 minutes for the recovery period. During the whole procedure, Visual Analogue Scales (VAS) were used for subjective stress measurement and saliva samples were collected for cortisol and saliva alpha-amylase (sAA) analysis.

Results: After excluding TSST non-responders, findings indicated that during recovery, the change of VAS scores was significantly different among groups ($F(3, 99)$ = 3.11, $p = 0.030$, $d = 0.71$); the area under the curve with respect to increase (AUC_i) of sAA was also significantly different cross groups ($F(3, 95)$ = 3.36, $p = 0.022$, $d = 0.85$); whereas there were no differences for the AUC_i of cortisol ($F(3, 72)$ = 0.90, $p = 0.445$, $d = 0.53$). The planned contrasts revealed that, for VAS change, the group 4 was higher than groups 1-3 ($t(99)$ = 0.049, $r = 0.20$). For AUC_i of sAA, group 1 was significantly higher than group 2 ($t(95)$ = 0.003, $r = 0.30$).

Conclusion: Music did not facilitate subjective stress recovery. Rather, listening to music or nature sounds decreased recovery compared to resting in silence. Self-selected music had a beneficial effect on sAA compared to researcher-selected music. These findings should be appropriately considered in the clinical context.

Paper Session 12 - Consequences of adversity and chronic stress across the lifespan
Thursday 13:45-14:45

Abstract 1570
ASSOCIATIONS BETWEEN LIFESPAN ADVERSE EXPERIENCES AND LATER LIFE CHRONIC STRESSORS AND THEIR APPRAISALS: AN ANALYSIS OF THE HEALTH AND RETIREMENT STUDY

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Background: Recent evidence suggests that Black adult Americans experience higher counts of stressors relative to their White counterparts but their perception of these stressors is comparatively less upsetting. It has been hypothesized that greater exposure to adversity during childhood and young-to-midlife promotes resiliency (lower negative appraisals) in the face of major life stressors later in life. Others, however, have suggested that an inverted-U relationship between adversity and resiliency may exist: some adversity exposure buffers against future negative appraisals compared to no or high exposure. The current study tested whether early and midlife adversity predicts later life stressor appraisal, whether these relationships are linear or curvilinear, and whether there are any differences between Black and White adults.

Methods: Data from the nationally representative Health and Retirement Study were used for the current analysis. White (N = 6,322) and Black (N = 1,446) adults > 50y reported experiences of 7 stressors over the past 12 months or longer (e.g. health, financial) and if so, how upsetting they were. Chronic stressors sum scores and mean appraisal were calculated. Participants also reported 9 adverse experiences from childhood (e.g. parents divorced, foster care) and 7 from adulthood (e.g. combat, jail).

Results: Black adults reported significantly more childhood and adulthood adversity, and more chronic stressors later in life. Covarying age, gender, Hispanic identity, number of chronic stressors, results indicate that increasing childhood and adulthood adversity significantly and positively (not negatively) predicted greater negative appraisals. There were no indication of curvilinear relationships between adversity in childhood or adulthood and reduced negative appraisals (all p's >0.05). Follow-up analyses revealed no differences between older Black and White adults in the relationships between childhood and adulthood adversity with appraisals.

Conclusions: Results indicate that increasing adversity before age 50 is associated with elevated, not reduced, negative appraisals in response to chronic stressors experienced across multiple domains later in life, with no indication of resiliency. Future research should disentangle how specific types of adverse experiences modulate appraisal across and within race and ethnicity groups.

Abstract 1236
SOCIOECONOMIC DISADVANTAGE, CHRONIC STRESS, AND PRO-INFLAMMATORY PHENOTYPE: AN INTEGRATIVE ANALYSIS ACROSS THE LIFESPAN

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Socioeconomic disadvantage confers risk for many chronic illnesses, and theories have highlighted chronic stress and alterations to inflammatory processes as key pathways. Specifically, theories posit that disadvantage heightens chronic stress, which promotes the development of a pro-inflammatory phenotype characterized by immune cells' exaggerated cytokine responses to challenge and lowered sensitivity to anti-inflammatory signals. Importantly, developmental perspectives emphasize that such physiological alterations should be more potent in early decades of life during a sensitive period when bodily tissues are highly plastic to environmental inputs. Examining these propositions has been challenging, as they require cell-culturing approaches to model functional aspects of inflammatory processes as well as a wide age range and longitudinal data to model changes and age effects across the lifespan. To overcome these challenges, we integrated data from 5 studies (3 were longitudinal), each included interview data on disadvantage (income, savings, education) and chronic stress (UCLA Life Stress Interview), and in-vitro inflammatory measures, to produce a sample of 1,607 individuals aged 8 to 60 years. Latent profile analyses were conducted to estimate a pro-inflammatory phenotype, characterized by higher stimulated cytokine production and lower sensitivity to inhibition signals. Using these data, we examined (1) whether disadvantage and chronic stress predicted pro-inflammatory phenotype cross-sectionally and longitudinally; (2) whether these associations varied by age; and (3) whether disadvantage operated via chronic stress. Results indicated that more disadvantage and chronic stress was linked with increased odds of exhibiting a pro-inflammatory phenotype cross-sectionally and longitudinally. Of note, the magnitude of these links decreased with age, such that they were strongest in childhood, weaker in adolescence, and not apparent in mid/late adulthood (Figure 1). Furthermore, chronic stress operated as a pathway linking disadvantage and pro-inflammatory phenotype, both cross-sectionally and longitudinally (Figure 2), and these indirect effects were strongest in childhood and weakened across the lifespan. Collectively, these findings highlight the importance of considering the developmental context when examining mechanisms underlying health disparities.
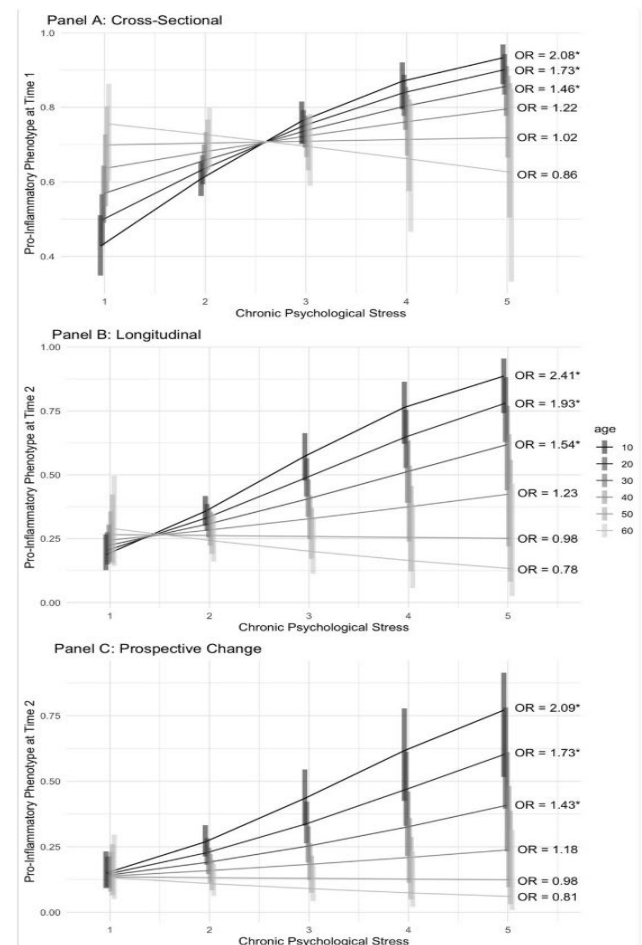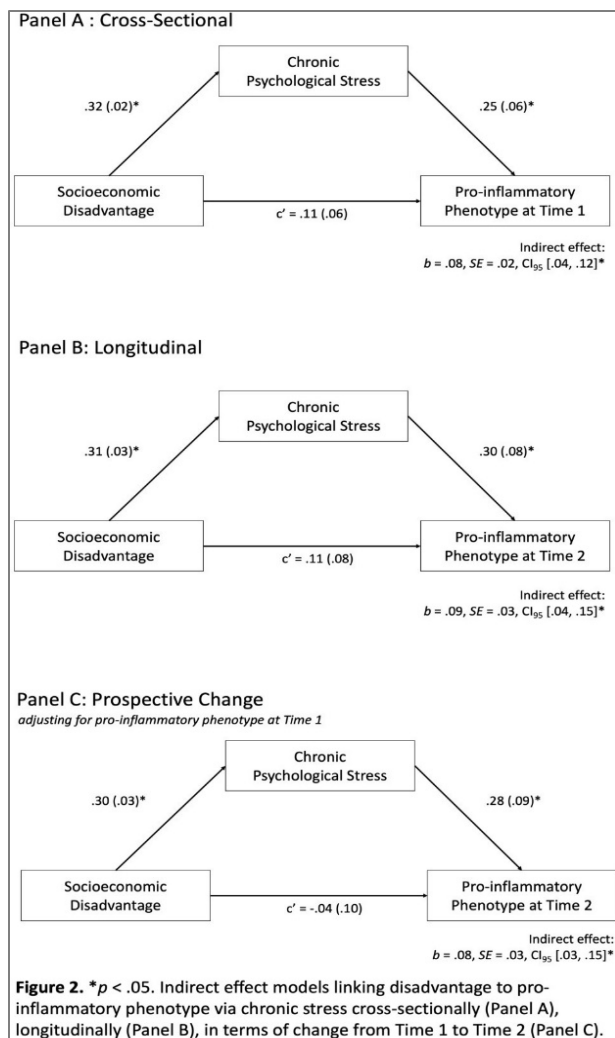
Figure 1. *p < .05. Age moderated the links between chronic stress and pro-inflammatory phenotype cross-sectionally (Panel A), longitudinally (Panel B), and in terms of prospective change from Time 1 to Time 2 (Panel C). OR refers to odds ratio.

Figure 2. *p < .05. Indirect effect models linking disadvantage to pro-inflammatory phenotype via chronic stress cross-sectionally (Panel A), longitudinally (Panel B), in terms of change from Time 1 to Time 2 (Panel C).

Abstract 1437

SUBJECTIVE SOCIOECONOMIC STATUS ACROSS THE LIFE COURSE AND AGE-RELATED DECREMENTS IN KIDNEY FUNCTION AMONG BLACK AND WHITE AMERICAN ADULTS

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Background: Faster age-related decrement in kidney function among healthy adults is a robust predictor for the development of chronic kidney disease (CKD) and is the major biological pathway to socioeconomic and racial disparities in CKD. Previous studies have not explored the role of subjective socioeconomic status (SES) across the life course on age-related decrements in kidney function across adulthood. The goal of this study was two-fold: 1) to examine the association between multiple indicators of subjective SES across the life course and age-related decrements in kidney function and 2) to identify different profiles of subjective SES across the life course and whether they link differently to age-related decrements in kidney function.

Methods: Data were from the Midlife in the United States (MIDUS) study wave two and Refresher, including 1,861 adults (ages=34-84; *n* Black=326) who completed the baseline survey and biomarker portion of the study. Estimated glomerular filtration rate (eGFR) based on serum creatinine was used to proxy kidney function. Subjective SES included childhood financial status, current

subjective social status, current financial well-being, and current financial strain. Profiles of subjective SES across the life course were examined using latent class analysis (LCA).

Results: Current financial well-being (especially lower financial status: *B*=0.05, *SE*=0.01, *p*<.01) and current financial strain (especially not enough money to fulfill needs: *B*=0.27, *SE*=0.07, *p*<.001), but not childhood financial status and current subjective social status, were associated with age-related decrements in eGFR. The association between each indicator of subjective SES and age-related decrements in eGFR was not conditional on race. Results from LCA indicated that experience of any adversity associated with subjective SES across the life course was associated with faster age-related decrements in eGFR relative to those with stable high subjective SES across the life course.

Discussion: Despite the long-standing interests in understanding the role of subjective SES in health disparities, little is known whether it is associated with kidney functioning across adulthood. The current analysis showed that current financial status and financial strains were a robust predictor of age-related decrements in eGFR, above and beyond objective SES.

Submission ID: 1437

Subjective Socioeconomic Status across the Life Course and Age-Related Decrements in Kidney Function among Black and white American Adults

Table 1. Comparison of subjective SES indicators among Black and white participants (*N* = 1,861)

Subjective SES	Black (*n* = 326)	White (*n* = 1,535)	All (*N* = 1,861)	t/ χ^2
Childhood financial well-being				
Lower childhood financial status (%)	28.4	29.5	29.3	0.14
Current subjective social status				
Subjective social status (*M* [SD])	6.22 (2.08)	6.60 (1.74)	6.54 (1.80)	2.88**
Current financial well-being				
Current financial status (*M* [SD])	4.74 (2.54)	6.42 (2.19)	6.13 (2.34)	11.07***
Control over financial status (*M* [SD])	6.17 (3.14)	6.84 (2.47)	6.72 (2.61)	3.59***
Current financial strain				
Not enough money to meet needs (%)	53.8	18.9	25.0	174.64***
Struggling to pay bills (%)	60.7	27.5	33.3	133.62***

Note: t/ χ^2 = t value or chi-square value from comparison across racial groups. * = *p* < .05, ** = *p* < .01, and *** = *p* < .001.

Table 2. Summary from the multiple linear regression analysis on the association between each indicator of subjective SES across the life course and age-related decrements in eGFR (*N* = 1,861)

	Model 1[a] B (SE)	95% CI	Model 2[b] B (SE)	95% CI	Model 3[c] B (SE)	95% CI	Model 4[d] B (SE)	95% CI
Childhood Financial Status								
Intercept	91.39 (0.89)***	89.65, 93.14	92.95 (1.51)***	89.97, 95.93	98.02 (1.68)***	94.72, 101.32	97.93 (2.05)***	93.92, 101.95
Age (mean centered)	-4.78 (0.06)***	-0.89, -0.67	-0.77 (0.06)***	-0.89, -0.66	-0.91 (0.14)***	-1.19, -0.63	-0.86 (0.14)***	-1.14, -0.58
Childhood financial status	-0.90 (0.81)	-2.50, 0.70	-0.53 (0.82)	-2.13, 1.08	-2.17 (1.98)	-6.04, 1.71	-2.29 (1.98)	-6.19, 1.60
Childhood financial status*Age	-0.08 (0.07)	-0.21, 0.05	-0.07 (0.07)	-0.20, 0.06	-0.23 (0.17)	-0.55, 0.10	-0.26 (0.17)	-0.58, 0.07
Race (0 = Black, 1 = white)					-8.80 (1.79)***	-12.31, -5.30	-8.23 (1.83)***	-11.82, -4.65
Age*Race					0.18 (0.15)	-0.12, 0.48	0.13 (0.15)	-0.18, 0.43
Childhood financial status*Race					1.12 (2.16)	-3.11, 5.36	1.71 (2.17)	-2.54, 5.97
Childhood financial status*Age*Race					0.21 (0.18)	-0.14, 0.57	0.25 (0.18)	-0.10, 0.61
F	159.5***		78.2***		105.9***		64.88***	
Adj. R²	.30		.32		.34		.35	
Subjective Social Status								
Intercept	90.43 (0.70)***	89.06, 91.80	92.64 (1.43)***	89.83, 95.45	96.62 (1.09)***	94.48, 98.77	97.01 (1.62)***	93.84, 100.19
Age (centered)	-4.82 (0.03)***	-0.88, -0.76	-0.81 (0.03)***	-0.87, -0.75	-1.02 (0.08)***	-1.18, -0.86	-0.98 (0.08)***	-1.14, -0.82
Subjective social status (centered)	0.11 (0.21)	-0.30, 0.53	0.37 (0.22)	-0.06, 0.79	0.51 (0.49)	-0.44, 1.46	0.76 (0.49)	-0.20, 1.72
Subjective social status*Age	0.02 (0.02)	-0.01, 0.05	0.02 (0.02)	-0.01, 0.05	0.01 (0.04)	-0.07, 0.08	0.02 (0.04)	-0.05, 0.10
Race (0 = Black, 1 = white)					-8.22 (1.06)***	-10.3, -6.14	-7.30 (1.12)***	-9.50, -5.09
Age*Race					0.27 (0.09)**	0.10, 0.44	0.25 (0.09)**	0.08, 0.42
Subjective social status*Race					-0.42 (0.54)	-1.47, 0.64	-0.53 (0.54)	-1.59, 0.53
Subjective social status*Age*Race					0.01 (0.04)	-0.08, 0.09	-0.01 (0.04)	-0.09, 0.08
F	154.30***		74.48***		100.22***		60.99***	
Adj. R²	.30		.31		.33		.34	
Current Financial Status								
Intercept	90.34 (0.70)***	88.97, 91.71	91.94 (1.44)***	88.11, 94.76	96.55 (1.14)***	94.32, 98.77	96.63 (1.69)***	93.32, 99.94
Age (centered)	-4.84 (0.03)***	-0.90, -0.78	-0.83 (0.03)***	-0.90, -0.77	-1.04 (0.08)***	-1.20, -0.89	-1.00 (0.08)***	-1.16, -0.84
Current financial status (centered)	-0.37 (0.16)†	-0.68, -0.05	-0.05 (0.17)	-0.39, 0.29	0.17 (0.35)	-0.52, 0.87	0.31 (0.36)	-0.40, 1.02
Current financial status*Age	0.05 (0.01)**	0.02, 0.07	0.05 (0.01)**	0.02, 0.07	0.04 (0.03)	-0.02, 0.10	0.04 (0.03)	-0.02, 0.09
Race (0 = Black, 1 = white)					-8.20 (1.10)***	-10.35, -6.05	-7.52 (1.15)***	-9.77, -5.28
Age*Race					0.28 (0.09)**	0.12, 0.45	0.25 (0.09)**	0.08, 0.42
Current financial status*Race					-0.27 (0.40)	-1.05, 0.51	-0.29 (0.40)	-1.08, 0.50
Current financial status*Age*Race					-0.01 (0.03)	-0.08, 0.05	-0.01 (0.03)	-0.07, 0.05
F	166.57***		80.66***		107.57***		65.95***	
Adj. R²	.31		.33		.34		.35	

	Model 1[a]		Model 2[b]		Model 3[b]		Model 4[a]	
	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI
Control Over Financial Status								
Intercept	90.59 (0.70)***	89.22, 91.96	92.43 (1.42)***	89.62, 95.23	96.46 (1.06)***	94.37, 98.53	96.56 (1.60)***	93.41, 99.70
Age (centered)	-0.84 (0.03)***	-0.90, -0.78	-0.83 (0.03)***	-0.90, -0.76	-1.05 (0.07)***	-1.20, -0.91	-1.01 (0.08)***	-1.16, -0.86
Control over financial status	-0.21 (0.14)	-0.49, 0.07	-0.05 (0.15)	-0.34, 0.23	-0.11 (0.28)	-0.67, 0.44	-0.02 (0.29)	-0.58, 0.55
Control over financial status*Age	0.02 (0.01)	-0.01, 0.04	0.02 (0.01)	-0.01, 0.04	0.04 (0.02)	-0.01, 0.09	0.04 (0.02)	-0.01, 0.08
Race (0 = Black, 1 = white)					-8.01 (1.01)***	-9.99, -6.02	-7.27 (1.08)***	-9.38, -5.16
Age*Race					0.30 (0.08)***	0.15, 0.46	0.27 (0.08)**	0.11, 0.43
Control over financial status*Race					0.01 (0.33)	-0.62, 0.65	-0.06 (0.33)	-0.70, 0.59
Control over financial status*Age*Race					-0.03 (0.03)	-0.08, 0.02	-0.03 (0.03)	-0.08, 0.02
F	163.60***		79.83***		107.76***		65.92***	
Adj. R^2	.31		.32		.34		.35	
Availability of Money to Meet Needs								
Intercept	91.86 (0.93)***	90.05, 93.68	92.52 (1.49)***	89.60, 95.44	96.81 (1.35)***	94.16, 99.46	96.82 (1.76)***	93.37, 100.27
Age (centered)	-1.04 (0.07)***	-1.17, -0.91	-1.03 (0.07)***	-1.17, -0.90	-1.25 (0.11)***	-1.46, -1.05	-1.19 (0.11)***	-1.40, -0.98
Money to meet needs (0 = not enough, 1 = enough or more)	-1.98 (0.88)*	-3.70, -0.25	-0.50 (0.93)	-2.31, 1.32	-0.52 (1.82)	-4.10, 3.06	-0.12 (1.85)	-3.75, 3.51
Money to meet needs*Age	0.27 (0.07)***	0.12, 0.41	0.27 (0.07)***	0.12, 0.42	0.38 (0.15)*	0.09, 0.67	0.34 (0.15)*	0.05, 0.63
Race (0 = Black, 1 = white)					-8.56 (1.57)***	-11.64, -5.48	-8.05 (1.62)***	-11.23, -4.88
Money to meet needs*Race					0.39 (0.13)**	0.15, 0.46	0.32 (0.14)*	0.05, 0.58
Age*Race					0.80 (2.10)	-3.31, 4.91	0.99 (2.11)	-3.14, 5.12
Money to meet needs*Age*Race					-0.25 (0.17)	-0.59, 0.09	-0.18 (0.17)	-0.52, 0.16
F	168.92***		81.62***		109.01***		66.72***	
Adj. R^2	.31		.33		.34		.35	
Struggle Paying Bills								
Intercept	92.11 (0.85)***	90.45, 93.77	92.78 (1.46)***	89.92, 95.64	97.52 (1.31)***	94.95, 100.09	96.98 (1.73)***	93.59, 100.38
Age (centered)	-0.93 (0.06)***	-1.04, -0.82	-0.93 (0.06)***	-1.04, -0.82	-1.14 (0.10)***	-1.33, -0.95	-1.11 (0.10)***	-1.30, -0.91
Struggling paying bills (0 = yes, 1 = no)	-2.82 (0.81)***	-4.41, -1.24	-1.66 (0.84)*	-3.32, -0.01	-3.21 (1.85)	-6.83, 0.41	-2.49 (1.87)	-6.16, 1.19
Struggling paying bills*Age	0.16 (0.07)*	0.03, 0.29	0.17 (0.07)*	0.04, 0.30	0.18 (0.15)	-0.12, 0.47	0.21 (0.15)	-0.08, 0.51
Race (0 = Black, 1 = white)					-8.59 (1.44)***	-11.42, -5.76	-7.79 (1.50)***	-10.72, -4.86
Age*Race					0.37 (0.12)**	0.14, 0.60	0.34 (0.12)**	0.11, 0.57
Struggling paying bills*Race					2.36 (2.05)	-1.67, 6.38	1.91 (2.07)	-2.14, 5.96
Struggling paying bills*Age*Race					-0.15 (0.17)	-0.48, 0.18	-0.16 (0.17)	-0.49, 0.17
F	169.26		81.69		108.86***		66.65***	

	Model 1[a]		Model 2[b]		Model 3[a]		Model 4[b]	
	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI
Adj. R^2	.31		.33		.34		.35	

Note: a = sex and study cohort were included as covariates; b = sex, study cohort, education level, household income to poverty ratio, and health-related factors were included as covariates; * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table 3. Model fit information for the 1- to 5-class solution from the latent class analysis of subjective SES across the life course

No. of classes	Log-likelihood	Degrees of freedom	AIC	BIC	a-BIC	Entropy	BLRT
1	-6176.54	57	1994.58	2027.75	2008.69	—	—
2	-5272.11	50	199.73	271.61	230.31	.86	$p < .01$
3	-5230.47	43	130.45	241.02	177.48	.86	$p < .01$
4	**-5201.47**	**36**	**86.44**	**235.72**	**149.94**	**.74**	**$p < .01$**
5	-5197.30	29	92.10	280.08	172.06	.78	$p = .74$

Note: Dashes indicate criterion was not applicable; boldface type indicates selected model. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; BLRT = bootstrapped likelihood ratio test.

Table 4. Latent class membership probabilities and item-response probabilities

Indicator	Class 1: Downward Mobility (17.56%)	Class 2: Low Strain (5.74%)	Class 3: High Strain (19.53%)	Class 4: Stable High (57.18%)
Childhood Financial Status				
Higher childhood financial status	**.66**	.51	**.67**	**.75**
Current Social Status				
Higher community standing	.52	.49	**.75**	**.86**
Current Financial Well-Being				
Higher current financial status	.10	.53	**.82**	**1.00**
Higher control over financial status	.35	.51	**.89**	**.97**
Current Financial Strain				
Enough money to meet needs	.12	**1.00**	.57	**.98**
Not difficult to pay monthly bills	.04	**1.00**	.29	**.95**

Table 5. Latent classes of subjective SES mobility and age-related decrements in eGFR (N = 1,861)

	Model 1[a]		Model 2[h]	
	B (SE)	95% CI	B (SE)	95% CI
Intercept	**91.25 (1.18)***	88.94, 93.56	**91.71 (1.73)***	88.32, 95.10
Age (centered)	**-0.73 (0.04)***	-0.80, -0.66	**-0.72 (0.04)***	-0.80, -0.65
Subjective SES Mobility				
Downward vs Stable High	**2.81 (1.02)**	2.81, 4.82	1.23 (1.09)	-0.91, 3.37
Low Strain vs Stable High	0.40 (1.71)	-2.95, 3.74	-0.71 (1.71)	-4.07, 2.65
High Strain vs Stable High	**2.32 (1.00)***	0.37, 4.27	1.21 (1.03)	-0.80, 3.22
Subjective SES Mobility*Age				
Downward vs Stable High *Age	**-0.25 (0.09)**	-0.41, -0.08	**-0.26 (0.09)**	-0.42, -0.09
Low Strain vs Stable High *Age	**-0.34 (0.14)***	-0.61, -0.06	**-0.32 (0.14)***	-0.59, -0.05
High Strain vs Stable High *Age	**-0.22 (0.08)**	-0.38, -0.06	**-0.20 (0.08)***	-0.37, -0.04
F	95.93***		60.71***	
Adj. R-squared	.32		.33	

Note: a = sex and study cohort were included as covariates; b = sex, study cohort, education level, household income to poverty ratio, and health-related factors were included as covariates; * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Table 6. Racial differences in the association between subjective SES mobility and age-related decrements in eGFR (N = 1,861)

	Model 1[a]		Model 2[b]	
	B (SE)	95% CI	B (SE)	95% CI
Intercept	**96.33 (1.96)***	92.49, 100.17	**95.21 (2.36)***	90.59, 99.83
Age (centered)	**-0.81 (0.14)***	-1.08, -0.55	**-0.80 (0.14)***	-1.07, -0.53
Subjective SES Mobility				
Downward vs Stable High	2.62 (2.25)	-1.79, 7.03	1.82 (2.31)	-2.73, 6.35
Low Strain vs Stable High	10.78 (5.61)	-0.22, 21.79	9.90 (5.60)	-1.08, 20.88
High Strain vs Stable High	2.94 (2.36)	-1.69, 7.57	2.64 (2.39)	-2.04, 7.33
Subjective SES Mobility*Age				
Downward vs Stable High *Age	**-0.47 (0.19)***	-0.83, -0.10	**-0.45 (0.19)***	-0.81, -0.09
Low Strain vs Stable High *Age	-0.30 (0.40)	-1.08, 0.48	-0.26 (0.40)	-1.03, 0.52
High Strain vs Stable High *Age	-0.24 (0.19)	-0.61, 0.13	-0.18 (0.19)	-0.55 0.20
Race (0 = Black, 1 = white)	**-5.69 (1.73)**	-9.09, -2.30	**-5.28 (0.17)**	-8.69, -1.86
Age*Race	0.10 (0.14)	-0.18, 0.37	0.10 (0.14)	-0.17, 0.38
Subjective SES Mobility*Race				
Downward vs Stable High*Race	-2.20 (2.54)	-7.18, 2.79	-1.70 (2.56)	-6.72, 3.32
Low Strain vs Stable High*Race	-11.49 (5.88)	-23.02, 0.03	-11.07 (5.85)	-22.54, 0.41
High Strain vs Stable High*Race	-2.53 (2.61)	-7.64, 2.59	-2.74 (2.63)	-7.90, 2.42
Subjective SES Mobility*Age*Race				
Downward vs Stable High*Age*Race	**0.44 (0.21)***	0.02, 0.85	0.38 (0.21)	-0.03, 0.79
Low Strain vs Stable High*Age*Race	0.01 (0.42)	-0.81, 0.84	-0.02 (0.42)	-0.85, 0.80
High Strain vs Stable High*Age*Race	0.13 (0.21)	-0.29, 0.54	0.05 (0.21)	-0.37, 0.46
F	58.72***		44.10***	
Adj. R-squared	.35		.35	

Note: a = sex and study cohort were included as covariates; b = sex, study cohort, education level, household income to poverty ratio, and health-related factors were included as covariates; * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Abstract 1157
ADVERSE CHILDHOOD EXPERIENCES AND SEVERITY LEVELS OF INFLAMMATION AND DEPRESSION FROM CHILDHOOD TO YOUNG ADULTHOOD: A LONGITUDINAL COHORT STUDY

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Background: Adverse childhood experiences (ACEs) are associated with depression and systemic inflammation in adults. However, limited longitudinal research has tested these relationships in children and young people, and it is unclear whether inflammation is an underlying mechanism through which ACEs influence depression.
Aims: We examined the longitudinal associations of several ACEs across different early-life periods with longitudinal patterns of early-life inflammation and depression in young adulthood and assessed the mediating role of inflammation.
Method: We analysed data from the Avon Longitudinal Study of Parents and Children (N=3,931). ACEs from the prenatal period through to adolescence were operationalised using cumulative scores,

single adversities, and dimensions derived through factor analysis (FA). Inflammation (C-reactive protein) was measured on three occasions (9-18yrs) and depressive symptoms were ascertained on four occasions (18-23yrs). Latent class growth analysis was employed to delineate group-based trajectories of inflammation and depression. The associations between ACEs and the inflammation/depression trajectories were tested using multinomial logistic regression analysis.

Results: Most types of ACEs across all early-life periods were associated with elevated depression trajectories, with larger associations for threat-related adversities compared with other ACEs. The relationships between ACEs and early-life inflammation were weak, but some associations were observed with bullying victimisation and sexual abuse in late childhood/adolescence. Inflammation was unrelated to depression and did not mediate the associations with ACEs.

Conclusion: ACEs are consistently associated with depression, whereas the associations of inflammation with ACEs and depression are weak in young people. Future research should consider different inflammatory markers and/or biological mechanisms.

Paper Session 13 - How physiological and psychological stress relate to brain function
Thursday 15:00-16:00

Abstract 1283
AEROBIC EXERCISE TRAINING AND DENTATE GYRUS FUNCTION IN HEALTHY OLDER ADULTS

Richard P. Sloan, PhD, Psychiatry, Adam Brickman, PhD, Frank Provenzano, PhD, Neurology, Vincenzo Lauriola, PhD, Psychiatry, Martina Pavlicova, PhD, Biostatistics, Jennifer Scodes, MS, Tse-Hwei Choo, MS, Jean Choi, MS, Psychiatry, Scott A. Small, MD, Neurology, Columbia University Irving Medical Center, New York, NY

With the world's population aging, normal age-related memory decline is an impending cognitive epidemic and evidence suggests that the dentate gyrus (DG), a hippocampal subunit, plays a significant role in this decline. Studies in rodents have shown that aerobic exercise (AE) enhances DG neurogenesis and neuronal signaling pathways important for synaptic plasticity and cognitive function but human studies are lacking.
In a randomized controlled trial, we assessed the impact of AE training on DG function, measured as MRI-based percent cerebral blood volume (CBV). We measured hippocampal-dependent cognitive function (the Modified Benton Recognition Task (ModBent), the Modified Rey Auditory Verbal Learning Test (ModRey), and the Stark Separation Bias test). To test the selectivity of the effect of AE on the DG, we also measured prefrontal dependent cognitive function (Continuous Paired Associative Learning and the Stroop task).
104 healthy inactive adults, age 20-75 years, 67% women were randomized to 12 weeks of AE training or a wait-list (WL) control group. In the AE group, after adjustment for study entry VO$_2$max, age, and sex, VO$_2$max significantly increased by 2.68 ml/kg/min (t(93)=4.35, p<.001). In the WL group, VO$_2$max decreased non-significantly by 0.42 ml/kg/min (t(93)=-0.71, p=.479). The effect of exercise training on DG-CBV was significantly moderated by age (treatment by age interaction: F(1,84)=5.43, p=.022). In those ≥ 45 years, AE led to a significant increase in DG-CBV (0.46 ± 0.20 %, *p* =.0244), while WL subjects experienced a non-significant decrease (0.08 ± 0.21 %, *p* =.706). Among those < 45 years, there was no differential effect of group assignment on DG-CBV. There were no significant effects of group assignment on the ModBent or ModRey tasks, nor was the group X age interaction significant. Contrary to expectation, the group by age interaction was marginally significant for the Stark task - in older participants, performance slightly worsened in the AE group (0.08 ± 0.08, *p* =.053). Exercise training had no effect on prefrontal cortex-

based tasks. Exercise-induced changes in DG-CBV did not mediate changes in cognitive indices.
Together, these findings provide support for the beneficial effect of aerobic exercise training on DG function but do not support its effects on the cognitive operations subserved by the DG.

Abstract 1213
CARDIOIMMUNOMETABOLIC RISK IS ASSOCIATED WITH BRAIN-AGE IN MIDLIFE.

Thomas E. Kraynak, MS, Psychology, Helmet T. Karim, PhD, Psychiatry, Stephen B. Manuck, PhD, Anna L. Marsland, PhD, Peter J. Gianaros, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Risk factors for cardiometabolic disease and systemic inflammation in midlife are associated with cognitive decline and dementia in later life. The neurocognitive risk conferred by cardiometabolic and inflammatory factors may be partly accounted for by their intermediate influence on brain aging. To date, however, cardiometabolic and inflammatory correlates of brain aging have been considered separately and not as reflecting correlated facets of a common pathophysiological phenotype. The present study thus tested whether a latent factor of cardioimmunometablic risk would be cross-sectionally associated with a validated structural magnetic resonance imaging (MRI) indicator of 'brain-age' derived by machine learning in midlife. Also tested was whether a latent cardioimmunometabolic risk factor would statistically explain previously documented sex and race differences in brain-age. Participants included those from two community samples of midlife adults free of confounding cardiometabolic, immune, and other medical and psychiatric conditions (total N = 362 men and 385 women, age 30-55, 77% white). Predicted brain-age was significantly correlated with chronological age (r = .72). Using structural equation modeling (SEM), a latent factor of cardioimmunometabolic risk was derived from indicators of blood pressure, insulin resistance, dyslipidemia, adiposity, and systemic inflammation. Measurement models accounting for chronological age, sex, race, study cohort, and MRI quality showed good model fit, $X^2(39) = 107.09$, p < .001; CFI = .985; TLI = .959; RMSEA = .049; SRMR = .020. In path models, greater cardioimmunometabolic risk was associated with greater brain-age (β = 0.14 p < .001). There were no significant sex differences in brain-age (p = .32). In comparison to white participants, nonwhite participants exhibited significantly greater brain-age (β = 0.07 p = .006), and cardioimmunometabolic risk significantly mediated race differences in brain-age (indirect β = 0.02, 95% confidence intervals = 0.007-0.035, proportion mediated = 27%). A latent factor reflecting cardioimmunometabolic risk in midlife is associated with a multivariate indicator of brain age, possibly comprising a pathway linking psychosocial factors to neurocognitive health in later life.

Paper Session 14 - Ecological momentary assessment studies on psychosomatic health
Thursday 15:00-16:00

Abstract 1227
ASSOCIATIONS AMONG SALIVARY CORTISOL, SLEEP, AND HEADACHES IN DAILY LIFE

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Background: Headaches are one of the most common physical symptoms that disrupt everyday life. While higher stress levels and insufficient sleep are well-established triggers of daily headaches, the joint effects of biological markers of stress and sleep on headaches

remain unexplored. Therefore, this study aimed to examine the daily associations between salivary cortisol, a physiological indicator of stress responses, and sleep duration on the experiences of headaches.
Methods: We used data from the second wave of the National Study of Daily Experiences (NSDE), a daily diary project of the Midlife in the United States (MIDUS) study. Across eight consecutive interview days, participants reported total duration of sleep and whether they experienced any headaches in the past 24 hours (0 = did not have any headaches; 1 = had a headache). On Days 2 through 5, participants provided their salivary cortisol samples four times a day (i.e., immediately upon waking, 30 minutes after waking, before lunch, and before bed). Area under the curve with respect to the ground (AUCg) was calculated using the four cortisol samples, which indicates the total amount of cortisol secretion on a given day. We examined 10,432 cortisol samples and 2,608 interview days from 1,107 adults aged between 33 and 83 (mean age = 56.3; 54.9% women, 93.7% white). Multilevel logistic models were used to examine the interaction effect between daily sleep duration and AUCg on daily headache symptoms.
**Results:** There was a significant interaction between sleep duration and AUCg on the odds of experiencing a headache (*OR* = 0.56; 95% CI = [0.35, 0.90]; *p* < .05). Region of significance tests (Figure 1) showed that on days when AUCg was higher than around average (AUCg > 0.16), shorter sleep duration was associated with higher odds of having a headache. However, on days when AUCg was extremely low (AUCg < -1.61), longer sleep duration was associated with higher odds of having a headache.
Conclusion: Results suggest that lack of sleep combined with higher levels of bological stress response are related to headache in daily life. Such finding highlights the importance of understanding the dynamics between daily stress response and sleep duration with regards to the experiences of headaches in everyday life.

Figure 1.
Johnson-Neyman plot for the conditional effect of daily sleep duration on headache
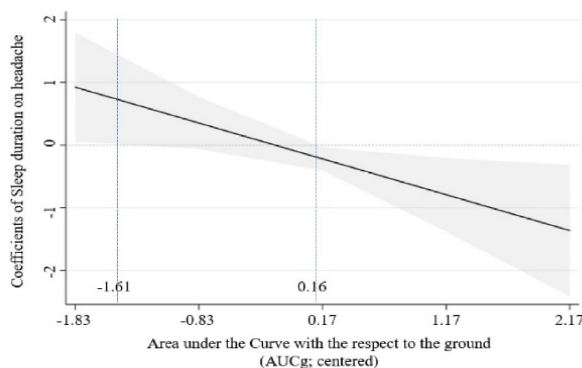
Abstract 1244
DAILY ACHES AND PAINS OF STRESS: COMPOUNDING EFFECTS OF MULTI-DOMAIN CUMULATIVE STRESS AND DAILY STRESS ON DAILY HEALTH

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Psychological stress across multiple domains (heretofore, 'multi-domain cumulative stress') is a particularly strong predictor of health over the lifespan. It has been proposed that multi-domain cumulative stress worsens health by altering the extent to which daily stressors predict daily affective states and daily physical health symptoms. Recent work confirms that multi-domain cumulative stress exacerbates the effects of daily stressors on daily affective states, though it remains untested the extent to which multi-domain cumulative stress potentiates the effects of daily stressors on daily reports of physical symptoms. We employed data from the second wave of the Midlife in the United States Survey and National Study of Daily Experiences (N = 2,022; M age =56.2; 57.2% female; 84.2% White; 96.7% not Hispanic; 45.4% with post-secondary education) to examine whether levels of multi-domain cumulative stress compounds the effects of daily stressors on daily physical health symptoms. Reports of psychological stress across eight domains (e.g., financial, relationship, work, family; aggregated into a cumulative score), occurrence of daily stressors, and occurrence, number, and severity of daily symptoms (e.g., headache, nausea) were analyzed using multilevel modeling. Greater multi-domain cumulative stress increased the odds of occurrence, number, and severity of daily symptoms (OR = 1.29, β = .56, β = .27, respectively; ps < .001). Days with stressors also had increased odds of occurrence, number, and severity of daily symptoms vs. days without stressors (OR = 1.94, β = .39, β = .29, respectively; ps < .001). Moreover, the effects of daily stressors on daily symptoms were potentiated in those with higher levels of multi-domain cumulative stress (ps < .001). For instance, individuals with multi-domain high cumulative stress scores [1 standard deviation (SD) > mean] had 2.3 increased odds of reporting a daily symptom on days with a stressor compared to non-stressor days, whereas individuals with low multi-domain cumulative stress scores (1 SD < mean) had 1.72 odds of reporting a daily symptom on days with a stressor compared to non-stressor days. In conclusion, the effects of daily-level experiences of stressful events on daily physical health may be most pronounced in those who report higher levels of accumulated stress across multiple life domains.

Abstract 1603
PRACTICE EFFECTS ON COGNITIVE PERFORMANCE ARE ATTENUATED BY HIGHER PERIPHERAL INFLAMMATION: A STUDY IN MIDLIFE ADULTS

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Cognitive decline with aging is an increasing problem which appears to start in midlife and can be exacerbated by inflammation. Here we investigated biomarkers of peripheral inflammation [basal cytokines, lipopolysaccharide-stimulated cytokines (*ex vivo*), C-reactive protein (CRP)] as moderators of age-related changes in cognitive functioning. As part of the Effects of Stress on Cognitive Aging, Physiology, and Emotion (ESCAPE) study, participants (N = 233; 65% women; 63% Black, 25% Hispanic; 25-65 years of age) completed ambulatory cognitive testing up to four times per day across two weeks, for three consecutive annual assessments (waves). After each 2-week ecological momentary assessment (EMA) burst, blood was collected and assayed for inflammatory biomarkers (CRP, IL-1β, IL-6, IL-8, IL-10, TNF-α). Performance on tasks involving spatial working memory (Euclidean distance errors), processing speed (Symbol Search reaction time), and working memory (2-back test accuracy) were averaged across all instances within an EMA burst. A CRP x Age interaction predicted change in spatial working memory (B = 0.003, [0.000, 0.005], *t*(133.60) = 2.350, *p* = 0.020) such that higher CRP levels at older ages (~60 years) were associated with a loss of practice effects across waves; at younger ages, CRP did not relate to change in spatial working memory. In a similar fashion, basal (B = -0.002, [-0.004, -0.000], *t*(103.26) = -2.399, *p* = 0.018) and stimulated cytokine levels (B = -0.002, [-0.004, -0.000], *t*(126.65) = -

2.183, $p = 0.031$) interacted with age to predict change in processing speed across waves. As practice effects constitute an important and adaptive component of cognition, these results indicate that inflammation may be critically associated with changes in cognitive functioning in midlife adults.

Abstract 1277
THE ASSOCIATIONS OF SLEEP DISTURBANCE WITH ALLOSTATIC LOAD - A SYSTEMATIC REVIEW AND META-ANALYSIS

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BACKGROUND: The negative effects of sleep disturbances on physical and mental health are well-established, but the mechanisms are not fully understood. The allostatic load model is a possible framework for understanding the adverse effects of sleep disturbances. A systematic review and meta-analysis was conducted to examine the associations of sleep quality and sleep duration with allostatic load.

METHODS: PubMed, PsycInfo, Embase, and Web of Science were searched for records on sleep and allostatic load published between 1993 and 2020. Screening of 359 records by two independent raters resulted in the final inclusion of 11 studies of 16,506 participants in a random effects meta-analysis. To aid the interpretation of results, the frequentist approach was supplemented with Bayesian Model-Averaged meta-analysis.

RESULTS: Poor sleep quality was associated with higher allostatic load (effect size correlation [ESr]=0.12; 95%CI: 0.09-0.15; p<0.001; N=10). The association was weaker in samples with older participants (Slope=-0.01; p=0.026). Compared with normal sleep (7–8 hours), long sleep ($\geq$ 9 hours) was statistically significantly associated with higher allostatic load (ESr=0.12; 95%CI: 0.04-0.20; p=0.003; N=3). No association was found for short sleep ($\leq$ 5 hours or $\leq$ 6 hours; ESr=0.05; 95%CI: .00-0.11; p = 0.069). Supplementary Bayesian analyses revealed that the alternative hypothesis, i.e., that the association between poor sleep quality and higher allostatic load is non-zero, is extremely likely, corresponding to a Bayes Factor (BF) of 1270. In contrast, the available evidence for an association between long sleep and high allostatic load remains weak (BF=1.8). No moderating effects were found of allostatic load operational definitions, i.e., the number of biomarkers and systems analyzed.

CONCLUSION: While the results indicate a strong association between self-reported sleep quality and higher allostatic load, future research should seek to determine directionality of effects and identify mechanisms linking poor sleep with allostatic load in longitudinal studies.

Abstract 1088
A META-ANALYSIS OF STUDIES USING COMMON MEASURES OF HEART RATE VARIABILITY TO PREDICT ALL-CAUSE AND CARDIAC MORTALITY IN CLINICAL AND NONCLINICAL POPULATIONS

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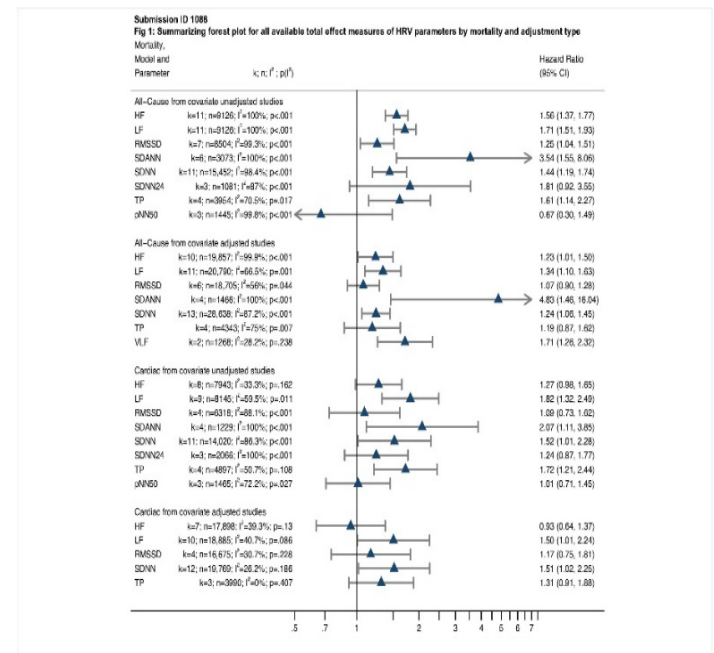
Background: Heart rate variability (HRV) is described as a measure of adaptation to environmental stimuli. In addition, HRV has been investigated as a predictor of disease and mortality risk. With the present comprehensive meta-analysis of 32 studies and two individual participant datasets (IPD), we aim to quantify the general association between measures of adaptation (i.e. HRV) and the potential terminal outcome of continued adaptation failure as represented by premature death or mortality events subsumed in all-cause and cardiac mortality measures.

Methods: MEDLINE database was systematically searched including studies published between January 1997 and June 2019 were considered. The search was updated in March 2021, resulting in 254 records screened. A total of 32 studies and two IPD (Whitehall II, MIDUS) with 37 samples comprising a total of 38,008 participants were included and analyzed following COCHRANE and PRISMA guidelines.

Despite the existing moderate to large heterogeneity across included populations, study features, and units (e.g. msec or sec) or cut-offs (e.g. lowest quartile or certain threshold) in HRV parameters, a substantial negative association (Hazard Ratios [HR] >1) between the adaptation measure (HRV) and mortality was found (summary Figure 1) in random effect meta regressions.

Leave-one-out-sensitivity analysis indicated no influential study. Meta-regressions revealed no effect modifier for HRs extracted from covariate-adjusted studies. Relevant effect modifiers from covariate-unadjusted models were mean follow-up time, population type, ECG recording length, and sex. Most of the examined parameters showed a comparable magnitude of hazard ratios (HR). Sub-analyses of studies comparing the lowest quartile (weighted average cutpoint $\leq$13msec vs. rest) yielded a combined HR of 1.65 (95% CI: 1.37-1.98) for 5-min-RMSSD (Follow-up time 14.5 years). In comparison, this risk exceeds the mortality risk of white coat hypertension (HR=1.33, 95%CI 1.07–1.67).

Conclusion: In conclusion, several parameters of HRV were found to be a nonspecific predictor of mortality with a lower value corresponding to a higher risk of all-cause and cardiac mortality. Future work may elaborate sex- and age stratified clinical reference or cut-off values for HRV parameters to additionally improved risk prediction of this non-invasive, cost-effective marker.

Submission ID 1088
Fig 1: Summarizing forest plot for all available total effect measures of HRV parameters by mortality and adjustment type

Abstract 1235

OBESITY AND INDIVIDUAL SYMPTOMS OF DEPRESSION: A POOLED ANALYSIS OF 15 POPULATION-BASED COHORT STUDIES

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Background. Obesity may increase the risk of depression, but symptom-specific associations that could potentially inform more targeted treatments remain uncertain. We explored the cross-sectional and longitudinal associations between excess body weight and an array of depression-related symptoms.

Method. This random-effects pooled analysis included 57,532 individuals from 15 population-based cohorts aged ≥18 years. Height and weight were measured at baseline and body mass index (BMI) was computed. Using validated self-report measures, 24 symptoms of depression were assessed once in 15 cross-sectional, and twice in 7 prospective cohort studies (mean follow-up 3.2 years).

Results. At baseline, 38.3% of participants were overweight (BMI between 25 and 29.9), 20.9% class I obese (BMI between 30 and 34.9), and 13.0% class II-III obese (BMI≥35). A total of 12.3% were classified as depressed. The proportion of depressive symptoms ranged between 1·1% (suicidal ideation) and 21.4% (sleep problems). After adjustment for demographic and illness-related factors, obesity class I was associated cross-sectionally with 1.11-fold (95% confidence interval 1.01-1.22) and obesity class II-III with 1.31-fold (1.16-1.49) higher odds of depression. In symptom-specific analyses, equally strong or stronger associations were observed for five distinct symptoms: everything was an effort, lack of energy, little interest in doing things, felt bad about myself, and felt depressed. The odds of having three or more versus none, one, or two of the identified symptoms were 1.26 (1.04-1.53) for obesity class I and 1.64 (1.35-2.00) for obesity class II-III. Symptom-specific associations were confirmed in longitudinal analyses; among individuals with depression; in age-stratified analyses; and were stronger in women compared with men. In contrast, we found robust evidence against an association between obesity and four symptoms: felt fearful, hopeless, life had been a failure, and talked less than usual.

Conclusions. Individuals with obesity, particularly women, are prone to a distinct set of depression-related symptoms not well characterized by existing depression subtypes, such as atypical or melancholic depression. Awareness of this specific obesity-related symptom profile may inform future research and the design of personalized treatments for depression and obesity.

Paper Session 16 - Brain mechanisms underlying psychosomatic health
Thursday 15:00-16:00

Abstract 1438

BRAIN CHANGES UNDERLYING IBS SYMPTOM IMPROVEMENT IN RESPONSE TO MINDFULNESS-BASED TREATMENT

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Background: Characterized by persistent abdominal pain and altered bowel habits, irritable bowel syndrome (IBS) is a chronic visceral pain disorder with prevalence rates of 8-12% of the population. The aim of this study was to explore brain changes underpinning IBS symptom improvement in response to mindfulness-based treatment. Therefore, single arm interventional design was employed to determine the effects of mindfulness-based stress reduction (MBSR), on brain resting state functional connectivity (RSFC) in IBS.

Methods. T1-weighted and RS-fMRI brain images were obtained in 48 female patients (32 clinical responders, 16 nonresponders) on a 3T Siemens Prisma scanner before and after 8-week MBSR group treatment. Responder status was defined by a change of ≥ 50 point on the IBS Severity Scoring System (IBS-SSS) post MBSR. Group differences were assessed via general linear models. RSFC was computed using the CONN toolbox. Brain regions were defined by the Schaeffer 400 functional cortical parcellation, Harvard-Oxford subcortical cortical, and the Harvard ascending arousal network atlases.

Results: There were no differences in IBS-SSS prior to MBSR training or mindfulness as measured by the Five Facets of Mindfulness Questionnaire (FFMQ). Following MBSR, significant group differences were found in FFMQ total change score (t(46)= -2.89, p= .006). Responders compared to nonresponders primarily showed increased RSFC 1) between default mode, salience, somatomotor, control, and dorsal attention networks and 2) within-network the default mode and somatomotor networks(q's<.05). An elastic-net regularized generalized logistic regression model with stability selection indicated that decreases in two pairwise connections (of the 64 identified), default-default and control-somatomotor, were most predictive of responder status (56% variance explained).

Conclusion: Overall, responders compared to nonresponders showed increased connectivity of the default mode network with other brain networks, suggesting a shift from a predominantly inward, retrospective, ruminative focus to one characterized by more reciprocal connectivity with externally focused attentional, salience, or sensory networks. The study provides support for the hypotheses that mindfulness training may improve IBS symptom severity via impact on the brain's RSFC.

Abstract 1285

BRAIN MECHANISMS UNDERLYING NEGATIVE AFFECT INDUCED SOMATIC SYMPTOM REPORTING IN FUNCTIONAL SOMATIC SYNDROME PATIENTS

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Previous studies have consistently shown that inducing negative affect through picture viewing without any somatic stimulation increases somatic symptom reporting in patients with functional somatic syndromes (FSS), such as fibromyalgia, chronic fatigue syndrome, and irritable bowel syndrome (IBS). The goal of this study was to investigate the neural mechanisms underlying such negative affect-induced somatic symptom reporting in FSS patients. Thirty patients with FSS (fibromyalgia and/or IBS) and 30 healthy controls (HC) watched blocks of neutral, positive and negative affective pictures during functional MRI scanning. Negative affect and somatic symptoms were rated after every picture block. Whole-brain

parcelwise robust GLM analysis was used to compare brain activation in the 489 brain parcels of the 2018 Wager combined atlas during negative vs. neutral picture viewing in FSS patients vs HC. Further, we compared activation of the neurologic pain signature (NPS) and the picture-induced negative emotion signature (PINES) to the negative vs neutral emotion contrast and investigated whether activation of the NPS mediated between-group differences in affective picture- induced somatic symptom reporting. Additionally, we searched for additional mediating brain activation patterns using the multivariate "principal direction of mediation (PDM)" method. More somatic symptoms were reported after watching negative compared to neutral pictures; this effect was larger in patients than in HC. Accordingly, patients showed stronger activation in somatosensory regions (SI/SII, insular regions) during negative vs. neutral picture viewing. Further, there was relatively stronger activation of the NPS, but not of the PINES, in patients compared to HC during negative vs. neutral picture viewing. Interestingly, activation of the NPS mediated the difference in somatic symptom reporting between patients and HC after watching negative vs neutral pictures. Two additional mediating brain patterns were identified using PDM. Our findings confirmed that picture-induced negative affect elicits somatic symptom reports in FSS patients as a result of activation of somatosensory and nociceptive brain patterns. These findings support the idea that affect-driven alterations in processing of bodily signals is a critical mechanism underlying FSS.

Abstract 1376
CLINICAL PRESENTATION AND RESTING STATE FUNCTIONAL CONNECTIVITY DIFFER BASED ON THE TEMPORAL ONSET OF SYMPTOMS IN PROVOKED VESTIBULODYNIA

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Background. Primary provoked vestibulodynia (PVD1) is marked by onset of symptoms at first provoking vulvar contact, while secondary PVD (PVD2) refers to symptom onset after some period of painless vulvar contact. Different pathophysiologic processes are thought to be involved in the development and maintenance of PVD1 and PVD2. The aim of this study was to examine differences in the clinical presentation and resting state functional connectivity (RSFC) between PVD1 and PVD2.
Methods. T1-weighted and RS-fMRI brain images were obtained in 46 PVD1 and 68 PVD2 women on a 3T Siemens Prisma scanner. All participants completed psychosocial and symptom assessments. Group differences were assessed via general linear models. RSFC was computed using the CONN toolbox. Brain regions were defined by the Schaeffer 400 functional cortical parcellation atlas, Harvard-Oxford subcortical atlas, and the Harvard ascending arousal network atlas.
Results: The PVD2 cohort reported significantly greater vulvodynia symptom unpleasantness ($d=0.52$) and higher levels of pain catastrophizing than PVD1 ($d=0.39$). No differences were observed between the PVD subtypes in evoked vulvar vestibular pain and vaginal muscle tenderness. PVD2 were more likely to experience sexual abuse during childhood (17.9%) and were more likely to report having grown up in households with substance abusers (28.4%) compared to PVD1(2.2%,13.3%, respectively). PVD2 compared to PVD1 exhibited increased RSFC between the dorsal attention and somatomotor networks (q < 0.01). Compared to PVD1, PVD2 had reduced connectivity between 1) the locus coeruleus and other brainstem nuclei including the median raphe (MR) nucleus (q < 0.05) and 2) the periaqueductal gray to the superior parietal cortex, a dorsal attention region (q < 0.05). Increased connectivity was observed between the serotonergic raphe and the primary sensory cortex in PVD2 compared to PVD1 patients (q < 0.05).
Conclusion. Results indicated that women with PVD 2 compared to PVD1 exhibit more pain catastrophizing and have experienced more

early life stress. RSFC of brain and brainstem regions involved in pain processing and modulation differed based on the temporal onset of PVD. Together the results support the hypotheses that different pathophysiologic mechanisms may be involved in the production and maintenance of symptoms in PVD1 and PVD2.

Abstract 1081
CLINICAL BENEFITS OF SELF-TRANSCENDENCE DURING MINDFULNESS TRAINING: RESULTS FROM FIVE RANDOMIZED CLINICAL TRIALS

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Self-transcendence is as a transient mental state characterized by the feeling of selflessness and expansive emotions such as bliss and awe. Self-transcendence is an established, therapeutic mechanism of mindfulness. Yet, few empirical studies have examined the clinical benefits of self-transcendent experiences arising during mindfulness-based interventions (MBIs).
In this presentation, we will review 5 randomized clinical trials (RCTs) that investigated self-transcendent experiences in the context of ultra-brief MBIs and an 8-week MBI, Mindfulness Oriented Recovery Enhancement (MORE).
Studies 1 (N=266) and 2 (N=118) found [1] a single, preoperative, ultra-brief MBI was able to induce self-transcendent states in a general sample of knee and hip replacement patients (Study 1: p<.001; Study 2: p=.001), [2] mindfully-induced self-transcendent states were associated with immediate decreases in pain intensity (Study 1: β=-.26, p=.001; Study 2: β=-.29, p=.005), and [3] the experience of self-transcendence before surgery predicted better postoperative physical function (β=.21, p=.033) and less pain (β=-.40, p=.021).
Study 3 (N=62) found that after 8-weeks of MORE, [1] opioid-treated chronic pain patients were able to achieve self-transcendent states during a laboratory-based, self-guided meditation practice (), [2] mindfully induced self-transcendent states were positively correlated with frontal theta power (β=.25, p=.038), and [3] increases in frontal theta power predicted opioid dose reductions 4 months after treatment ended (b=-1.83, p=.002).
Studies 4 (N=95) and 5 (N=250) found [1] 8-weeks of MORE increased the frequency with which opioid-treated chronic pain patients experienced self-transcendence (Study 4: F=82.43, p<.001; Study 5: F=44.74, p<.001), and [2] increases in self-transcendence predicted better pain (Study 4: β=-20, p=.025; Study 5: β=-23, p=.024) and opioid-related (Study 5: β=-23, p=.027) outcomes up to 9-months after treatment ended.
Together, these findings suggest self-transcendence is a viable therapeutic mechanism, even in samples of novice mindfulness practitioners. These findings further suggest the realization of self-transcendent states during MBIs is associated with both immediate and long term health benefits. Thus, further research on mindfully-induced self-transcendent states is indicated.

Paper Session 17 - Mechanisms of vascular health
Thursday 15:00-16:00

Abstract 1139
DIETARY QUALITY PREDICTS INFLAMMATION, CARDIOVASCULAR RISK BIOMARKERS, GUT LEAKINESS, AND DEPRESSIVE SYMPTOMS

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Dietary quality is integral to mental health. Meta-analytic evidence suggests that higher quality diets are associated with lower depressive symptoms and reduced risk of depression onset or recurrence. One

pathway from poor dietary quality to depression may involve physiological changes including systemic, low-grade inflammation and gut leakiness. In this longitudinal observational study, we explore relationships between dietary quality, inflammatory markers, gut leakiness, and depressive symptoms. On two occasions an average of 90 days apart, 162 people (81 couples) provided blood samples to assess inflammation (interleukin-6; IL-6, c-reactive protein; CRP, tumor necrosis factor-alpha; TNF-α), cardiovascular risk biomarkers (serum amyloid A; SAA, intercellular adhesion molecule-1; ICAM-1, vascular cell adhesion molecule-1; VCAM-1), and gut leakiness (lipopolysaccharide-binding protein; LBP, soluble CD14 (sCD14), and completed the Center for Epidemiological Studies Depression Scale (CES-D). They also completed three 24-hour food recalls – one at each visit, and one between visits, which were averaged and summarized via the Alternate Mediterranean Diet Index (AMED) and Alternative Healthy Eating Index (AHEI-2010). We also had these dietary indices, CES-D, and IL-6 in another study of healthy couples, which involved two visits an average of two years apart, so we included these additional data when modelling CES-D (Visit 1: n=214, Visit 2: n=131) and IL-6 (Visit 1: n=98, Visit 2: n=91). The effect of AMED or AHEI adherence on the outcomes of interest was not different at each visit ($ps>$.09). Across visits, those who were more adherent to the AMED had lower LBP ($p=$.027), LBP:sCD14 ($p=$.016), and SAA ($p=$.026). Those who were more adherent to the AHEI had lower depressive symptoms ($p=$.009), as well as lower levels of CRP ($p=$.009), I-CAM ($p=$.026), and SAA ($p=$.0005). In post-hoc mediation models, CRP emerged as a significant mediator of the relationship between poor AHEI adherence and higher depressive symptoms ($B=$ -.0218, $SE=$.0100, 95% CI: -.0430 - -.0043). These results suggest that AMED adherence is relevant to gastrointestinal health, while adherence to AHEI relates to depression and cardiovascular disease risk – in line with the index's purpose. Also, these findings situate inflammation on the pathway from poor dietary quality to increased depression risk.

Abstract 1537
ACUTE STRESS DISORDER SYMPTOMS AND SLEEP DISTURBANCE FOLLOWING STROKE

Alison Trainor, MS, Margaret E. Murdock, MS, Cara L. McMurry, MPH, Ian M. Kronish, MD, MPH, Ari Shechter, PhD, Center for Behavioral Cardiovascular Health, Columbia University Irving Medical Center, New York, NY

Background: Up to 70% of stroke survivors experience sleep disturbance during their recovery. Sleep disturbances, e.g., short sleep duration and poor sleep quality, are related to physical and mental health risk. Here, we examined whether higher acute stress symptoms due to stroke or transient ischemic attack (TIA) were associated with short sleep duration and poor sleep quality over the following month.
Methods: The sample consisted of patients in the Reactions to Acute Care and Hospitalization (REACH)-Stroke Study, an observational cohort assessing predictors of adverse psychological and cardiovascular outcomes following stroke/TIA. Participants were enrolled following presentation to the emergency department or hospital with stroke symptoms. Acute stress disorder symptoms at baseline were assessed using the Acute Stress Disorder Scale (ASDS). ASDS total scores ≥28 indicated probable acute stress disorder (ASD). Sleep duration and quality were assessed via self-report with questions from the Pittsburgh Sleep Quality Index. Short sleep duration was defined as <6 hours/night and bad quality sleep was defined as a rating of fairly or very bad sleep over the prior month. Binary logistic regression was conducted, producing odds ratios (OR) on the association between ASDS status at baseline and sleep duration and quality assessed 1-month later. Analyses controlled for age, gender, race and ethnicity, NIH Stroke Scale score, stroke event type, Patient Health Questionnaire-8 score, modified Rankin score, and discharge location.
Results: Of the n=400 participants included (mean age [SD]: 61.4 y [15.3], 51% female), 53.5% were categorized as having probable

ASD at baseline. At 1-month, 31.25% of participants reported short sleep and 24.5% reported poor sleep quality. Probable ASD was not significantly related to short sleep duration (OR: 1.41, 95% CI: 0.83-2.38, p=0.20), but was significantly related to poor sleep quality over the following month (OR: 1.98, 95% CI: 1.12-3.55, p=0.02).
Conclusions: Probable post-stroke ASD was significantly associated with poor sleep quality over the next month. Sleep disturbance in the month following an acute medical event is linked to adverse mental and physical health outcomes. Interventions to reduce stress and improve sleep quality in the early post-stroke period may help improve outcomes for stroke and TIA survivors.

Abstract 1502
LONGITUDINAL ASSOCIATIONS BETWEEN DEPRESSION, STRESS, AND PHYSICAL ACTIVITY IN PATIENTS WITH PERIPHERAL ARTERY DISEASE: A PATH ANALYSIS

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Introduction
A third of patients with peripheral artery disease (PAD) experience depression, and 1 in 5 report chronic distress following their PAD diagnosis. Depression and distress deplete self-care capacity e.g., being physically active. They are also associated with an increased risk of diminished health benefits following PAD-specific treatment, and with major limb events and long-term mortality. The longitudinal trajectories of depression, distress, and physical activity in PAD in the year after PAD diagnosis have not previously been examined. We aimed to model the 1-year trajectories using a path analysis.
Methods
Data were from the US cohort of the PORTRAIT study which included 797 patients with new or worsening PAD symptoms from 10 centers. Patients were administered the 8-item Patient Health Questionnaire 8 (PHQ-8) to assess their depressive symptoms (cut off ≥ 10), the 4-item Perceived Stress Scale (cut off ≥ 6) to examine perceived stress, and physical activity items from the INTERHEART study to group patients into sedentary and non-sedentary (mild and strenuous activity) groups, at initial visit, 3, 6, and 12 months. Structural Equation Modelling (SEM) was performed with STATA using depression and stress scores as continuous variables, and physical activity as an ordinal variable. Standardized effect (β) and 95% confidence intervals were derived.
#### Results
Patients had a mean age of 68.3 (± 9.4) years and were 58.1% male. Overall, 17.44% reported clinically relevant depressive symptoms, and 35.38% experienced increased distress; a total of 55.71% reported being sedentary at baseline. Analyses revealed that changes in physical activity preceded subsequent inverse changes in depressive symptoms (BL to 3m:β=-0.57, (-0.97, -0.18); 3m to 6m:β=-0.47, (-0.86, -0.08); 6m to 12m:β=-0.47, (-0.86, -0.08)). Similarly, changes in physical activity preceded subsequent inverse changes in perceived stress (BL to 3m:β=-0.31, (-0.91, 0.29); 3m to 6m:β=-0.68, (-1.30, -0.06)). (Figure 1)
Conclusion
Increases in physical activity preceded improvements in depression and distress amongst patients with a new diagnosis of PAD. These findings underscore the importance of physical activity as a factor contributing to risk of chronic depressive symptoms and distress and suggest the testing of behavioral activation-based interventions to improve subsequent PAD outcomes.

Figure 1. Structural Equation Modeling Results for (a) Depressive Symptoms and (b) Perceived Stress and Physical Activity Measurements at Baseline, 3, 6, and 12 Months.
Beta coefficients with 95% confidence intervals are presented.

Abbreviations: PHQ-8, 8-item Patient Health Questionnaire; PSS-4, 4-item Perceived Stress Scale
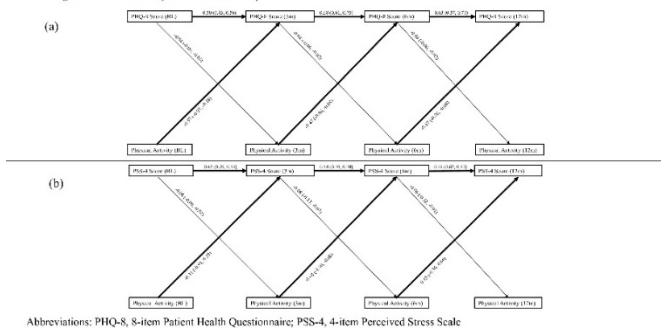
Abstract 1579
RACIAL DIFFERENCES IN RESTING TOTAL PERIPHERAL RESISTANCE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Total peripheral resistance (TPR) is an important co-determinant of blood pressure, and elevated TPR is an established marker of peripheral vasoconstriction in hypertension. Across the last 30 years, evidence has consistently indicated that African Americans (AA) exhibit elevated basal TPR. Elevated resting BP via TPR particularly is associated with worse physical health outcomes, such as end-organ damage, and psychological variables relevant to mental health outcomes, like perseverative cognition and emotional dampening. In the present systematic review and meta-analysis we sought: 1) to further characterize the importance of elevated *basal* TPR as a potentially unique index of global vascular burden among AAs, irrespective of hypertensive status, and 2) to clarify whether resting TPR is consistently higher among AAs, compared to EAs, across a moderately heterogenous literature. A search of the literature yielded 140 abstracts that included a measure of TPR and a sample with both AAs & EAs; 40 studies were included. Sample sizes, means and standard deviations for baseline TPR with samples that included EAs and AAs were collected and Hedges' g was computed. Findings indicated that across studies AAs had higher resting TPR than EAs (Hedges' g = .307, SE = 0.043, CI = 0.224, 0.391, $p < 0.001$). This effect was present in both hypertensive and healthy samples. Additionally, EAs had higher baseline cardiac output (CO) than AAs (Hedges' g = -0.214, SE = 0.056, CI = -0.324, -0.104, $p < .001$). This is noteworthy, as researchers have reported a greater risk for cardiovascular events and death for individuals with elevated BP maintained by increased TPR, rather than increased CO. These findings may provide potential support that the differences between AAs and EAs in certain psychological factors, such as perseverative cognition, emotional dampening, and perceived discrimination may in part lead AAs to have elevated levels of TPR. In sum, the present meta-analysis highlights the importance of the differences in TPR between AAs and EAs in understanding and addressing racial disparities in cardiovascular, and potentially psychological, health outcomes.

Abstract 1105
ACTIGRAPHIC SLEEP REGULARITY AS A MECHANISM LINKING SOCIAL INTEGRATION AND SYSTEMIC INFLAMMATION IN MIDLIFE ADULTS

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Objective. Social integration, the extent to which an individual participates in a range of social relationship types (e.g., spouse, parent, friend, neighbor), is associated with lower cardiovascular disease (CVD) risk across the lifespan. Recent meta-analytic evidence suggests that elevated systemic inflammation represents a biological mechanism linking lower social integration and higher CVD risk. However, the pathways through which social integration is associated with systemic inflammation are unclear. Earlier studies have shown that actigraphic sleep regularity mediates the associations of social integration and other biomarkers of CVD risk (i.e., flatter diurnal cortisol slopes, blunted nocturnal blood pressure dipping). This study evaluated whether sleep regularity also mediates the hypothesized associations of social integration and systemic levels of the inflammatory cytokines interleukin-6 (IL-6) and C-reactive protein (CRP).
Methods. Participants were 352 healthy community adults from the Study of Health and Interactions in the Natural Environment (mean age = 52.8, age range = 40-64; 61% female, 21% BIPOC). We assessed fasting IL-6 and CRP levels in blood. Sleep regularity was assessed via seven-day wrist-actigraphy monitoring protocol and calculated as the individual standard deviation in sleep midpoint across the monitoring period. Social integration was assessed via self-report using Cohen's Social Network Index.
Results. Linear regression models adjusted for age, sex, race, education, and body mass index demonstrated that higher levels of social integration were associated with lower levels of IL-6 (β = -.10, p = .044, 95% CI = [-.06, -.00]) but not CRP (β = -.07, p = .19, 95% CI = [-.09, .02]). Bootstrapped mediation analyses indicated that sleep regularity partially mediated the association of social integration and lower systemic IL-6 (indirect effect = -.01, 95% CI = [-.02, -.00]).
Conclusion. Sleep regularity mediated the association of social integration and systemic inflammation among midlife adults. Increasing sleep regularity could represent a behavioral intervention target to reduce systemic inflammation and CVD risk among less socially integrated individuals. Future research is needed to evaluate underlying circadian processes linking social integration, sleep regularity, and systemic inflammation.
Supported by R01AG041778; T32HL007570

Abstract 1131
INFLAMMATION AND SLEEP VARIABILITY IN OLDER ADULT WOMEN

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Objective: Poor sleep is common for older women and is associated with negative health outcomes, including impaired cognitive function and chronic diseases. Heightened proinflammatory biomarkers may be one pathway linking sleep and poor health. Shorter sleep duration and more sleep disturbances are associated with heightened proinflammatory biomarkers, including interleukin-6 (IL-6) and C-reactive protein (CRP). Additionally, greater night-to-night

fluctuations (intra-individual variability; IIV) in sleep duration is associated with higher IL-6. However, previous findings focus on between-person associations. The current study examined the within-person relationship between mean levels and IIV of sleep duration and sleep disturbances and C-reactive protein in healthy, aging women.

Methods: Participants (*N = 179)* from a longitudinal study of activity and well-being in middle-aged and older women (M_{age} = 62; range = 50-75) completed a 7-day daily diary, every 3 months, for 2 years, for up to 9 waves. The 4-item PROMIS Sleep Disturbances Short Form was given at each diary and CRP bloodspots were collected following each 7-day daily diary. All models were adjusted for age, education, race, statin use, beta blocker use, SSRI use, sleep medications, body fat, and menopause status.

Results: On waves when a person reported higher than their average variability in total sleep time, CRP increased (g = .065, SE =.02, *p* = .002). Within-person changes in mean total sleep time were not associated with CRP. Additionally, neither mean sleep disturbances nor sleep disturbance IIV were associated with CRP. Age did not moderate any of these associations.

Conclusion: This study is the first to show that within-person changes in variable sleep duration are related to changes in proinflammatory biomarkers. Finding from the current study suggest that greater variability in sleep duration is related to heightened CRP, which increases risk for early morbidity and mortality. Future studies should investigate inflammation as a pathway linking sleep variability and health, paying particular attention to sleep time and within-person associations, which are understudied in the literature.

Abstract 1415
THE IMPACT OF ACTOR AND PARTNER OVERNIGHT MOVEMENT ON SLEEP QUALITY METRICS IN MILITARY COUPLES

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The majority of U.S. adults share their bed with another person while sleeping, necessitating the examination of the impact of co-sleeping on sleep quality metrics. Previous studies demonstrate that sleeping with a partner is associated with increased movement during sleep, but no research has examined the association between partner's movements and sleep metrics. The current study utilized actor-partner interdependence models (APIMs) to examine the association between sleep movement duration and intensity and total sleep time (TST), sleep efficiency (SE), and duration of wake after sleep onset (WASO). 27 co-sleeping, heterosexual couples (n = 54) with one partner active-duty military personnel, completed 14-days of self-monitoring. Participants wore wrist actigraphs and completed Consensus Sleep Diaries each morning. APIMs indicated that sleep movement duration and intensity were not associated with actigraphy or diary TST. However, individuals' own sleep movement duration in both male and female partners was associated with poorer actigraphy-determined (B_{male} = -1.11, *p* < .001; B_{female} = -.96, *p* <.001) and sleep diary (B_{male} = -.94, *p* < .001; B_{female} = -.64, *p* = .002) SE. Gender of partner significantly moderated the association between partner sleep movement duration on actigraphy SE (*B* = .36, *p* = .022), with female sleep movement associated with poorer male partner SE (*B* = -.30, *p* = .009), but not vice versa. Individual's own sleep movement intensity was associated with poorer actigraphy SE in both male (*B* = -.11, *p* <.001) and female (*B* = -.05, *p* = .003) partners. Gender moderated the effect of individuals' own sleep movement on diary reported WASO duration (*B* = 2.83, *p* = .001), with increased sleep movement associated with higher ratings in females (*B* = 3.79, *p* <.001) but not males. Individuals' own sleep movement intensity was associated with greater WASO ratings in both male

(*B* = .26, *p* = .020) and female (*B* = .30, *p* <.001) partners. Results of the current study provide some evidence that female partner sleep movements are independently associated with sleep metrics for men. Further, individuals' own sleep movement may be uniquely associated with poorer objective and subjective sleep efficiency parameters. Future research should consider an APIM approach to understanding the development of sleep disturbance.

Abstract 1003
SELF-REPORTED SLEEP EFFICIENCY AND SLEEP DURATION ARE ASSOCIATED WITH MITOCHONDRIAL BIOENERGETIC FUNCTION IN PERIPHERAL BLOOD MONONUCLEAR CELLS OF ADULTS

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Introduction: Sleep is important for aging, health, and disease, but its cellular role in these outcomes is poorly understood. Basic research suggests that disturbed and insufficient sleep impair mitochondrial bioenergetics, which is involved in numerous aging-related chronic conditions. However, the relationship between sleep and bioenergetics has not been examined in humans. We examined associations of self-reported sleep with systemic bioenergetic function in peripheral blood mononuclear cells (PBMCs) of community-dwelling adults.

Methods: N = 43 adults (79% female) ages 48-70 (M = 61.63, SD = 5.99) completed the Pittsburgh Sleep Quality Index (PSQI) from which key components of sleep (satisfaction, alertness, timing, efficiency, and duration) were calculated. Participants provided blood samples from which PBMCs were isolated and measured for bioenergetics using extracellular flux analysis. Associations of sleep components with bioenergetic parameters, including the Bioenergetic Health Index (BHI), were examined.

Results: In bivariate analyses, lower sleep efficiency was associated with lower maximal respiration, spare capacity, and BHI (ps < 0.05). Longer sleep duration was associated with lower BHI (p < 0.01) and later sleep timing was associated with higher basal respiration, ATP-linked respiration, maximal respiration, spare capacity, and non-mitochondrial respiration (ps < 0.05). After adjustment for age, sex, and body mass index, lower sleep efficiency (β = 0.52, p < 0.01) and longer sleep duration (β = -0.43, p < 0.01) were associated with lower BHI.

Conclusion: Self-reported indices of sleep efficiency and duration are related to systemic bioenergetic function in humans, suggesting a possible cellular pathway linking sleep to health.

<u>**Paper Session 19 - New insights from transcriptomics, metabolomics and epigenetics regarding individual differences in health**</u>
Thursday 16:15-17:30

Abstract 1279
USING TRANSCRIPTOMICS TO INVESTIGATE THE EFFECTS OF MILD INFLAMMATION IN MYALGIC ENCEPHALOMYELITIS/CHRONIC FATIGUE SYNDROME (ME/CFS) AND FIBROMYALGIA (FM)

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Experimental Medicine, Jessica A. Eccles, PhD, Neuroscience, Brighton and Sussex Medical School, Brighton, United Kingdom, Neil A. Harrison, PhD, Immunopsychiatry Research Group, University of Cardiff, Cardiff, United Kingdom

INTRO: ME/CFS and FM are chronic, disabling and poorly understood conditions with overlapping systemic, physical, and psychological symptoms. Inflammatory abnormalities have been reported in both conditions. We aimed to investigate differential gene expression between patients and controls at baseline, and after an immune challenge. **METHODS:** 71 age and gender matched participants (Patients:n=49;Controls:n=22) were tested under 2 randomised conditions on separate visits - inflammatory challenge (typhoid vaccine) and placebo (saline). 4 hours after each injection, a PAXgene RNA (IVD) whole blood sample was taken. The samples were subjected to RNA sequencing (QuantSeq 3' mRNA-Seq Library Prep Kit-FWD). Differential gene expression analysis was performed using EdgeR, followed by gene ontology. **RESULTS:** 242 transcripts were differentially expressed in patients compared to controls at baseline ($p<0.05$, FC>1.2, CPM>10). Enrichment analyses identified significant between-group differences in cell metabolic processes, cell-component biogenesis and cell signalling ($p<0.01$). There was a main effect of typhoid vaccination on differential gene expression ($p<0.05$, FC>1.2, CPM>10) in both controls (152) and patients (306). 218 genes showed a differential response to Typhoid vaccine in patients compared to controls ($p<0.05$, FC>1.2, CPM>10). The differentially expressed genes showed enrichment in cell signalling pathways ($p<0.01$) and suggested down regulation of neurogenesis in patients ($p<0.01$). Differential gene expression analysis suggested abnormalities of the ATP metabolic process in ME/CFS. The viral gene expression pathway and ribosome biogenesis were upregulated in ME/CFS compared to controls but not in FM. Analysis suggested that sub-categorising patients into clinical diagnostic groups (ME/CFS:n=20,FM:n=16,Comorbid:n=13) revealed group-specific changes in gene expression at baseline and after challenge. **CONCLUSIONS:** This study has demonstrated differential gene expression between patients and controls at both baseline and post-inflammatory challenge. Investigation of the relationship between these findings, inflammatory markers, and structural/functional neuroimaging data is a part of a larger study. Better understanding of these biological mechanisms is essential for targeting future therapeutic interventions and diagnostics in a patient group with significant morbidity.

Abstract 1476
METABOLOMICS PROFILING OF TYPE D PERSONALITY TRAITS

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Background: Type D (Distressed) personality combines negative affectivity (NA) and social inhibition (SI) and is associated with an increased risk of cardiometabolic diseases. Here, over 230 metabolites or metabolite ratios, predominantly lipids, were investigated for their associations to the Type D personality traits. **Methods:** Four Dutch cohorts were included, together comprising 10,834 individuals. The Type D personality traits (i.e., NA and SI) were measured by either standard DS14 questionnaire (three cohorts) or ASEBA-based proxy (one cohort). A proton nuclear magnetic resonance metabolomics platform provided 149 absolute measures and 81 derived ratios. For all metabolite measures and ratios, linear regression analyses were performed within cohort, followed by random-effects meta-analyses. A per-measure FDR q-value of **Results:** SI was significantly associated with the ratio of omega-3 fatty acids to total fatty acids (FAw3.FA%) and free cholesterol to total lipids ratio in very small VLDL (XS.VLDL.FC%). No significant associations were observed between metabolites and NA or Type D. NA did show suggestive replication (p-value<.05) of the previously reported association with depression for five out of 21 metabolites measured on the same metabolomics platform, namely triglycerides in HDL (HDL.TG), serum total triglycerides (serum.TG), VLDL cholesterol (VLDL.C), mean diameter for VLDL particles (VLDL.D) and VLDL triglycerides (VLDL.TG). **Conclusions:** The ratio of omega-3 fatty acids to total fatty acids was found to associate with social inhibition, which is suggestive of lower omega-3 fatty acid intake. Also, free cholesterol to total lipids ratio in very small VLDL was associated with SI. Our data did not show any metabolite biomarkers that link specifically to Type D. Further studies, including a broader spectrum of metabolites, are warranted to investigate Type D associated biomarkers beyond lipid metabolism.
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Abstract 1475
PROSPECTIVE ASSOCIATIONS BETWEEN SOCIAL RELATIONSHIP FACTORS AND EPIGENETIC AGE

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Background: Social relationships, and the support they provide, are paramount for healthy aging. Loneliness and social isolation have recently been linked to older epigenetic age – a biological aging measure that predicts morbidity and mortality independent of chronological age. However, it is unknown how other positive social relationship factors, including the *number of close relationships* and *dimensions of social support*, may impact epigenetic aging; moreover, their changes over time may relate to epigenetic age, given that close and supportive relationships become increasingly important for adapting to changes that accompany aging. **Methods**: We analyzed longitudinal social data from 2006 to 2016 (up to 3 waves collected every ~4 years) on 2,117 Health and Retirement Study participants aged 50-96 (47% male). Person-specific intercepts (centered at the first time point, baseline) and slopes of the total number of close relationships and perceived social support levels (from spouse, family, child, and friend) were outputted and tested as main effects on epigenetic clocks (Horvath, Hannum, GrimAge, PhenoAge, and Dunedin Pace of Aging) measured from blood collected in 2016. Regression models controlled for age at blood draw, time between baseline and blood draw, and sex, BMI, and smoking status at the time of blood draw or two years prior. **Results**: In adjusted models, an increase in the total number of close relationships over time was associated with a lower Horvath epigenetic age, b=-.44, SE= .204, t= -2.13, p=.033. At baseline, higher perceived support levels from one's spouse and from friends were prospectively associated with a slower Pace of Aging (spouse: b=-.003, SE=.001, t= -2.09, p=.037; friend: b=-.004, SE=.001, t=-3.07, p=.002) and a lower GrimAge (friend: b=-.16, SE=.064, t=-2.55, p=.011). **Conclusion**: The presence of close social relationships, and perceived support from friends and spouse, may promote healthy biological aging in midlife and beyond. Increases in the total number of close relationships was associated with a first-generation epigenetic clock, trained to predict chronological age. Baseline perceptions of social support were associated with both second- and third-generation clocks, trained to predict mortality and physiological dysregulation, which may be more sensitive to psychological factors than first-generation clocks.

Abstract 1245

CHRONIC GLUCOCORTICOID STRESS INCREASES ENERGY EXPENDITURE AND ACCELERATES AGING TRAJECTORIES IN HUMAN FIBROBLASTS

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Background: In response to stressors, living organisms mount evolutionarily conserved allostatic responses that aim to increase resilience and promote survival. However, the chronic activation of allostatic responses can lead to maladaptive recalibrations, a phenomenon termed allostatic load. Large-scale epidemiological studies show that allostatic load predicts physical and cognitive decline, as well as early mortality, but the cellular basis of it remains unclear. We hypothesized that chronic stress would increase energetic demand, causing "hypermetabolism", which would be associated with cellular wear and tear and accelerated aging.

Methods: To define the energetic cost and the associated long-term consequences of chronic stress at the cellular level, we developed a longitudinal lifespan model in primary human fibroblasts (Sturm et al. *Epigenetics* 2019) from three healthy donors, one female, and two males. Cells were cultured for up to 250 days under constant exposure to the glucocorticoid agonist dexamethasone. Mitochondrial and glycolytic energy production, along with gene expression, telomere length, and DNA methylation were measured at regular intervals across the cellular lifespan.

Results: Results replicated across all donors demonstrate that chronic stress increased basal energy consumption by 62% ($p<0.001$). This increased cost of living relied on increased mitochondrial respiration, supported by upregulation of mitochondrial biogenesis and an elevated mtDNA copy number ($p<0.01$). Consistent with human studies, chronic stress accelerated cellular aging as independently shown by i) 28% faster telomere shortening rate per cell division ($p<0.05$), ii) 70% faster rate of epigenetic aging based on DNA methylation clocks ($p=0.060$), and an 18% reduction in lifespan ($p<0.05$).

Discussion: Together, these results underscore the increased energetic cost of cellular allostasis. This suggests an "energetic psychosomatic" mechanism for the transduction of chronic stress into accelerated cellular aging and early mortality, which requires validation in human populations.

Paper Session 20 - Clinical trial findings of four psychological interventions
Thursday 16:15-17:30

Abstract 1297

EFFECT OF MODERNIZED COLLABORATIVE CARE FOR DEPRESSION ON DEPRESSIVE SYMPTOMS AND CARDIOVASCULAR DISEASE RISK MARKERS: PRIMARY RESULTS OF THE EIMPACT RANDOMIZED CONTROLLED TRIAL

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Although depression is a risk and prognostic factor for cardiovascular disease (CVD), clinical trials to treat depression in patients with CVD have not demonstrated cardiovascular benefits. We proposed a novel explanation for these null results – the late timing of depression treatment in the natural history of CVD. To test our hypothesis that treating depression before clinical CVD onset reduces CVD risk, we conducted an RCT comparing 12 months of our eIMPACT intervention to usual primary care for depression in primary care patients (aged ≥50 years) with depression and ≥1 CVD risk factor, but no clinical CVD, from a safety net healthcare system. See Table 1 footnotes for intervention and comparator descriptions. Outcomes were depressive symptoms and CVD risk markers (indicators of endothelial dysfunction, autonomic dysfunction, systemic inflammation, and platelet activation). We randomized 216 patients (M_{age}=59 years, 78% female, 50% Black, 84% with income <\$25K/year), 199 (92%) of whom attended the 12-month post-treatment visit. Treatment groups did not differ on any outcome variable at pre-treatment (ps>0.20). Table 1 presents results of intent-to-treat analyses using multiple imputation for the outcomes at post-treatment. ANCOVAs adjusted for stratification variables (age and sex) revealed that eIMPACT patients, versus usual care patients, exhibited moderate-to-large improvements in depressive symptoms at post-treatment (Hedges' g=-0.64, $p<0.01$). Clinical response data yielded similar results – 43% of eIMPACT patients, versus 17% of usual care patients, had a ≥50% reduction in depressive symptoms (OR=3.73, $p<0.01$). Contrary to our hypothesis, eIMPACT patients did not differ from usual care patients on any CVD risk marker – i.e., post-treatment brachial flow-mediated dilation (g=-0.07, p=0.60), high-frequency heart rate variability (g=0.02, p=0.81), interleukin-6 (g=-0.15, p=0.20), high-sensitivity C-reactive protein (g=-0.22, p=0.09), β-thromboglobulin (g=-0.16, p=0.23), and platelet factor 4 (g=-0.23, p=0.08). Our modernized collaborative care intervention – which harnessed technology to maximize access and minimize resources – produced clinically important improvements in depressive symptoms in primary care patients with depression. However, 12 months of successful depression treatment did not lower CVD risk as assessed by multiple CVD risk markers.

Table 1. Results of Intent-to-Treat Analyses using Multiple Imputation for Primary and Secondary Outcomes of the eIMPACT Trial (N = 216)

	eIMPACT[a] (n = 107) M (SD)	Usual Care[b] (n = 109) M (SD)	p
Depressive Symptoms (possible range: 0.00-4.00)			
Post-Treatment SCL-20	1.12 (0.81)	1.65 (0.83)	<0.01
Endothelial Dysfunction (% change in artery diameter)			
Post-Treatment FMD	2.28 (2.04)	2.44 (2.30)	0.60
Autonomic Dysfunction (ln of ms²/Hz)			
Post-Treatment HF HRV	5.39 (1.85)	5.35 (1.77)	0.81
Systemic Inflammation ($\log_{10}$ of pg/mL and $\log_{10}$ of mg/L)			
Post-Treatment IL-6[c]	0.73 (0.26)	0.77 (0.27)	0.20
Post-Treatment hsCRP	0.65 (0.40)	0.74 (0.41)	0.09
Platelet Activation (ng/mL and ng/mL)			
Post-Treatment BTG	185 (125)	205 (118)	0.23
Post-Treatment PF4	3842 (2002)	4351 (2328)	0.08

Note. Funding: R01HL122245. ClinicalTrials.gov Identifier: NCT02458690. Values are M (SD) from imputed datasets. Sensitivity analyses using only the observed data yielded nearly identical results. FMD = flow-mediated dilation; SCL-20 = Hopkins Symptom Checklist-20; HF HRV = high-frequency heart rate variability; IL-6 = interleukin-6; hsCRP = high-sensitivity C-reactive protein; BTG = β-thromboglobulin; PF4 = platelet factor 4.

[a] eIMPACT is our modernized collaborative care intervention for depression, which involved a multidisciplinary team delivering internet cognitive-behavioral therapy (CBT), telephonic CBT, and/or select antidepressants in an algorithm optimized for CVD risk reduction, consistent with patient preference. eIMPACT patients had a mean of 20.8 (SD = 9.0) contacts with our depression clinical specialist, most of which were by phone. 70% received Beating the Blues® (internet CBT), 29% received Problem-Solving Treatment in Primary Care (telephonic CBT), and 31% were prescribed an antidepressant medication based on our recommendation.

[b] Usual primary care for depression involved a team care approach, with primary care providers supported by embedded behavioral health clinicians and affiliated psychiatrists available for brief counseling and antidepressant management.

Abstract 1580
COGNITIVE FUNCTION IN ACCEPTANCE-BASED VS STANDARD BEHAVIORAL TREATMENT FOR OBESITY: RESULTS FROM THE COSMOS TRIAL
Misty Hawkins, PhD, Psychology, Oklahoma State University, Stillwater, OK
Background: Acceptance-based behavioral treatments (ABT) may produce greater weight loss than standard behavioral treatments (SBT) for obesity, an effect that may be related to individuals' baseline neurocognitive function. The study objective was to test 1) whether ABT vs. SBT produced differential weight loss, and 2) whether neurocognitive factors moderated treatment effects on weight loss. *Hypothesis 1*: participants would exhibit weight loss from pre- to post-treatment in both SBT and ABT with superior weight loss for ABT. *Hypothesis 2*: Lower executive function at baseline would predict less weight loss for both groups.
Method: Participants (N=107) were enrolled in the Cognitive and Self-regulatory Mechanisms of Obesity Study (COSMOS; *Identifier-*

NCT02786238) and randomized to ABT or SBT. Baseline, post-treatment (6-months), and follow-up (12-months) weight (lbs) and waist circumference (WC) were assessed. Executive function was assessed using subscales from the NIH Toolbox-Cognition Battery and Automated Neuropsychological Assessment Metric-IV.
Results: Individuals in both ABT (b = -19.15, $p < .001$; d = .74) and SBT (b = -13.99, $p < .001$; d = .75) lost weight from baseline, with a non-significant trend toward greater loss (b = -5.16, p = .107; d = .17) and less regain at follow-up (b = -3.74, p = .137; d = .20) for ABT. Overall, from baseline to follow-up, ABT did show significantly superior weight loss (b = -8.90, p = .031; d = .24). A similar pattern was observed for changes in WC with smaller effect sizes (ds = .12 to .19). Lower baseline working memory scores were most strongly related to less weight loss during treatment (b = -2.34, p = .028, d = .27) and less weight circumference reduction at follow-up (b = -2.34, p = .012, d = .27).
Conclusions. Consistent with prior literature, ABT appears to produce greater weight loss. Weight loss was greater among participants with higher working memory scores, highlighting the potential for aspects of executive function to be notable predictors of treatment heterogeneity in behavioral weight loss.

Abstract 1100
VIDEO-CONFERENCED STRESS MANAGEMENT AND RELAXATION TRAINING (VSMART) IMPROVES PSYCHOLOGICAL ADAPTATION AND INFLUENZA VACCINE RESPONSE IN DISTRESSED OLDER WOMEN DURING BREAST CANCER TREATMENT
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INTRODUCTION. Since inflammation increases and anti-viral immunity decreases with distress, aging, and cancer treatment older distressed women may be vulnerable to immune compromise during breast cancer (BC) treatment. Previously, cognitive behavioral stress management (CBSM) reduced distress and inflammation and increased anti-viral immunity in women receiving BC treatment. Since in-person CBSM is challenging for older women during treatment, we developed videoconferenced stress management and relaxation training (VSMART).
METHODS. Post-surgical BC patients ≥50 who had not begun adjuvant therapy were randomized to VSMART or wait-list control (WLC). VSMART delivers 10 weekly 90-min group telehealth CBSM sessions and access to a website for education videos, resources and stress ratings. They completed measures of psychological adaptation (affect, intrusive thoughts, quality of life, and perceived stress management skills, PSMS) and provided blood at baseline and 6 months to measure immune/inflammatory markers before receiving a trivalent influenza vaccine followed by 7- and 28-day measures of affect, and antibody response using Hemaglutination Inhibition assay (HAI).
RESULTS. Women (M = 61.3 years, SD = 6.9) had a body mass index (BMI) of 28.2, and were 37.2% White non-Hispanic, 32.6% Hispanic, and 9.3% Black, with no baseline differences in demographics, BMI or outcome variables in VSMART vs WLC. They reported comfort with the technical requirements of sessions and the e-tablet; 74% attended ≥7 sessions. The sample (VSMART = 28, WLC = 30) showed a significant condition x time effect on PSMS (VSMART: 32.4% increase vs WLC: 6.3% decline) (p= .004). Those in VSMART reported significantly smaller increases in fear of dying (p= .023) and greater increases in FACT physical well-being (p =.029*)* vs WLC.Those in VSMART showed a nearly 3-fold 28-day HAI vaccine response vs only 18.4% in WLC. Within WLC greater

increases in negative affect predicted smaller 28-day HAI responses (p = .035), controlling for age and stage. <u>Within VSMART</u>, greater PSMS increase related to reduced inflammation and increased B-cell function.

<u>CONCLUSIONS</u>. VSMART utilizes less resources and provides more accessibility during cancer treatment than in-person programs, and may improve vaccine response in older women treated for BC by improving psychological adaptation and immune function.

Abstract 1389
HORMETIC STRESS INTERVENTIONS AND MINDFULNESS EFFECTS ON COMPULSIVE EATING

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Mindfulness-based training can reduce compulsive eating (CE), likely through stress-mediated pathways. Hormetic stressors (acute, intermittent stressors of moderate intensity) could reduce CE by creating more adaptive stress responses (e.g., with lower cortisol exposure, greater sympathetic activity) with quick recovery. We compared the effects of two hormetic stress interventions, which we considered high arousal (Wim Hof Method of breathing/cold showers and high intensity interval training), along with two low arousal interventions (mindfulness and an active control, breathing condition) on self-reported CE. We predicted high arousal interventions would promote the greatest reductions in CE. We also examined associations between changes in mindfulness and CE across conditions.

We randomized 140 moderately stressed (PSS $\geq$ 12) women to one of four conditions for 21 days: (1) high intensity interval training (HIIT); (2) meditation (MI); (3) method of breathing and cold showers (MOBS); (4) and technique of breathing and warm shower (TOBS). We assessed CE (13-item Reward-based Eating Drive Scale [RED]) and mindfulness (15-item Mindfulness Attention Awareness Scale [MAAS]) at baseline and 3 weeks post-randomization. We used ANCOVA to examine the effect of treatment randomization on changes in RED and linear regression to explore the association between changes in MAAS and RED.

Among all 4 groups (*n*=139), there was a treatment effect ($F(3,134)=2.98, p=.03$), such that those in either high arousal condition (i.e., HIIT or MOBS) showed the greatest decreases in RED (-3.79 and -2.39, respectively, with no differences between HIIT or MOBS, *p*=.34), compared to those in either low arousal condition (i.e.., MI or TOBS; +0.51, -1.58; with no differences between MI vs. TOBS, *p*=.14). Irrespective of treatment condition, we found a significant association between increases in MAAS and decreases in RED-13 (*B*=-3.04, *p*=.002).

In a healthy sample of mid-life women, we found preliminary support for both a physiological pathway (high arousal interventions that may impact stress responses) and a psychological pathway (increases in mindfulness) as potential mechanisms underpinning reductions in compulsive eating. Future research should examine biological mediators, as well as how to optimize hormetic interventions to increase mindfulness for reducing CE.

Abstract 1102
A LONG AND RESILIENT LIFE: THE ROLE OF COPING STRATEGIES AND VARIABILITY IN THEIR USE IN LIFESPAN

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Objectives: Research has evaluated the role of stress-related coping strategies in survival in medical populations; yet, whether these regulatory processes predict longevity in the general population is understudied. Moreover, while coping strategies are typically characterized as adaptive or maladaptive, it is unclear if variability in implementing distinct coping strategies that allows for tailoring them to situational needs matters for lifespan.

Method: Women from the Nurses' Health Study II completed the Coping Orientation to Problems Experienced (COPE) inventory, which assesses 4 maladaptive (eg, Denial) and 4 adaptive (eg, Emotional Support) coping strategies, and reported relevant covariates in 2001 (N=54,308; median age=47 years). Deaths were documented over follow-up until 2017 (median life expectancy=60 years). With a standard deviation-based algorithm, participants were classified as having lower, moderate, or greater variability in their use of coping strategies. Accelerated failure time models estimated percent changes and 95% confidence intervals (CI) in the expected survival time (or lifespan) related to the use of individual coping strategies (continuous standardized scores).

Results: After controlling for baseline demographics and health status, most adaptive strategies were related to a longer lifespan. For instance, each 1-SD increase in Active Coping was associated with 4% longer lifespan (95%CI=2%, 6%). Maladaptive strategies were generally related to a shorter lifespan (e.g., per 1-SD increase in Behavioral Disengagement=-7%, 95%CI=-10%, -5%). When considering coping variability, moderate but not larger (vs. lower) levels were related to increased lifespan (e.g., moderate=6%, 95%CI=1%, 12%; larger=4%, 95%CI=-1%, 10%). Further adjusting for baseline health behaviors slightly attenuated estimates.

Discussion: Multiple adaptive and maladaptive coping strategies were related to 2-4% increase and 4-7% decrease in lifespan, respectively, among midlife women. Beyond conventional categorizations of coping, greater benefits for longevity were observed with a moderate level of coping variability. Women with greater variability heavily relied on the same 1 or 2 strategies at the expense of other strategies that may be more useful in certain situations. By doing so, they may fail to regulate effectively, which may not be beneficial for lifespan.

Abstract 1562

DEPRESSION MODERATES THE LIFESPAN TRAJECTORY OF EARLY LIFE ADVERSITY INDUCED INFLAMMATION: AN EXPLORATORY TIME-VARYING EFFECT MODEL

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Early life adversity (ELA) is a key risk factor for life course depression. ELA may also influence inflammatory process well into late life. When considered together, ELA and depression often enhance inflammatory processes, further conferring risk for premature morbidity and mortality. Yet, associations between ELA and depression on inflammation are not always consistent and may be limited by bi-directional associations between inflammation and depression, categorical operationalizations of ELA, and analytic approaches that do not consider the age variation of these associations. To address these limitations, we used data from the MIDUS2 biomarker study, which allowed us to expand upon previous work using cumulative risk modeling, thereby granting a nuanced perspective of the lifespan trajectory of ELA-inflammation associations in a nationally representative sample. We employed Time-Varying Effect Modeling (TVEM) to estimate the moderating effect of depression on the age-varying association between ELA and inflammation using a sex-adjusted Gaussian TVEM model with the B-spline method. We hypothesized that individuals with depression would have greater associations between ELA and inflammation, particularly at younger ages. Data from 1236, 32 to 84-year-old adults (M_{age}=57;SD=12;47% males) were used. Depression was assessed using participants' response to *have you ever had depression*. Composite scores from the Childhood Trauma Questionnaire (α=0.78) were used to assess ELA. Circulating levels of interleukin (IL)-6 and tumor necrosis factor (TNF)-α were collected. Individuals with a history of depression (N=298) were younger (52 vs 55;$p<0.01$,$\eta^2<0.01$), more likely to be female (68% vs 53%,$p<0.01$,φ=0.13), had higher levels of IL-6 (1.8 vs 1.1;$p<0.05$,$\eta^2<0.01$), and reported more ELA (45 vs 36,$p<.01$,$\eta^2=0.08$). There were no significant depression-specific differences in TNF-α (-0.11 vs 0.12;$p>0.05$,$\eta^2<0.01$). In TVEM analyses, compared to those with depression, the association between ELA and TNF-α was stronger among adults aged 43-60 without depression ($p<0.05$) and was stronger with IL-6 among adults aged 43-58 without depression ($p<0.05$). In line with previous research, individuals with depression showed lower magnitudes of association between ELA and inflammation, suggesting that the age-varying associations between ELA and inflammation may depend on type of ELA.

Abstract 1573

HIGH STRESSOR EXPOSURE AND LOW STRESSOR DIVERSITY ARE LINKED TO HIGHER BLOOD PRESSURE: FINDINGS ACROSS AGE AND SES

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Stress exposure is linked to elevated blood pressure, which increases risk for cardiovascular disease (Spruill, 2010; WHO, 2013). Stress exposure may be especially harmful when concentrated in one particular domain (i.e., low stressor diversity) (Koffer, et al, 2016). Additionally, sociodemographic characteristics, such as advanced age and low socioeconomic status (SES), place individuals at particular risk for cardiovascular disease, which may be partly due to lifetime stress accumulation (Lakata, 2002; Steptoe, & Kivimäki, 2013). Previous literature has suggested that older adults experience lower stressor diversity (Brose, Scheibe, & Schmiedek, 2013; Koffer, et al., 2016). Associations between lower SES and stressor diversity have not yet been tested, but evidence for stressor exposure by domain is mixed (Grzywacz, Almeida, Neupert, & Ettner 2004). The present study is the first to investigate whether age and SES are associated with differences in momentary stressor exposure and stressor diversity. Further, the present study tests whether the combination of high stressor exposure and low stressor diversity is associated with high resting blood pressure, above and beyond the presence of exposure itself.

Participants (N=387, age 40-64 yrs) completed four days of hourly ambulatory blood pressure monitoring and self-report of stressful experiences (e.g., work task demand, non-work task demand, arguments, interpersonal tension), with clinic blood pressure separately assessed in a lab visit following the daily monitoring. Linear regression models were used to examine the associations among blood pressure, stressor exposure, stressor diversity, age, and SES.

Older age (B=-0.003,p=.003) and lower SES (B=0.026,p=.004) were both associated with lower stressor diversity, after controlling for race and gender. Further, higher stressor exposure in combination with lower stressor diversity related to higher diastolic blood pressure, measured both clinically (B=-10.77,p=.002) and ambulatory (B=-12.35,p= .009). Results trended in the same direction for systolic blood pressure (B=-9.66,p = .11; B=-15.00,p=.059). High stress concentrated in one domain may increase risk of high blood pressure. Understanding the distribution of stressor types may help explain risk of cardiovascular disease, and may be particularly important to examine in older adult and lower SES populations.
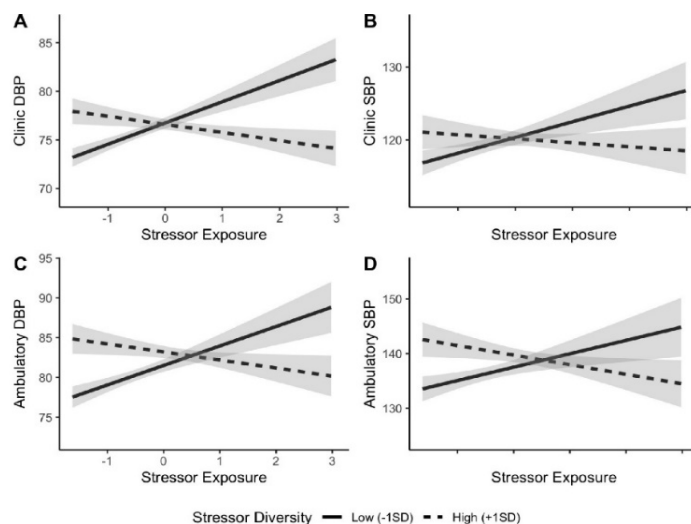
Note. Multivariate linear regression analyses of stressor exposure and stressor diversity on (A) clinic diastolic blood pressure (DBP) and (B) systolic blood pressure (SBP) and Multilevel model analyses of stressor exposure and stressor diversity on (C) ambulatory diastolic blood pressure (DBP) and (D) ambulatory systolic blood pressure (SBP). In gray: 95% CIs. Analyses adjusted for age, sex, income, education, race, and, in the case of the multilevel models, time-varying covariates.

Abstract 1287

EFFECTS OF CHILDHOOD TRAUMA ON SLEEP QUALITY AND STRESS-RELATED VARIABLES IN ADULTHOOD: EVIDENCE FROM TWO MULTILEVEL STUDIES

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Background: Early life adversity has been shown to influence an individual's future health and wellbeing. In particular, childhood trauma has been found to have serious negative consequences for mental and physical health, psychological wellbeing and chronic health conditions in adulthood as well as increasing risk of suicide. However, the precise mechanisms through which trauma influences health outcomes is unclear. Childhood trauma-related disruptions to sleep quality and pre-sleep factors in adulthood represent an important potential pathway. This paper reports findings from two 7-day multilevel studies that investigated the effects of childhood trauma on sleep quality and pre-sleep factors and whether the effects of trauma were mediated through daily stress-related vulnerability variables. *Methods*: 150 participants (95 with a history of suicide ideation/attempt) were recruited to Study 1 and 194 participants (75 with a history of suicide ideation/attempt) were recruited to Study 2. Participants completed the Childhood Trauma Questionnaire before commencing a 7-day online daily diary study. In Study 1 measures of daily stress, mood and sleep quality were completed at the end of each day. In Study 2 measures of perseverative cognition and stress were completed at the end of each day and measures of sleep quality were completed the following morning. *Results*: Hierarchical linear modelling analyses found that higher levels of childhood neglect were associated with poorer daily sleep quality, shorter sleep duration and greater sleep onset latency in Study 1 and with poorer daily sleep quality in Study 2. Higher childhood neglect and abuse were associated with higher daily perceived stress and daily perseverative cognition. Multilevel mediation analyses also found that childhood trauma variables had indirect effects on sleep quality outcomes via daily stress-related vulnerability variables. *Conclusions*: These results suggest that childhood trauma and daily stress-related vulnerability variables are important distal and proximal factors that may have serious negative consequences for mental and physical health in adulthood. Childhood neglect appears to exert a particularly pernicious effect. Personalized medicine informed interventions ought to target these modifiable stress-related vulnerability variables in individuals with a history of childhood trauma.

Paper Session 22 - Psychosocial mechanisms in cancer
Friday 11:45:12:45
Abstract 1071
THE EFFECTS OF SPIRITUALITY AND HISPANIC ETHNICITY ON NEUROENDOCRINE FUNCTIONING AMONG COLORECTAL CANCER PATIENTS

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Adjusting to a cancer diagnosis not only evokes distress but also prompts resilience through spirituality, which is most prominent in Hispanics. Cancer patients are vulnerable to neuroendocrine dysregulation, implicating cancer progression and poorer health outcomes. Unknown is the role of spirituality in neuroendocrine functioning of adult colorectal cancer patients. This study examined the degree to which patients' spirituality is associated with neuroendocrine biomarkers of colorectal cancer patients and the moderating role of Hispanic ethnicity.

Newly diagnosed adult colorectal cancer patients ($n = 81$, 55 years old, 34% female, 63% Hispanic, 72% advanced cancer, 6 months post-diagnosis) participated in the study. The domains of spirituality (FACIT-Sp: meaning, faith, and peace) and ethnicity (Hispanic vs. non-Hispanic) were self-reported. Cortisol, alpha amylase (sAA), and DHEA-s were assayed from saliva samples collected at waking and bedtime on seven consecutive days. Mean levels and diurnal slopes over seven days were calculated. Age and cancer stage were covariates.

Patients reported moderate to high levels of meaning, faith, and peace. They showed lower mean levels of cortisol, sAA, and DHEA-s and blunted diurnal slopes over a day. General linear modeling revealed that greater faith was associated with lower mean levels of cortisol and DHEA-s at waking ($|B| \geq -0.477$, $p \leq .042$). Greater peace was associated with steeper sAA diurnal slope ($B = 0.021$, $p = .005$). Furthermore, Hispanic patients with greater faith showed lower mean levels of sAA at waking and at bedtime ($B \leq -125.305$, $p \leq .018$), and steeper sAA diurnal slope ($B = 0.028$, $p = .022$), which were not the case among non-Hispanic patients.

Findings highlight that making peace with a cancer diagnosis and drawing on one's faith, particularly among Hispanic patients, protects against neuroendocrine dysregulation. Results suggest that spirituality-based interventions may facilitate health-promoting adjustments of Hispanic patients during the early cancer survivorship phase. Findings warrant further investigation on the differential roles of diverse components of spirituality and additional individual and cultural modifiers of spirituality linking cancer patients' health across various illness trajectories.

Abstract 1465
INTERPERSONAL CHARACTERISTICS PREDICT DYADIC NEUROENDOCRINE REGULATION IN COLORECTAL CANCER PATIENTS AND THEIR SPOUSAL CAREGIVERS

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Cancer diagnosis is a major stress, which is also reflected in dysregulated neuroendocrine functioning. Additionally, adult patients and their caregivers are typically spouses who share a close, intimate relationship. Less known is the extent to which their relational factors play a role in their own and each other's neuroendocrine stress regulation, which the current study investigates.

Patients who were newly diagnosed with colorectal cancer (54.6 years old, 35.2% female, 62.9% Hispanic, 6-month post-diagnosis) and their spouses ($n= 58$ dyads, 53.6 years old, 67.4% female, 57.3% Hispanic) underwent an experimental session together that involved an interpersonal and health-relevant stress induction. Participants completed a questionnaire including adult attachment orientations (MAQ: dependence and anxiety), relationship satisfaction (RQI), and loneliness (UCLA Loneliness Scale). A total of 5 saliva samples were collected at the end of each phase during the 17 minutes of baseline (5 mns) and stress induction (12 mns), from which salivary alpha-amylase (sAA) was assayed.

Dyadic, time-lagged, multilevel modeling revealed that patients' higher sAA was predicted by their own higher sAA at the prior phase, which was more so when they were less satisfied with the relationship and more lonely ($|\beta| \geq .301$, $p \leq .037$). Patients' higher sAA was also predicted by their spouses' lower sAA at the prior phase, which was more so when the spouses were more satisfied with the relationship and had greater attachment anxiety as well as when the patient had greater attachment dependence ($|\beta| \geq .216$, $p \leq .049$). On the other hand, spouses' higher sAA was only predicted by their patients' higher sAA at the prior phase ($\beta \geq .155$, $p \leq .022$).

Findings suggest that intra- and inter-personal characteristics manifest in neuroendocrine regulation. Further investigation is warranted for the differential exacerbating and buffering effects of attachment orientations, loneliness, relationship satisfaction, partner's immediate prior levels of sAA, and the role of patient vs spouse, on one's neuroendocrine regulation. Findings underscore the need for efficacy testing of existing relationship interventions in improving psychobiological health of adult cancer patients and their spousal caregivers.

Abstract 1565
EFFECTS OF SOCIAL CONSTRAINT AND GENDER ON COLORECTAL CANCER CAREGIVER'S SLEEP

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Caring for a cancer patient often invokes significant distress. Negative social interactions (e.g. social constraint) that hinder the processing of stress-related concerns are known to contribute to poor health. Such relations may be differentially modulated by gender, as males tend to withhold greater stress-related concerns than females. The degree to which social constraint and gender is associated with sleep, a critical health concern of cancer caregivers, remains poorly understood. Thus, this study examined the relation of social constraint with sleep and the moderating effect of gender in a sample of adult cancer caregivers.

Spousal caregivers (N=73, 53.72 years old, 67.1% female, 57.2% Hispanic, 6 months post diagnosis of the patient) of colorectal cancer patients were enrolled in this study. Caregivers self-reported gender and completed the Social Constraints Scale (SCS; mean of 15 cancer related social constraint items). Averaged daily sleep markers, including sleep onset latency (SOL), waking after sleep onset (WASO), and sleep efficiency (SE), were derived from 14 consecutive days of Consensus Sleep Diary data.

Cancer caregivers on average reported comparable SE (86.5%), WASO (10.0 minutes), and SOL (22.36 minutes) compared to normal populations. Using caregiver age and gender as covariates, general linear regression modeling revealed that higher levels of social constraint were related to lower average SE (B = -0.035, t(68)= -2.835, p = 0.006). Higher social constraint was also related to longer WASO, which was the case only for male caregivers (B = 10.292, t(68) = 2.012, p = 0.049).

Findings highlight that social constraint processes contribute to cancer caregivers' inefficient and volatile sleep, and differentially so depending on the gender of the caregiver. Caregivers who may be less inclined to openly share their cancer-related thoughts and fears are at greater risk for disturbed sleep, which has implication for downstream health consequences and poorer wellbeing. Developing interventions that target sleep and integrate healthy and open communication between patient and caregiver are warranted.

Abstract 1274
ASSOCIATION OF DEPRESSION SYMPTOMS, SEVERITY, AND SYMPTOM PROFILES WITH REFERRAL/TREATMENT OF DEPRESSION IN CANCER OUTPATIENTS: A RETROSPECTIVE COHORT STUDY

Peter A. Shapiro, MD, Psychiatry, Thomas J. Ferland, BA, Vagelos College of Physicians and Surgeons, Nan Zhao, BS, Epidemiology, Arreum A. Kim, MBS, MS, Danielle A. Katayen, MPH, Medicine, Jon A. Levenson, MD, Psychiatry, Katherine D. Crew, MD MS, Medicine and Epidemiology, Columbia University, New York, NY

Background: Mental health problems are common in patients with cancer; screening for "distress" is part of the standard of care for cancer patients, but relationships of the severity and kind of depression symptoms to the likelihood of referral for treatment in cancer patients have not been well-studied. We examined the relationships of total depression symptom severity, individual symptoms, and symptom profiles to referral/treatment of depression in outpatients with cancer. We hypothesized that total depression symptom severity, individual depression symptoms, and symptom profiles are associated with increased referral/treatment of depression.

Method: Retrospective chart review of adult outpatients treated in the Comprehensive Cancer Center at Columbia University Medical Center, New York NY, who completed depression symptom screening with the PHQ9 between Jan 1, 2016-Dec 31, 2020. Patients with PHQ9 symptoms $\geq$ 10 were considered candidates for referral/treatment. In addition to total PHQ9 symptoms, patients were categorized as above or below the median of somatic symptoms (problems with sleep, fatigue, appetite, concentration) and cognitive-affective symptoms (low mood, loss of interest and pleasure, decreased self-esteem, psychomotor agitation, thoughts of death-suicide), yielding four symptom-group profiles. Treatment initiation/referral within four months of the date of screening was ascertained by notes in the clinical record. Patients documented as already receiving treatment prior to screening or with only a single visit in the outpatient record were excluded. Associations of symptom severity, individual symptoms, and symptom-group profiles with referral/treatment were examined with logistic regression, adjusting for other demographic and clinical factors.

Results: Initial screening identified 2107 patients with a completed PHQ9; of these 427 had PHQ9 $\geq$ 10, and 248 (mean age 63.6; 45% male; 94.8% with active disease, mean PHQ9 14.7) were included in the final analysis. Sixty patients (24%) were referred/treated for depression. PHQ9 symptom severity was higher in those referred/treated (mean (SD) 15.4 (4.4)) than in those not referred/treated (14.5 (3.8)) (p =.005). Three individual symptoms were positively associated with referral/treatment: feeling depressed, suicidal ideation, and feeling bad about oneself (p values, 0.013-0.023). The overall effect of symptom-group profile on treatment/referral was not significant.

Conclusion: Over 20% of cancer outpatients screened with the PHQ9 had elevated depression symptoms; of these, only 24% were referred/treated for depression. Total symptom severity and suicidal ideation, depressed mood, and impaired self-esteem were associated with referral/treatment.

Paper Session 23 - Adversity and stress in cardiovascular disease
Friday 13:45-14:45

Abstract 1167
CHRONIC STRESS, CORONARY ARTERY CALCIFICATION, AND THE MODERATING ROLE OF SOCIAL SUPPORT AND PHYSICAL ACTIVITY IN THE CORONARY ARTERY RISK DEVELOPMENT IN YOUNG ADULTS (CARDIA) STUDY

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BACKGROUND: Psychosocial stress is a known risk factor for coronary heart disease. Positive psychosocial factors such as social support and health enhancing physical activity (PA) are proposed buffers that may weaken the negative effects of stress on cardiovascular health. Thus, the current study examined longitudinal associations of chronic stress with coronary artery calcification (CAC) and cardiovascular disease (CVD) events, while also assessing whether social support and PA moderate these associations. **METHODS:** Data from 2,590 adults (aged 40.1 years; 46.5% Black; 59.5% women) from the Coronary Artery Risk Development in Young Adults (CARDIA) study, without CAC in 2000-2001 (baseline) were analyzed. Chronic stress lasting $\geq$6 months across five life domains (work, financial, relationships, health of self, and health of close other) was queried at baseline. A dichotomized score of 0 (no/low stress) or 1 (moderate/high stress) for each domain/stressor were summed for an overall chronic stress score (range: 0-5). CAC presence (> 0) was measured using non-contrast CT scans approximately 10 years later, and CVD events were adjudicated as a hard fatal/or nonfatal CVD event ascertained yearly through August 2018. PA and social support were self-reported via the CARDIA PA History and a 4-item social support questionnaire. Multivariate logistic regression and stepwise Cox proportional hazard analysis was used to measure associations

between key study variables. **RESULTS:** Mean chronic stress score was 1.31±0.03 stressors within the sample. After 10 years, 579 of the 2,590 participants had incident CAC – and by 2018, 132 participants had experienced a CVD event. Chronic stress was not associated with CAC (OR: 0.99; 95% CI: 0.91-1.07). Chronic stress was associated with significantly greater risk of a CVD event (HR: 1.05; 95% CI: 1.00-1.11) when adjusted for sociodemographic variables but was no longer significant when adjusting for lifestyle factors and psychological wellbeing. Neither PA nor social support were significant moderators of chronic stress and CAC or chronic stress and CVD events (all p>0.05) **CONCLUSION:** Chronic stress was not independently associated with CAC or with risk of having a CVD event in this middle-aged Black and White sample. It is possible that this middle-aged sample is below the expected age of prominent CAC development.

Abstract 1326
THE EFFECT OF HEALTH INSURANCE STATUS ON THREAT PERCEPTIONS AND THE DEVELOPMENT OF POSTTRAUMATIC STRESS SYMPTOMS IN PATIENTS AFTER SUSPECTED ACUTE CORONARY SYNDROME

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Background: Lack of medical coverage dramatically impacts health. Insurance disparities disproportionately affect minority patients, particularly in low-income communities. Previous studies have shown that early ED threat perceptions are a robust predictor of subsequent posttraumatic stress symptoms, but it is unknown how health insurance status may affect this pattern. We examined the possibility that lack of health insurance may amplify threat perceptions among patients seeking care for suspected acute coronary syndrome (ACS) in the emergency department (ED). We also tested the extent to which these threat perceptions may mediate the association between lack of health insurance and the development of post-traumatic stress symptoms 1 month after the ED visit.
 Methods: Patients ($N = 1741$) presenting to the NewYork-Presbyterian Hospital ED with suspected ACS were enrolled in an observational cohort study of psychological and cardiovascular outcomes. Participants were contacted 1 month post-hospitalization to assess post-traumatic stress symptoms. We ran a multivariable linear regression model, treating health insurance status as the predictor, ED threat perception as the outcome, and age, gender, education, Charlson Comorbidity Index, and GRACE ACS Risk Score as covariates. We then ran a mediation model with 5,000 bootstrapping samples, treating health insurance status as the predictor, PTSD symptoms at 1-month post-hospitalization as the outcome, ED threat perceptions as the mediator, with the same covariates as above.
 Results: As predicted, health insurance was negatively associated with threat perceptions, $b = -0.16$, $p = .002$, 95% CI [-0.26, -0.06]. Furthermore, greater threat perceptions significantly mediated the association between lack of health insurance and higher 1-month PTSD symptoms, indirect effect = -1.04, 95% CI [-1.98, -0.17].
Conclusions: The findings suggest that lacking health insurance may heighten ED threat perceptions, which thereby may put patients at greater risk of developing more severe post-traumatic stress symptoms 1 month after the event. We posit that lack of insurance may increase the risk of post-traumatic stress due to economic hardships and uncontrollability that arise from having to pay medical bills out of pocket after an acute medical event.

Abstract 1004
PROSPECTIVE ASSOCIATION BETWEEN PRO-INFLAMMATORY STATE ON ADMISSION AND

POSTTRAUMATIC STRESS FOLLOWING ACUTE CORONARY SYNDROME

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Objective: The traumatic experience of acute coronary syndrome (ACS) may induce symptoms of posttraumatic stress disorder (PTSD). We examined whether the ACS-triggered acute inflammatory response predicts the development of PTSD symptoms. **Methods:** Study participants were 70 patients (all Caucasian, 80% male, mean age 59 years) with myocardial infarction (MI) during the acute treatment phase. Interleukin (IL)-1β, IL-6, tumor necrosis factor (TNF)-α, IL-4, IL-10, and transforming growth factor (TGF)-1β were determined in plasma collected within 48 h of hospital admission. Participants self-assessed the severity of ACS-induced PTSD symptoms with the 17-item Posttraumatic Diagnostic Scale at 12 months. **Results:** There was a significant positive association of the pro-inflammatory index (added standardized z-scores of pro-inflammatory cytokines IL-1β, IL-6, and TNF-α) with total PTSD symptom severity (delta R^2=.058, p=.025) and re-experiencing symptoms (delta R^2=0.098, p=.005), but not avoidance/numbing and hyperarousal symptoms. Analyses were adjusted for the anti-inflammatory index (added standardized z-scores of IL-4, IL-10, and TGF-β1), sex, age, ST-elevation MI, body mass index, and distress during MI. Results were robust when the anti-inflammatory index was removed from the model. Additional analyses showed significant associations of both the net-inflammatory index (i.e., pro-inflammatory index minus anti-inflammatory index) and IL-1β with total PTSD symptom severity, re-experiencing, and hyperarousal symptoms (delta R^2 values between .047 and .076, p-values <.05). **Conclusion:** The findings suggest an association between the pro-inflammatory state launched during ACS and the development of PTSD symptoms. Increased IL-1β may play a particular role in the pathophysiology of ACS-induced PTSD symptoms.

Abstract 1472
THE INFLUENCE OF SOCIOECONOMIC STATUS AND SEX IN A NETWORK ANALYSIS ON RISK FACTORS IN CAD PATIENTS: THE THORESCI STUDY

Sophie van den Houdt, MSc, Paula Mommersteeg, PhD, Medical and Clinical Psychology, Tilburg University, Tilburg, Netherlands, Jos Widdershoven, MD, PhD, Department of Cardiology; Medical and Clinical Psychology, Elisabeth-TweeSteden Hospital; Tilburg University, Tilburg, Netherlands, Nina Kupper, PhD, Medical and Clinical Psychology, Tilburg University, Tilburg, Netherlands

Background – A variety of risk factors (i.e., psychosocial, biomedical, socioeconomic status [SES] and health behavioral) influences the risk of development and prognosis of coronary artery disease (CAD), health and healthcare use both independently as well as mutually. Low SES was previously found to worsen the other risk factors, indicating it could be an influential factor. Additionally, sex differences were similarly found to exist in each separate risk factor. Network analysis could provide an in-depth insight in the interrelatedness of the risk factors with the moderating role of sex to

ultimately contribute to more refinement in prevention and cardiac rehabilitation strategies.

Methods – 1682 participants (77.9% male; $M_{age} = 69.2 \pm 10.6$) with established CAD completed questionnaires on psychosocial factors and health behaviors at multiple timepoints. Biomedical data was retrieved through medical records. An SES index was created based on self-reported occupation and education, and area-based median income through postal code. Using R, we conducted a mixed graphical model network analysis on all risk factors combined with and without the moderating role of sex.

Results – SES belonged to the more influential risk factors with moderate to high levels of expected influence and degree centrality, indicating it plays a considerate role in the risk factor network. When considering the moderating role of sex, relationships between SES and the majority of the risk factors were found to be stronger for women.

Discussion – The current study provided an insight in an interrelated network of a variety of risk factors among CAD patients. With SES belonging to the more influential risk factors and female sex influencing the strength of most of the SES-risk factor relationships, cardiac rehabilitation and prevention techniques could be more refined by accounting for both influences.
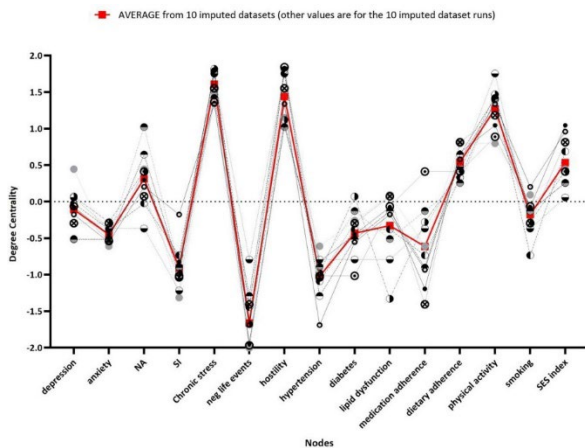
Paper Session 24 - Current state of the art: Stress reactivity
Friday 13:45-14:45

Abstract 1124
PREDICTING CORTISOL STRESS RESPONSE TRAJECTORIES: A MEGA-ANALYTIC PERSON-CENTERED APPROACH

Peggy Zoccola, PhD, Psychology, Ohio University, Athens, OH, Andrew Manigault, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA, Gabrielle Decastro, BA, Courtney Taylor, MA, Psychology, Ohio University, Athens, OH, Sally Dickerson, PhD, Psychology, Pace University, New York, NY

Background. To date, most prior work on cortisol stress responding only attempts to characterize a single, average pattern of response over time, in part due to limited sample size. Yet, heterogeneity in individuals' perceptions and responses to stress is a central tenet of psychological theories of stress, and multiple cortisol trajectories have been observed in response to acute stressful experiences. Notably, social-evaluative threat (SET) is considered a reliable predictor of variability in cortisol response magnitude.

Aim. We thereby aimed to identify cortisol stress response trajectory classes using a data-driven approach, and to test whether SET indicators could predict class membership.

Methods. We used mega-analysis to pool raw data across 13 laboratory acute stress studies of healthy adults (n = 1,258) that included a version of the Trier Social Stress Test and at least 3 salivary cortisol assessments (1 pre-stressor, 2 post-stressor). We applied group-based trajectory modeling to identify cortisol trajectory groups that best fit the data. SET was operationally defined and tested

in 3 ways: study conditions with evaluators present, 1 self-report item reflecting how evaluated participants felt during the stressor, and mean score of 10 self-report items reflecting shame-related cognitions and emotions. Age and gender were included as predictors of cortisol trajectories after number of groups were determined. Hypotheses, approach, and analytic plan were pre-registered.

Results. Five cortisol trajectory groups were found to best fit the data (see Figure 1). Moreover, SET indicators predicted group membership such that, assignment to SET condition, greater perceived evaluation, and greater shame-related cognitions and emotions were most strongly linked to membership in Group 4 (the most peaked response; *p's* < .006), relative to Group 2 (the most populated group). SET condition also predicted greater probability of membership in Group 1 (low, blunted response) relative to Group 2 (*p* = .01).

Discussion. The present results highlight the high degree of response heterogeneity that characterizes cortisol responses to acute stress and could suggest that modeling average trajectories across the full sample hides more than it reveals. Additional findings and implications of results for theory and future research will be discussed.
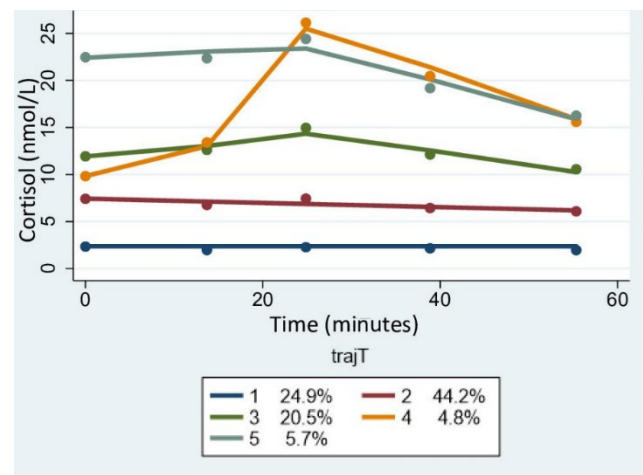
Abstract 1602
MULTIVARIATE CLUSTERS OF HEART RATE AND BLOOD PRESSURE REACTIVITY TO PSYCHOLOGICAL STRESS IN YOUNG AND MIDLIFE ADULTS: DESCRIPTIVE FINDINGS USING A LATENT PROFILE APPROACH IN TWO SAMPLES

Katherine A. Duggan, PhD, Department of Psychology, North Dakota State University, Fargo, ND, Alexandra T. Tyra, MA, Annie T. Ginty, PhD, Department of Psychology and Neuroscience, Baylor University, Waco, TX, Ryan C. Brindle, PhD, Department of Cognitive and Behavioral Science, Washington and Lee University, Lexington, VA

Stress reactivity has been traditionally defined using change scores (i.e., subtracting baseline average from stress average) and statistically analyzed using one physiological metric at a time. This is not ideal as blood pressure and heart rate profoundly influence each other and prior research has shown distinct multivariable clusters (or patterns) of stress reactivity emerge when multiple metrics are simultaneously considered. We therefore used Latent Profile Analysis (LPA) to identify latent (underlying or unobserved) groups or patterns of reactivity to psychological stress. LPA uses continuous indicators (here, heart rate, systolic, and diastolic blood pressure reactivity measured using difference scores) and identifies underlying individual differences across all indicators. We conducted two LPAs without covariates: the first was in 1106 participants from the Midlife in the United States sample (average age = 54y, range = 34-83) who completed a 6-minute math and a 6-minute Stroop task. The second LPA was in 456 young adults (average age = 19y, range = 18-34) who completed a 4-minute mental arithmetic stress task. Six groups

emerged in the midlife adults and five groups emerged in the young adults. Four groups were common to both samples. First, the largest group in both samples followed an average or typical reactivity pattern (i.e., heart rate and blood pressure reactivity were close to the sample mean). The second largest group showed a blunted pattern (i.e., heart rate and blood pressure reactivity were below the sample mean). Across both samples, smaller "exaggerated blood pressure but not heart rate" and "very high reactivity across all variables" groups were also identified. Next, there were some groups that were unique to each sample. In midlife adults only, slightly exaggerated (values somewhat higher than the sample mean) and extreme blunting (with negative values for blood pressure reactivity only) groups were identified. Finally, in young adults only, a "high heart rate but average blood pressure" group was identified. Differences across samples may be related to age, the development of chronic illness, baroreflex dysregulation, stress task, or may be sample-specific. These results generate new insights and exciting questions related to the psychophysiology of mental stress and the development of stress reactivity across the lifespan.

Abstract 1329
ADVERSE CHILDHOOD EXPERIENCES (ACES) RELATE TO BLUNTED CARDIOVASCULAR AND CORTISOL REACTIVITY TO ACUTE LABORATORY STRESS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Ryan C. Brindle, PhD, Cognitive and Behavioral Science, Neuroscience, Alexandra Pearson, B.S, Cognitive and Behavioral Science, Washington and Lee University, Lexington, VA, Annie T. Ginty, PhD, Psychology and Neuroscience, Baylor University, Waco, TX

Adverse childhood experiences (ACEs) are associated with poor future mental and physical health. Altered biological reactivity to mental stress may be a possible mechanism linking ACEs to poor health. However, it is not clear if ACEs relate to blunted or exaggerated stress reactivity. This meta-analysis aimed to determine whether exposure to ACEs is associated with cardiovascular and cortisol stress reactivity. A systematic review yielded 37 sources. Random-effects modelling tested the aggregate effects of 83 studies of the association between ACEs and stress reactivity. Hedges G (Hg) was used as a measure of effect size. Exposure to ACEs was associated with relatively blunted heart rate (Hg = -0.21 (-0.37 - -0.05), p =.01), systolic (Hg = -0.36 (-0.65 - -0.07), p =.016) and diastolic (Hg = -0.29 (-0.58 - -0.00), p =.05) blood pressure, and salivary cortisol (Hg = -0.28 (-0.40 - -0.16), p <.001) stress reactivity. Effect sizes did not significantly vary as a function of sample sex or reactivity measure (e.g., heart rate, blood pressure, or cortisol). Meta-regression revealed preliminary evidence of greater blunting in younger samples and samples reporting greater ACE exposure. In a small subset of studies (14/83) where heart rate and cortisol reactivity were simultaneously measured, a significant correlation emerged (r(13) = .68, p = .008) between effect sizes for heart rate and cortisol reactivity such that studies that reported more negative effect sizes for cortisol also tended to report more negative effect sizes for HR. Subgroup analyses for stress task, ACE measurement instrument, and sample race were not conducted because of a lack of between-study variability. Exposure to ACEs is associated with dysregulation of multiple components of the human stress response system.

Abstract 1357
TYPE D PERSONALITY AND CARDIOVASCULAR REACTIVITY TO ACUTE PSYCHOLOGICAL STRESS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Adam O' Riordan, B.A, Siobhán Howard, PhD, Stephen Gallagher, PhD, Department of Psychology, University of Limerick, Limerick, Ireland

Background: Type D personality has been consistently associated with adverse cardiovascular health outcomes including reoccurring myocardial infarctions, cardiac revascularization and cardiac/all-cause mortality amongst cardiac patients. Atypical cardiovascular reactivity to psychological stress is one potential mechanism facilitating the association between Type D personality and poorer cardiovascular health. However, studies examining Type D personality and cardiovascular reactions to stress have reported mixed findings. The current review examined if Type D personality was associated with cardiovascular reactivity to stress, and if this association varied by both sex and the social salience of the psychological stressor.
Methods: Electronic databases (Medline, PsycArticles, PsycInfo, CINAHL, PubMed, Web of Science) were searched for relevant publications. Studies with non-clinical samples that employed a resting baseline period followed by a stress-task period were reviewed. A total of 401 articles were retrieved and screened for eligibility. After removing irrelevant articles, 16 peer-reviewed studies were included in the review.
Preliminarily results: The association between Type D personality and cardiovascular reactivity varied by sex and the social salience of the psychological stressor across studies. Furthermore, Type D personality was associated with exaggerated cardiovascular reactivity to social stress tasks, particularly amongst males. In contrast, Type D appeared to be associated with lower cardiovascular reactivity amongst females.
Conclusion: While atypical cardiovascular reactions to psychological stress indicate a possible psychophysiological pathway leading to adverse cardiovascular events amongst individuals with Type D personality, it appears that Type D males are particularly vulnerable to socially based stressors, exhibiting exaggerated cardiovascular reactions.

Late Breaking Session 2 - Studies on asthma
Friday 15:00-15:45

Abstract 1623
ANTICHOLINERGIC TREATMENT FOR ASTHMA IN CHILDREN WITH CO-MORBID DEPRESSION: AN APPROACH TO TARGETING A VULNERABLE POPULATION

Bruce D. Miller, MD, Psychiatry and Pediatrics, Heather K. Lehman, MD, Pediatrics, Beatrice L. Wood, PhD, Psychiatry and Pediatrics, University at Buffalo, Buffalo, NY

Objective. Child asthma and depression are more prevalent in socio-economically stressed populations, and child depression is associated with worse asthma. Stress is known to impact child asthma mediated by immune pathways, but pathways specific to child asthma and depression are not well established. Depression in child asthma is associated with a predominance of parasympathetic/cholinergic activation over sympathetic activation (i.e., vagal bias), and cholinergic activation mediates airway smooth muscle constriction. The current study tested the hypothesis that children with asthma who have elevated depressive symptoms are differentially responsive to short-acting anticholinergic therapy. Methods. Forty children (ages 7-17 years) with asthma and active airway obstruction were recruited from the asthma clinic at Oishei Children's Hospital and initially evaluated for depressive symptoms using the Children's Depression Inventory (CDI); airway function was measured using spirometry (FEV1 % predicted). The children were then treated with ipratropium, a short-acting inhaled anticholinergic medication. After 30 minutes, the children's airway function was assessed for treatment response a second time. Finally, an inhaled adrenergic medication, albuterol, was administered and pulmonary function was measured again, to assess for any further beneficial effect on the airway. Results. There was a statistically significant, positive correlation between higher scores of depressive symptoms on the CDI and improved in pulmonary function (FEV1 % predicted) in response to inhaled ipratropium (r_s =0.341, p=0.031). Higher CDI scores were not correlated with further improvement in pulmonary function in response to residual albuterol treatment. Conclusion.

Children with asthma showed greater airway response to anti-cholinergic medication when they had higher rates of depressive symptoms. This indicates a cholinergic mechanism of effects on pulmonary function in children with asthma and depression. The findings in this study indicate that anti-cholinergic medication may be preferentially beneficial for children with asthma and co-morbid depression. Since many children with asthma and co-morbid depression come from socio-economically stressed populations, such treatment may help reduce child asthma health disparities.

Abstract 1620
MOTHER-CHILD RELATIONAL INSECURITY AS A TARGET FOR INTERVENTION TO IMPROVE CHILDHOOD ASTHMA IN SCIO-ECONOMICALLY DISADVANTAGED FAMILIES

Beatrice Wood, PhD, Bruce D. Miller, MD, Psychiatry and Pediatrics, University at Buffalo, Buffalo, NY, JungHa Lim, PhD, Child and Adolescent Development, Korea University, Seoul, NA, Korea, Democratic People's Republic Of

Objective. Child asthma disparities are prevalent in socio-economically stressed single maternal parent families. Stress impacts childhood asthma mediated by immune and autonomic pathways, but specific targets for psychosocial intervention are not yet identified. The purpose of this study is to identify such targets. Research indicates that both maternal depression and child depression impact child asthma. This study tests the hypothesis, derived from previous research, that single parent maternal depression negatively impacts child asthma mediated serially by insecure mother-child relational security and child depression. Methods. In a cross-sectional study, children with asthma (age 7-17 years old) from a socio-economically disadvantaged population, and their single parent mothers (N=202), were assessed for depression. Children were assessed using the Children's Depression Inventory, and mothers with the Beck Depression Inventory. Mother-child relational security was assessed with the Relatedness Questionnaire. Child asthma disease activity was assessed by symptom report and lung function tests. Structural equation modeling (SEM) was used to test a model in which caregiver depression impacts child asthma disease activity mediated by insecure attachment and child depression. Results. SEM results indicated that maternal depression statistically predicted child depression (β =.21, p < .01) and insecure mother-child relations (β =.17, p < .05). In addition, insecure relations statistically predicted child depression (β = .50, p < .001). Child depression mediated the adverse effects of maternal depression and insecure attachment on child asthma disease activity (β = .43, p < .01). There was no direct effect of insecure mother-child relations on child asthma, suggesting that relational insecurity affects asthma through the child's depressive symptoms. Conclusion. In single parent families, maternal depression may impact child asthma disease activity through insecure relations contributing to child depression. Longitudinal and/or intervention studies are needed to establish causal effect. Nonetheless, these findings suggest that for socially and economically disadvantaged children with asthma, caregiver depression and parent-child relationships may be important targets for intervention to improve child outcomes and reduce health disparities.

Paper Session 25 - Be amazed! Non-topical, but highly recommended
Friday 15:00-15:45

Abstract 1404
LOSING MY RELIGION: THE HEALTH ASSOCIATIONS OF RELIGIOUS DEIDENTIFICATION

Amy J. Osterbaan, BA forthcoming, Alyssa Cheadle, PhD, Psychology, Hope College, Holland, MI

The purpose of this study was to investigate the health of people who stop identifying as religious as young adults. Generally, religious people have better health than nonreligious people (Cheadle & Dunkel Schetter, 2017). However, little is known about the health of those who deidentify. They may experience worse health than others (Fenelon & Danielsen, 2016). Alternatively, the religious residue hypothesis contends that formerly religious people resemble always religious people in terms of prosocial behaviors and moral reasoning (Van Tongeren et al., 2021).
The current study utilized data from the National Longitudinal Study of Adolescent to Adult Health, Waves III through V, including 18,379 Americans surveyed in 2001-02, 2008, and 2016-18. Surveys included information that allowed formation of religious identification categories and assessments of physical and mental health and health behaviors.
In cross-sectional analyses, formerly religious people reported poorer health and engaged in more risky health behaviors than always and never religious people for over 30 markers of health at each Wave (all p ≤ 0.037). In prospective analyses, formerly religious people reported poorer health and engaged in more risky health behaviors at Waves IV and V for over 30 markers of health (all p ≤ 0.047). Wave IV identification followed this pattern when predicting Wave V for 31 markers of health (all p ≤ 0.049). In retrospective analyses at Wave III, people who deidentified from religion at Wave IV displayed poorer health and more risky health behaviors than always religious people for 31 markers of health (all p ≤ 0.047). Additionally, at Wave IV, people who had deidentified from religion at Wave III reported poorer health and more risky health behaviors than those who had deidentified at Wave IV for 40 markers of health (all p ≤ 0.037).
Overall, results suggest boundary conditions for the religious residue hypothesis and the health benefits of religiousness. People who deidentify appear to experience worse health even than those who were never religious. Further, poor health and risky health behaviors preceded religious disaffiliation. Additionally, longer duration of disaffiliation was associated with worse health and greater engagement in risky health behaviors. These findings have implications for research and practice.

Abstract 1528
NEUROCOGNITIVE FUNCTION IN ADULTS WHO LIVED AND GREW UP IN AIR-POLLUTION: THE 4HAIE STUDY

Vera K. Jandackova, Ph.D., Steriani Elavsky, Ph.D., Daniel Jandacka, Ph.D., Department of Human Movement Studies, Faculty of Education, University of Ostrava, Ostrava, Czech Republic

Air pollution has been recognized as an environmental neurotoxin that may affect cellular and molecular events in the brain. Evidence about the impact of air pollution on cognitive development has been growing but remains inconclusive. We aimed to assess whether exposure to air pollution throughout one´s life, including childhood, is associated with neurocognitive function in adulthood and how this differs by age. Cross-sectional data from Programme 4 of the Czech study Healthy Aging in Industrial Environment(4HAIE) were used. We analyzed data from 379 participants (158 women) aged 18-65yrs who reported to have spent at least the first 10yrs of their life and resided for at least last 5 years prior to cognitive testing in either 1) a region with historically high values of air pollutants PM10, PM2.5, NO2 and benzo(a)pyrene (Moravian-silesian region), or 2) a region with low air pollution(control region, South Bohemia). All participants were non-smokers. Global cognitive score was calculated as the sum of standardized test scores of 5 tests of memory and executive function. Multivariable regression was applied. On average, participants from polluted region had higher cognitive performance (β=2.6, p=0.015) than those from control region. However the interaction term between region and age showed that for every 1 year increase in age, there was a lower global cognitive score in those from the polluted region (β=-0.06; p=0.036), compared to those from the control region. The model accounted for sex, education, physical activity, VO2max, economic status and self-reported fatique, concentration and external noise during the testing. Our findings may suggest that the effect of air pollution becomes evident as one grows older. Alternative explanation is that, due to the

cross-sectional design and improving air quality in the recent decades, the effect of air pollution is only observed in older adults who grew up in worse air quality than the young adults in the study. Detailed estimates of individual exposure to air pollution and longitudinal design, as well as neuroimaging and physiological corraborating data, are needed to examine potential biological mechanisms.

Abstract 1049
SHORT-TERM TRAJECTORIES OF DEPRESSIVE SYMPTOMS IN THE COURSE OF BEREAVEMENT, THEIR BIOPSYCHOSOCIAL RISK FACTORS AND RISK OF PROLONGED GRIEF

Marzieh Majd, PhD, Michelle A. Chen, M.A., Psychological Sciences, Rice University, Houston, TX, Diana A. Chirinos, PhD, Department of Preventive Medicine, Northwestern University, Chicago, IL, Angie S. LeRoy, PhD, Psychological Sciences, Rice University, Houston, TX, Kyle W. Murdock, PhD, Biobehavioral Health, Pennsylvania State University, State College, PA, E L. Wu-Chung, B.S., Ryan L. Brown, M.A., Psychological Sciences, Rice University, Houston, TX, Cobi Heijnen, PhD, Department of Symptom Research, The University of Texas MD Anderson Cancer Center, Houston, TX, Christopher P. Fagundes, PhD, Psychological Sciences, Rice University, Houston, TX

Severe and/or prolonged depressive symptoms among bereaved individuals can interfere with adapting to the loss and lead to prolonged grief reactions. Substantial individual variability exists in the severity and duration of depressive symptoms after the loss. Biopsychosocial factors may help account for such variation. In this longitudinal study, we examined distinct trajectories of depressive symptoms from 3 to 12 months after the death of a spouse. We also examined whether 1) childhood adversity and inflammation at baseline were associated with the trajectory group membership, and 2) distinct depression trajectories predict the risk of prolonged grief at 12 months post-loss. Spousally bereaved individuals (N=175) completed psychological assessments and a blood draw. Proinflammatory T-cell stimulated cytokines interleukin-6 (IL-6) and tumor necrosis factor-alpha (TNF-α) were quantified in blood. Group-based trajectory modeling and logistic regression were conducted. Analyses controlled for relevant demographic/psychosocial covariates. We identified four trajectories of depressive symptoms: resilience (minimal/no depression; 45%), moderate depression-improved (alleviated to "mild" by 12 months; 31%), severe depression-improved (alleviated to "moderate" by 12 months; 15%), chronic depression (severe depression across time points; 9%). The "resilient" group was considered as the primary reference category. Higher levels of childhood adversity predicted the probability of membership in the "moderate depression-improved," "severe depression-improved," and "chronic depression" groups (ORs: 1.33-1.83, *ps* <.05). Individuals with larger IL-6 and TNF-α production at baseline (i.e., within three months post-loss) were more likely to belong to the "severe depression-improved" group (ORs: 2.93-3.06, *p* <.05). Compared to the "resilient" group, the three trajectory groups exhibiting moderate to severe depressive symptoms during the first six months post-loss were more likely to have high grief severity (using an established cut-score) at 12 months (ORs: 7.12-57.57, *ps* <.01). This study described the short-term patterns of change in depressive symptoms in the grief process. Our findings provide insight into risk factors associated with depression trajectories and prolonged grief symptomatology, which may inform prevention and treatment efforts early in the grief process.

Abstract 1117
INFLAMMATORY STRESS RESPONSES AND MENTAL HEALTH OUTCOMES IN PEOPLE WITH TYPE 2 DIABETES: A FOLLOW-UP STUDY

Laura Panagi, PhD, Psychiatry, University of Cambridge, LONDON, NA, United Kingdom, Lydia Poole, PhD, Health Informatics, University College London, London, NA, United Kingdom, Ruth A. Hackett, PhD, Psychology, King's College London, London, NA, United Kingdom, Andrew Steptoe, PhD, Behavioural Science and Health, University College London, London, NA, United Kingdom

Background: People with Type 2 Diabetes (T2D) have increased risk of mental health disorders compared to people without the condition. Inflammatory dysregulation may be linked with mental health disturbances in this group of people however no previous studies have examined longitudinal associations between inflammatory stress responses and mental health outcomes in T2D.
Purpose: To understand the biological mechanisms that might predispose people with T2D to poor mental health in the future.
Methods: At baseline, 140 participants with doctor-verified T2D participated in a laboratory stress testing study (mean age = 64 years). Participants were recruited from diabetes outpatient and primary care clinics in London. In the laboratory, participants underwent two mental stress tasks and blood was sampled before and up to 45 minutes post-stress to detect plasma interleukin-6 (IL-6). The Center for Epidemiological Studies-Depression scale and the Short Form-36 Health Survey were completed at baseline. These measures were also completed 7.5 years later. Associations between IL-6 stress responses and a) depressive symptoms and b) mental health-related quality of life were tested cross-sectionally and longitudinally using linear regression analyses adjusting for age, sex, and body mass index.
Results: Up to 66 participants provided follow-up data. In cross-sectional analyses, increased IL-6 stress responses immediately post-task were associated with lower mental health-related quality of life adjusting for covariates (B = -21.73, p = 0.005, 95% CI [-36.82, -6.63]). In longitudinal analyses, greater IL-6 stress responses at 45 minutes post-task predicted increased depressive symptoms (B = 10.31 p = 0.048, 95% CI [0.10, 20.51]) and decreased mental health-related quality of life (B = -21.18 p = 0.031, 95% CI [-40.34, -2.02]) adjusting for covariates. The association between the 45-minute IL-6 response and mental health-related quality of life at follow-up was upheld after further adjustment for baseline mental health-related quality of life (B = -19.63, p = 0.040, 95% CI [-38.35, -0.92]).
Conclusions: This study supports the predictive value of inflammatory stress responsivity on future mental health outcomes in people with T2D. Further research involving larger sample size is required.

Abstract 1014
DISCRIMINATION, ACCULTURATION, AND INCIDENT TYPE 2 DIABETES: EVIDENCE FROM THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS

Loretta Hsueh, PhD, Luis Rodriguez, PhD, Estibaliz Iturralde, PhD, Division of Research, Kaiser Permanente Northern California, Oakland, CA, Jesse Stewart, PhD, Department of Psychology, Indiana University-Purdue University Indianapolis, Indianapolis, IN, Dhananjay Vaidya, PhD, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, Sandra Albrecht, PhD, Department of Epidemiology, Mailman School of Public Health at Columbia University, New York, NY, Carlos Rodriguez, MD, Department of Medicine and Department of Epidemiology & Population Health, Albert Einstein College of Medicine, Bronx, NY

Immigrants are at increased type 2 diabetes (T2D) risk. Discrimination may contribute to this association, but discrimination's impact on immigrant health is mixed, potentially due to acculturation differences. We hypothesized that lower

acculturation attenuates a positive association between discrimination and T2D.

Objective: To estimate the association of discrimination with developing T2D and to assess whether acculturation moderates this association.

Method: Data came from 1,795 Hispanic and Chinese adults from the Multi-Ethnic Study of Atherosclerosis. Acculturation was measured using language spoken at home, nativity, and length of US residence at baseline (2000-2002); scores ranged from 0 (least acculturated) to 4 (most acculturated). Daily discrimination (none, any) and lifetime discrimination (never, once, more than once) were measured at baseline. Incident T2D was defined as fasting glucose ≥126 mg/dL or diabetes medication use. We treated time of incident T2D as the mid-point between exam visits. Two separate Cox proportional hazards models were constructed to examine associations of acculturation and daily discrimination (Model 1) and lifetime discrimination (Model 2) with incident T2D. We tested acculturation level x discrimination interactions using nested likelihood ratio tests at $p<.05$.

Results: Participants were mean aged=61 years, 53% women, 63% Hispanic, and 37% Chinese. Hispanic vs. Chinese adults had higher mean acculturation (2.0 vs. 1.0) and were more likely to report any daily (4% vs. 1%) or lifetime discrimination (34% vs. 18%). Over a median 9.7 years of follow-up between 2000-2018, 319 new cases of T2D occurred. Acculturation was not associated with incident T2D, adjusting for age, gender, race/ethnicity, education, and daily discrimination (Model 1) or lifetime discrimination (Model 2). Daily discrimination (Model 1) was not associated with incident T2D, but those reporting more than one lifetime discriminatory experience (Model 2) had 1.4 times the risk of T2D vs. those reporting none (*HR*=1.44, 95% *CI*: 1.08, 1.91). Acculturation did not moderate the association of daily or lifetime discrimination with T2D.

Conclusions: Lifetime discrimination, but not daily discrimination, was associated with increased risk for developing type 2 diabetes among Hispanic and Chinese adults but acculturation did not moderate the association.

Abstract 1103
THE ASSOCIATION BETWEEN ACCULTURATION AND ACCURACY OF TYPE 2 DIABETES RISK PERCEPTION: ANALYSIS OF 2011-2016 NATIONAL HEALTH AND NUTRITION EXAMINATION STUDY (NHANES) DATA

Ashley Splain, BS, Tasneem Khambaty, PhD, Psychology, University of Maryland, Baltimore County, Baltimore, MD

Early detection of type 2 diabetes (T2DM), necessary for timely intervention, requires accurate perception of risk. Increased acculturation to American sociocultural practices has been linked with higher risk for T2DM. What is not known is how individuals with higher or lower levels of acculturation *perceive* their risk for T2DM. Thus, we examined the association of acculturation with the likelihood of accurate risk perception among adults at risk for T2DM.

Participants were 6,089 adults (mean (SD) age: 55 (18) years, 40% female, 12% Non-Hispanic Black, 15% Hispanic/Latino, 5% Non-Hispanic Asian). Accurate risk perception was determined by participants a) meeting American Diabetes Criteria for prediabetes based on glycated hemoglobin (HbA1c), fasting plasma glucose, or 2-hour oral glucose tolerance test values, *and* b) self-reporting their risk for prediabetes or T2DM. Acculturation was operationalized as length of time in the US (immigrants living in the US ≤ 10 years, immigrants living in the US > 10 years, born in the US; acculturation time) and whether participants predominantly spoke English (high acculturation) or their native language (low acculturation) at home (acculturation language).

Overall, 35% of participants accurately perceived their T2DM risk. Multivariable logistic regression models adjusting for age, race, sex, education, insurance status, smoking, alcohol use, waist circumference, and survey design revealed an influence of acculturation time, but not acculturation language, on accuracy of

risk perception. Compared to those born in the US, persons living in the US ≤ 10 years had 57% lower odds of accurate T2DM risk perception (OR = 0.43, 95% CI: 0.32-0.56, $p = .03$) and those living in the US > 10 years had 38% lower odds (OR = 0.62, 95% CI: 0.47-0.69, $p = .01$). With further adjustment for family history of T2DM, compared to those born in the US, persons living in the US ≤ 10 years had 50% lower odds (OR = 0.50, 95% CI: 0.40-0.64, $p = .03$) and those living in the US > 10 years had 40% lower odds (OR = 0.60, 95% CI: 0.56-0.65, $p = .01$) of accurate T2DM risk perception. Results indicate 38-57% lower odds of accurate T2DM risk perception in immigrant populations, regardless of the length of time lived in the US. Increased cognizance of acculturation status by health care and other providers may be warranted to increase early T2DM risk detection.

Paper Session 27 - Studies on acute and chronic pain
Friday 15:00-15:45

Abstract 1405
HEART METRICS FROM WEARABLE SENSORS AT NIGHT PREDICT NEXT-DAY PAIN REPORTS:A STUDY OF PRIMARY CHRONIC PAIN

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Chronic pain is devastating and its measurement is elusive, making intervention difficult for sufferers and practitioners alike. The present study explores whether heart-based metrics may contribute to tracking the trajectory of pain over time and to possible interventions. A hint of promise comes from studies of anesthesiology, where heart metrics are used effectively as biomarkers of pain to help titrate consciousness in surgery patients. But a complicating factor is that heart activity is influenced by a host of factors in the more variable conditions of everyday life. The present study measured mean heart rate (HR) and heart rate variability (HRV) with a wrist-worn sensor in persons with and without chronic pain for one month. 30 adults with chronic pain and 24 adults without pain rated their subjective pain several times a day and wore a wristband heart sensor during each night. Multiple regression models examined the fit between daily pain and heart activity, while controlling for pain autocorrelation and the individual differences in pain and heart metrics among participants. The results showed that HR at night predicted pain reports the next day in participants with chronic pain, *beta*= 0.018, t(710) = 3.21, *p*= .001, but not in pain-free participants. This correlation was also stronger than that between daily pain reports and HR on the next night. Similar analyses involving HRV did not reveal any reliable correlations. This first demonstration of heart metrics predicting everyday pain reports in persons with chronic pain holds promise for future efforts to find objective biomarkers of fluctuations in daily pain.

Abstract 1452
THE CHANGE OF WORK-FAMILY-SOCIAL SUPPORT INTERFACE AMONG WORKERS WITH CHRONIC PAIN: A LATENT TRANSITION ANALYSIS

Nguyen Nguyen, M.A., Shin Ye Kim, Ph.D., Psychological Sciences, Jaehoon Lee, Ph.D., Educational Psychology, Texas Tech University, Lubbock, TX, Babetta Mathai, Ph.D., Department of Clinical and Health Psychology, University of Florida Health Science Center, Gainesville, FL

Objective: Managing the competing demands of work and family is a major source of stress for most employees, and it's even harder for those with chronic pain. Approximately, one out of every two employees experience some form of chronic pain, which not only creates additional strain in their work and family domains, but also negatively affects health outcomes. The biopsychosocial model of pain depicts the joint effect of one's social, psychological, and

physiological domains on their pain experience. Examining the psychosocial factors, especially the work and family domains – the two backbones of human experience, and how they predict health and pain-related outcomes is imperative. Practitioners need to fully understand workers' lived experiences if they are to develop tailored, more effective chronic pain treatments. **Method**: Drawing on biopsychosocial theory, the current study utilized a person-centered approach to investigate the longitudinal trajectory of workers' profiles based on work-family interface, social support, and culture. This study examined how well these profiles predicted health and pain-related outcomes among workers with chronic pain (n = 544) from the two waves of the Midlife in the United States (MIDUS) longitudinal study. **Results**: Using a person-centered Latent Transition Analysis (LTA) approach, three profiles (Harmful, Beneficial, Passive) at Wave 2 and two profiles (Harmful,Beneficial) at Wave 3 were identified. Across both waves, the Harmful group, characterized by high work-family conflict (WFC) and low work-family enrichment (WFE), reported the worst pain and health-related outcomes whereas the Beneficial group, characterized by low WFC and high WFE, reported better pain outcomes and greater psychological well-being. Importantly, all members in the Passive group (lowest WFC & WFE), along with 60% of individuals in the Harmful group who had greater psychological well-being at Wave 2, moved to the Beneficial group at Wave 3. **Conclusion:** Regarding the key contextual psychosocial factors of work-family interface, social support, and self-construal, findings indicate the heterogeneity of working adults with chronic pain and suggested more tailored and person-centered approaches to assess and treat pain among this group. The results also call for the need for occupational health interventions in pain management, particularly in promoting psychological well-being and WFE.

Abstract 1560
ENDOGENOUS OPIOID SYSTEM REGULATION OF PAIN AND STRESS RESPONSES IS DISRUPTED BY NICOTINE WITHDRAWAL: IMPLICATIONS FOR UNDERSTANDING THE ROLE OF STRESS IN ADDICTION

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Withdrawal from addictive substances is associated with dysregulation of the stress response. Research suggests a role for the endogenous opioid (EO) system in this dysregulation. The extent to which the EO system plays a role in this withdrawal-related perturbation has not been investigated among individuals with nicotine dependence, yet this could have potential therapeutic implications. We examined effects of opioid blockade on pain perception and cardiovascular stress responses in nicotine-dependent men and women assigned to ad libitum smoking (N=44) versus withdrawal (N=62), as well as nicotine non-users (N=43). Participants completed 2 sessions during which placebo or 50 mg of naltrexone (opioid antagonist) was administered in a double-blind, counterbalanced design. Participants underwent acute stressors. They then rated pain experienced during and after a 90-sec cold pressor test (CPT), followed by completion of the McGill Pain Questionnaire (MPQ). Cardiovascular measures were collected throughout the sessions. Results showed that opioid blockade led to paradoxically decreased pain perception among non-smokers and ad lib nicotine users, but this analgesia was absent among those in withdrawal (p=0.05). Although stress increased cardiovascular responses, diastolic BP responses were reduced by opioid blockade, with greater reductions in ad lib smokers than withdrawal smokers (p's<0.05). In contrast, opioid blockade increased HR stress reactivity only in ad lib smokers (p<.005). Consistent with HR, opioid blockade increased post-CPT pain ratings, indicating opioid-analgesic effects, in the ad

lib but not the withdrawal group. Across groups, women reported greater pain during the CPT (p<0.05). Opioid blockade enhanced sex differences, with a steeper decline in post-CPT pain ratings in males than females especially during ad lib nicotine use (p<0.05). Finally, greater systolic BP reactivity during stress was associated with lower pain during CPT and on the MPQ in all drug conditions (p's<0.05). The diminished hypoalgesic effects of opioid blockade and the previously reported blunted HPA responses to stress during nicotine withdrawal suggest altered opioid regulation during withdrawal; in contrast, ad lib nicotine use enhanced opioid inhibition of HR and post-CPT pain. This suggests a possible role for opioid-related nicotine reward effects during stress.

Paper Session 28 - Individual differences in treatment effectiveness
Friday 16:00-17:45

Abstract 1012
SLEEP, FATIGUE, DEPRESSION, AND PAIN FOLLOWING BREAST CANCER SURGERY: LUMPECTOMY VERSUS MASTECTOMY

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Background: Breast cancer is the most common cancer globally accounting for 12% of all new diagnoses. Almost all breast cancer patients undergo surgery as primary therapy and must decide between breast conservation (lumpectomy, L) and breast removal (mastectomy, M). Given that L is as efficacious as M for disease free survival in women with early-stage disease, efforts have been made to deimplement M when not clinically indicated. However, rates of this surgical choice are on the rise in the US; therefore, understanding the behavioral side effects of M will aid in patient decision making and has implications for quality of life in survivorship. Here, we tested whether the extent of surgery was associated with four key behavioral symptoms: sleep, fatigue, depression, and pain. **Methods**: Study participants included 215 women with early-stage breast cancer who participated in a longitudinal study aimed at identifying risk factors and mechanisms for cancer-related fatigue (RISE Study). Baseline assessments were conducted after diagnosis and surgical resection of the primary tumor (mean days post-surgery = 28.6, range 2-59), but before adjuvant therapy. Women completed questionnaires to assess common behavioral symptoms, including sleep disturbance (PSQI), depressive symptoms (CES-D), fatigue (MFSI-SF general subscale), and pain (SF-36 pain subscale). Regression analyses controlling for age and days since surgery were performed to compare differences between L and M. Exploratory analyses compared differences between unilateral (UM) and bilateral (BM) mastectomy. **Results**: 72% of participants received an L (n = 155), and 28% received Ms (19 UM and 41 BM). 75% of women who received Ms had immediate reconstruction. Mastectomies were associated with poorer sleep (b = 1.38, p = .024), more depressive symptoms (b = 3.44, p = .025), more fatigue (b = 2.05, p = .016), and greater pain (b = -26.16, p < .001) than lumpectomies. Exploratory analyses examining differences between mastectomy types revealed that there were no significant differences between UM and BM. **Conclusions**: Mastectomies are associated with poorer outcomes on key behavioral symptoms in breast cancer . Clearly communicating about, and preparing women for, these side effects will aid in the decision-making process regarding surgical choice, especially when mastectomy is not clinically indicated.

Abstract 1183
PREDICTORS OF TREATMENT NON- RESPONSE FOR DEPRESSIVE SYMPTOMS IN A SAMPLE OF ADOLESCENTS WITH RISK-TAKING BEHAVIOR - A ONE YEAR FOLLOW-UP

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Major depressive disorder (MDD) is a highly prevalent psychiatric disorder. In adolescence up to 40 %, do not respond to first- and second-line treatments (i.e. psychotherapy and/or pharmacotherapy). However, there is a gap in knowledge concerning the factors potentially predicting treatment non- response in adolescent MDD. Drawing on a consecutive clinical cohort of adolescents with risk taking and self-injurious behavior, the present study aimed to identify predictors of treatment non- response for depressive symptoms in a one year follow up. The sub-sample for analyses (n = 161) comprised female adolescents with verified MDD diagnosis ate baseline. Patients underwent extensive clinical assessments at baseline (T0) and at a one year follow up (T1). Remission was defined twofold; (1) patients no longer fulfilling formal diagnosis for MDD at follow-up; (2) and/or a decrease in self-reported symptom severity of >50% .Sociodemographic factors (e.g., age, siblings, educational level, parental status) and clinical measures (e.g., level of functioning, symptom severity, trauma) at baseline, as well as treatment intensity and satisfaction at follow-up were subsequently analyzed as predictors of treatment response. Additional analyses were adjusted for treatment intensity between T0 and T1. Based on diagnostic interviews (47.2%; n=76) or self-reports (21.7%; n=126) adolescents where defined as non- responders. In both categories lower quality of life at baseline and less treatment satisfaction at follow-up were shown to predict unfavorable treatment response. Non-response (based on MDD diagnosis) was predicted by greater age, greater overall symptom severity (SCL-90r), greater severity of depressive symptoms (self-reported DIKJ) at baseline, as well as more days of hospitalization and the absence of trauma . A lower number of siblings predicted treatment non-response as quantified based on self-reports. In adjusted analyses, controlling for treatment intensity and age at baseline in both non-response categories, lower treatment satisfaction remained as a significant predictor for treatment non-response. Greater overall symptom severity (SCL-90r), greater severity of depressive symptoms, greater severity of suicidal thoughts and lower quality of life continued to be predictors of nonresponse (diagnostic approach). A lower amount of siblings maintained to predict treatment non-response quantified based on self-reports. Coherently greater symptom severity, lower family network and lower quality of life have shown to be predictors for treatment non-respond. Interestingly in our cohort, more days of hospitalization, lower treatment satisfaction and higher age showed to worsen treatment prognosis, underlining the need for more individualized treatment options. The findings and potential clinical implications are critically discussed.

Abstract 1482
THE TRIGEMINO-CARDIAL REFLEX AS PARASYMPATHETIC MARKER AFTER PSYCHOSOMATIC INPATIENT THERAPY

Katja Weimer, PhD, Mastura Ganji, student, Jannik Harbich, student, Miriam Sünje Adam, student, Harald O. Gündel, Prof. Dr., Marc N. Jarczok, PhD, Department of Psychosomatic Medicine and Psychotherapy, Ulm University Medical Center, Ulm, NA, Germany

Background: A significantly decreased parasympathetic reactivity in psychosomatic patients compared to healthy controls was found in a previous study. However, there is little knowledge whether parasympathetic reactivity will change or improve during a psychosomatic inpatient or day clinic therapy program. We therefore investigated the reactivity of heart rate variability (HRV) parameters with a non-invasive cold face test (CFT) in such patients at three time points: at the beginning of the therapy, before discharge, and after 12 months.
Methods: HRV was assessed during a 5-min baseline at rest and during a 5-min CFT in 110 patients (40 ± 13 years, 55% female) wearing an ambulatory ECG monitor (eMotion Faros 180, 1kHz). The trigeminocardiac reflex was provoked through a cool pack with around 6 °C placed on the forehead of patients. The software Kubios 3.5 was used for ECG processing and HRV parameter calculation. The differences between baseline and CFT, and between their difference at the three time points was analyzed with repeated measures ANOVAs controlled for age and sex.
Results: There was no significant difference between baseline and CFT at any time point with regard to the HRV parameters RMSSD, SDNN, HF or LF power (all p values > 0.05). The reactivity (the difference between baseline and CFT) did not change between the three time points. When patients were divided in diagnosis groups, a higher RMSSD only during the CFT compared to baseline was found in patients with a depression as main diagnosis (p < 0.05), but not in any other diagnosis group or between the time points (all p's > 0.05).
Conclusion: In accordance with the literature and our previous study, psychosomatic patients show no or a very low parasympathetic reactivity before an inpatient or day clinic therapy, but also immediately after therapy and after 12 months - despite improved symptom scores. As a low HRV is associated with higher cardiovascular risks, it should be further discussed if specific interventions for its improvement should be incorporated in psychosomatic therapies.

Abstract 1318
PREVALENCE AND BIOBEHAVIORAL PREDICTORS OF EARLY AND LONG-TERM FATIGUE FOLLOWING HEMATOPOIETIC STEM CELL TRANSPLANTATION

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Fatigue is a commonly reported quality of life concern after hematopoietic cell transplant (HCT). The present study evaluated fatigue severity, duration, and interference with daily activities at post-HCT milestones during acute recovery and through 6 years post-HCT. We also investigated whether disease and treatment factors, inflammation, and psychological symptoms during the peri-transplant period predicted early and long-term fatigue. Participants were 433 (191 allogeneic, 242 autologous) HCT recipients who completed measures of fatigue (FSI), depression and anxiety (IDAS) pre-HCT, 1, 3, and 6 months, and 1, 3, and 6 years post-HCT. A subset (*n*=210) provided blood samples during the first 6 months post-HCT for determination of cytokine levels (IL-6, TNFα, IL-10). A majority of participants reported clinically significant fatigue at 1 (83.9%), 3 (68.4%), and 6 months (64.7%) post-HCT. Mixed effects regression models were used to evaluate predictors of fatigue during early recovery. Allogeneic HCT recipients showed a slower recovery of fatigue, reporting more fatigue than autologous HCT recipients at 3 and 6 months post-HCT but comparable fatigue at other points (interaction *z*=2.99, *p*=.003). No other diagnosis or treatment factors predicted fatigue. After covarying for transplant type and age, higher IL-6, TNFα and IL-10 levels (all *p*<.05), as well as more severe anxiety and depression symptoms (all *p*<.001), were strongly associated with greater fatigue severity during the 6 months following HCT. Fixed effects models indicated that, for individual

participants, changes in cytokine levels or psychological symptoms were associated with corresponding changes in fatigue (all $p<.01$). Most surviving participants continued to experience persistent fatigue at 1 (62.3%), 3 (68.0%), and 6 years (63.8%) post-HCT. Only anxiety and depression symptoms during the peri-transplant period consistently predicted fatigue severity at the long-term assessments (most $p<.05$). The pattern of results was similar for fatigue duration and interference. Findings indicate that fatigue persists through 6 years post-HCT, with little improvement beyond 3-6 months post-HCT. Allogeneic transplant and inflammation appear to be risk factors for fatigue during early recovery, whereas depression and anxiety during the peri-transplant period are more sensitive predictors of long-term fatigue.

Late Breaking Session 3 - Intervention pilot results
Friday 16:00-17:45

Abstract 1609
PREFRONTAL CORTEX OXYGENATION AND AUTONOMIC NERVOUS SYSTEM ACTIVITY UNDER TRANSCUTANEOUS AURICULAR VAGUS NERVE STIMULATION IN ADOLESCENTS

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The *Neurovisceral Integration Model* (*NIM*) is a prominent biobehavioral framework that has received considerable empirical support in accounting for observed relationships between peripheral physiology, cognitive performance, and emotional/physical health. The NIM suggests vagally-mediated heart rate variability (HRV) as indicator of the functional communication within hierarchically organized feedback loops of prefrontal and peripheral physiological processes. In the present study, we aimed to further investigate this complex circuitry, studying changes in autonomic measures and their relation to PFC activation during experimental manipulation. Transcutaneous auricular vagus nerve stimulation (tVNS), a non-invasive tool to modulate activity of the vagus nerve, was thereby used to manipulate the neurovisceral complex. tVNS versus sham stimulation, each during a 15-minutes stimulation phase, were applied in a sample of $n = 30$ female adolescents (age 12-17 years), using a within-subject-cross-randomized-design. We derived mean oxygenation of the PFC and functional connectivity using functional near infrared spectroscopy (fNIRS), and measures of autonomic activity, including HRV (vagal activity), HR (mixed influence), electrodermal activity (EDA; sympathetic activity), and saliva alpha-amylase (sAA; sympathetic activity). As expected, HRV increased and HR decreased during tVNS compared to sham. No effect on EDA or sAA was observed. PFC oxygenation increased over time under tVNS compared to sham. The relative increase in HRV and decrease in HR was associated with increased oxygenation of the PFC. Exploratory analyses illustrated that under tVNS, PFC connectivity increased compared to sham. The present study tested the close relationship between HRV and prefrontal activity, by modulating central-autonomic functional feedback loops using tVNS. Indeed, in further support of the NIM, tVNS influenced peripheral autonomic activity via changes in PFC oxygenation.

Abstract 1618
A PILOT MINDFULNESS-BASED SELF-COMPASSION INTERVENTION TARGETING BODY DISSATISFACTION

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Body dissatisfaction is a risk factor for eating disorders (Stice et al., 2017), and eating disorders are among the most lethal of mental disorders (Fichter & Quadflieg, 2016; Bhattacharya et al., 2020). In the present pilot study (N=30), we designed and tested a mindfulness intervention aiming to increase self-compassion in individuals high in body dissatisfaction. We used a pre-post test design where participants completed measures of self-compassion and body dissatisfaction before and after the online mindfulness intervention. The sessions were administered once a week for four weeks, completed either synchronously (n=12) with a live instructor or asynchronously (n=18). We hypothesized that participants would exhibit a significant increase in self-compassion and decrease in body dissatisfaction. Paired samples t-tests revealed a significant increase in self-compassion, $t(22) = -5.28$, $p < .001$, $d = 0.88$, 95% CI [-1.36, -0.59] and a significant decrease in body dissatisfaction, $t(22) = -6.36$, $p < .001$, $d = 0.64$, 95% CI [-1.13, -0.58]. Moreover, those who indicated being new to mindfulness showed the largest effects in both self-compassion, $t(5) = -6.10$, $p = .002$, $d = 0.59$, 95% CI [-2.08, -0.85] and body dissatisfaction, $t(5) = -4.57$, $p = .006$, $d = 0.62$, 95% CI [-1.79, -0.50] compared to those with some exposure to mindfulness but no practice and those with an existing mindfulness practice. Lastly, we found no significant differences in self-compassion based on synchronous vs. asynchronous intervention delivery method, $p = .207$ but did find that the synchronous condition showed greater decreases in body dissatisfaction, $p = .034$. The strengths of this intervention include its easy scalability and potential for wide dissemination as an online intervention, paving the way for an intervention that is low(zero)-cost and inclusive for those who cannot access traditional forms of eating disorder prevention. These results set the stage for a randomized, controlled trial, which could further test whether targeting body dissatisfaction through mindfulness could be beneficial in reducing eating disorder risk.

Abstract 1622
PERSONALIZING TOBACCO CESSATION WITH UNDERSERVED COMMUNITIES:IDENTIFYING TRAINING NEEDS OF CHW TO DEVELOP A TAILORED FACILITATOR CURRICULUM

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Background: Communities with low socioeconomic status have disproportionately high rates of tobacco use, and community health workers (CHWs) have an increasing role in delivering tobacco cessation interventions to this population. However, existing tobacco cessation trainings are often not appropriate for the CHW model of care, limiting their utility for CHWs. The aim of this study was to identify training needs of CHWs to develop a tailored tobacco cessation curriculum to help them effectively serve their high-risk patients.
Methods: Incorporating results of a previously conducted needs assessment survey, we developed a preliminary outline of a tobacco cessation training curriculum that was specific to the CHW experience. We conducted virtual qualitative interviews and focus groups with stakeholders (i.e., managers/directors of CHW programs) and CHWs, respectively, to obtain feedback on content to include in a tailored tobacco cessation training, as well as a sample 2-hour training schedule. Participants (N=14; n=3 stakeholders and n=11 CHWs) discussed their impressions of a) the training content, b) the unique needs of patients seen by CHWs, and c) tailoring to the CHW care model. Two independent coders analyzed the data using the Framework method.
Results: Two overarching themes emerged: the need for strategies to a) personalize treatment to each patient and b) increase patient motivation. Specifically, CHWs noted that most of their patients smoke to cope with recurring stress and trauma. CHWs want to learn how to recognize those stressors, which also impact their patients'

motivation to quit, and teach healthy ways to manage/cope. They also noted that they wanted to learn specific language, or talking points, to prompt conversation for patients who were not ready to quit. Conclusion: An integral role of CHWs is connecting with their patients to support their specific health needs. CHWs reported needing a tobacco cessation training that will help to refine their skills in flexibly supporting their patients, especially those who are not ready to quit. A tailored training might focus on motivational interviewing, including how to personalize treatment to the patient's experiences, and role playing scenarios with scenes on how to support patients who are overburdened and unmotivated.

Paper Session 29 - Mapping individual differences in health care persectives using a qualitative approach
Friday 16:00-17:45

Abstract 1234
NARRATIVES OF CHANGE IN RECOVERY FROM SEVERE FATIGUE - A QUALITATIVE STUDY OF STORIES OF HEALING FROM SEVERE CHRONIC FATIGUE SYNDROM/ MYALGIC ENCEPHALOMYELITIS.
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Background and purpose: Chronic fatigue syndrome or Myalgic Encephalomyelitis (CFS/ME) is a complex illness, involving severe suffering, debilitation, and hopelessness among the ones afflicted. There is no general agreement regarding conceptualisation, etiology, pathophysiology, diagnostics, or treatment options. Despite a pessimistic picture of an incurable chronic disease, some patients recover completely or regain their function and quality of life, even from the most severe conditions. However, there are scarce studies addressing these recovery processes. The aim of this study was to contribute to the understanding of how mental and behavioural change takes place in the healing process from severe fatigue. **Materials and methods:** 18 participants (4 men and 14 women) who had recovered from severe CFS/ME were included. 14 of the participants had been completely bedridden in dark rooms and in need of assistance with all basic functions for a continuous period of at least 3 months. The mean length of time being in this "very severe" state was 2,6 years (0,3-6). The participants were between 20 and 78 years old (mean 43). Median total length of illness was 5 years (2-22). The mean length of time since full recovery was 7,5 years (1-13). Participants´ stories were gathered through narrative inquiry in individual qualitative interviews. We used narrative analysis to explore the experiences of recovery and change. **Findings:** From the stories of major change from severely ill to healthy life, we highlight two main narratives: The quantum change (a sudden, dramatic and lasting transformation of a broad range of personal emotion, cognition, and behaviour) and the gradual change process (a discontinuous and time-consuming course of learning and training). Informants describe development of trust, control, sense of agency and positive expectations, along with changes in understanding of their illness and body and decrease of anxiety and distress. **Interpretation and conclusion:** Recovery from severe fatigue and CFS/ME is possible. We illuminate lived experience of the recovery process and point to plausible understanding and explanations of these processes.

Abstract 1451

LANGUAGE AND CULTURAL BARRIERS IN PAIN COMMUNICATION: EXPERIENCES OF HEALTHCARE PROVIDERS
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Objective: Despite provider-patient communication being the "gold standard" of assessing and treating chronic pain, there are many barriers that can profoundly hinder pain communication, which negatively impact treatments. Such communication barriers are exacerbated when providers are working with linguistic and ethnic minority patients with limited English-proficiency (LEP). However, the dearth of research on providers' experiences and challenges when treating LEP patients with pain issues perpetuates the existing problems, prevents innovation, and ultimately, affects the quality of care for the underserved LEP patients. To gather rich descriptions of this understudied area, the current study utilized a phenomenological approach to examine the lived experiences and perceptions of healthcare providers when working with LEP patients in pain assessment and treatment. **Methods:** Participants consisted of 15 U.S. healthcare providers (4 physicians and 11 nurses). Semi-structured qualitative interviews were utilized to guide the interviews and a focus group. Interviews were recorded, transcribed, and analyzed using Colaizzi's coding method. **Results:** The qualitative themes indicated that providers perceived assessing and treating pain to be challenging in general, but language and cultural barriers significantly exacerbated existing challenges in pain care when working with LEP patients. While medical interpreters and other means of translation mitigated some of the communication challenges, many providers also perceived them to be imperfect and inconsistent. Providers reported that such challenges created additional stress and frustration, potentially compromising the quality of pain care provided. **Conclusions**: The results shed light on the challenges in pain communication that providers experienced when treating LEP patients, and how these challenges could potentially hinder the accuracy of pain assessment and effectiveness of treatment for LEP patients. Given the disparities in pain care among ethnic and cultural minority patients, the results highlighted the importance of addressing this problem in pain care and the necessity of incorporating linguistically and culturally relevant training to help providers work more effectively with patients from diverse cultural and linguistic backgrounds.

Abstract 1078
SHAREHEART: USING PATIENT JOURNEY MAPPING FOR HEALTH CARE OPTIMIZATION IN PATIENTS WITH ISCHEMIA AND NON-OBSTRUCTIVE CORONARY ARTERIES (INOCA)
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Background: Ischemia with non-obstructive coronary arteries (INOCA) is a chronic cardiac condition characterized by vascular dysfunction. INOCA is often underrecognized and more prevalent in women. Patients' experiences remain unexplored and a clear patient-centered care pathway is lacking. We aimed to visualize patients' health care pathway (journey) by exploring the experiences and needs of patients with INOCA. The method of 'patient journey mapping'

will be used, which is a patient-centered design approach for designing health care solutions.

Method: In total 36 women were recruited in two Dutch hospitals and participated in eight online semi-structured focus group interviews. Transcriptions were analyzed according to a thematic analysis. Themes were further classified using a combination of 'process' and 'patient journey' mapping. The former method was used to visualize reported contact moments/steps (*touchpoints*), the latter adds a layer of experiences and needs to the patient journey. Picker's eight principles of patient-centered care framework were integrated into the patient journey map to highlight which principles need improvement according to the patients' view. This may support implementation steps towards a patient-centered care pathway.

Results: Process mapping shows a complex and unstructured health care pathway. Participants faced various barriers including a lack of familiarity with INOCA by health care providers, repeated hospitalization, testing and referrals, feelings of not being heard, shortage of specialized INOCA cardiologists, the lack of a multidisciplinary treatment program (including physical and psychological support), and the absence of a contact person/specialized nurse practitioner.

Conclusion: The resulting visual tool shows how patients experienced and interacted with the current health care system and can be used for future healthcare quality improvement towards a more patient-centered care pathway. More familiarity and knowledge regarding INOCA is needed as well as an adequate referral system in both early and later stages of the pathway. In the future, research should focus on the development and implementation of a patient-centered evidence-based clinical pathway, taking into account sex and gender differences.

Paper Session 30 - Mechanisms of adversity
Friday 16:00-17:45

Abstract 1017
ACCULTURATIVE STRESS, TELOMERE LENGTH, AND POSTPARTUM DEPRESSION IN LATINX MOTHERS

Angela C. Incollingo Rodriguez, PhD, Psychological & Cognitive Sciences / Neuroscience, Justin J. Polcari, BA, Department of Biology & Biotechnology, Benjamin C. Nephew, PhD, Biology & Biotechnology, Worcester Polytechnic Institute, Worcester, MA, Chris Murgatroyd, PhD, Life Sciences, Manchester Metropolitan University, Manchester, NA, United Kingdom, Hudson P. Santos Jr, PhD, School of Nursing, UNC Chapel Hill, Chapel Hill, NC

Latinx mothers in the United States are highly vulnerable to psychosocial stressors, including discrimination and acculturative-related stress. These stressors can increase health risks at any life phase, but this effect is compounded in the peripartum period. In particular, Latinx mothers are at increased risk of parenting stress and the development of postpartum depression, and cultural stressors exacerbate this risk. Previous work in Latinx mothers indicates that prenatal discrimination exposure influences epigenetic immune markers that may mediate the development of postpartum depression. Discrimination and acculturative stress have also been linked to cellular aging, including telomere degradation, in Hispanic populations broadly, but not in this particularly vulnerable population. The present work addressed this gap in a sample of 148 Latinx mothers living in the United States (mean age 27.6 years). Psychosocial measures (including discrimination, stress, and mental health) and blood were collected at 24-32 weeks' gestation. Psychosocial measures were then re-evaluated at 4-6 weeks postpartum. Here, we pursued two aims: First, we examined the relationship between maternal prenatal cultural stress (i.e., discrimination and acculturative stress) and telomere length. Second, we examined whether telomere length (TL) predicted maternal postpartum mental health. Results demonstrated that acculturative stress – but not discrimination – predicted shorter TL, especially among participants with high methylation of the *FOXP3* promotor

region. Further, TL negatively predicted postpartum depression symptoms, such that longer telomere measures during pregnancy was associated with lower postpartum depression symptoms at 4-6 weeks postpartum. TL was not related to any sociodemographic characteristics such as age, income, country of origin, or years in the United States. These results highlight the uniquely impactful role of acculturative stress on Latinx maternal health and also the potential interactive role of telomere length and epigenetic immune alterations in risk for maternal mental health concerns.

Abstract 1075
RESIDENCE IN HIGH-CRIME NEIGHBORHOODS MODERATES THE ASSOCIATION OF INTERLEUKIN-6 WITH SOCIAL AND NON-SOCIAL REWARD BRAIN FUNCTION

Iris Ka-Yi Chat, M.A., Psychology, Temple University, Philadelphia, PA, Naoise Mac Giollabhui, M.A., Depression Clinical Research Program, Massachusetts General Hospital, Boston, MA, Andrew Gepty, M.A., Psychology, George Washington University, Washington, DC, Marin M. Kautz, M.A., Zoe V. Adogli, BA, Psychology, Temple University, Philadelphia, PA, Christopher L. Coe, Ph.D., Lyn Y. Abramson, Ph.D., Psychology, University of Wisconsin – Madison, Madison, WI, Thomas M. Olino, Ph.D., Lauren B. Alloy, Ph.D., Psychology, Temple University, Philadelphia, PA

Background: Living in a neighborhood with high crime rates is a major public health concern because of the threat to personal safety and increased risk for negative health outcomes. Identifying neurobiological pathways underlying this environmental adversity may be key to precise intervention targets tailored to these residents. Crosstalk between inflammatory signaling and brain function may be a relevant pathway, given its role in modulating behaviors to meet survival demands and levels of threat and, when dysregulated, in multiple health issues. Thus, we examined the relationships between levels of an inflammatory protein and reward-related brain function in the context of residence in high- vs. low-crime neighborhoods. **Methods**: Inflammatory markers were assessed in 70 participants aged 15.9 years (57% female) who also completed two fMRI tasks assessing responsivity to monetary and social rewards. Linear regressions tested whether individuals with higher interleukin-6 (IL-6) who also lived in neighborhoods with higher crime had distinct orbitofrontal cortex (OFC) and nucleus accumbens (NAc) activation to monetary reward and social acceptance. Covariates included gender, body mass index, prescription medication use, depression history, and medical illness. **Results**: The IL-6 X Crime interaction was significant for neural responses to social acceptance (NAc: $B=.002$, $SE<.001$, $t=4.389$, $p<.001$; OFC: $B=.001$, $SE<.001$, $t=4.231$, $p<.001$), NAc anticipation of monetary reward ($B=-.001$, $SE<.001$, $t=-2.365$, $p=.021$), and OFC monetary reward outcome ($B=.001$, $SE<.001$, $t=-2.747$, $p=.008$). For individuals living in neighborhoods with more crime, higher IL-6 was associated with (i) higher neural responses to social acceptance and (ii) lower NAc anticipation of monetary reward and lower OFC responses to monetary reward. For those living in neighborhoods with less crime, higher IL-6 was associated with (i) lower NAc responses to social acceptance and (ii) higher OFC responses to monetary reward. These results held after adjusting for covariates. **Conclusions**: Peripheral immune activation may differentially influence reward-related neural function based on the specific demands of the social context and the level of threat. The prevailing view that inflammation-associated behaviors are characterized by a blunted responsiveness to reward may be too simplistic.

Gabriella M. Alvarez, Margaret Sheridan, Madeline Robertson, Sophia Martin, Adrienne Bonar, Matteo Giletta, Paul D. Hastings, Matthew K. Nock, Kinjal Patel, Karen D. Rudolph, George M. Slavich, Leah H. Somerville, Mitchell J. Prinstein, Adam Bryant Miller

Abstract 1241
EXPERIENCES OF DEPRIVATION, BUT NOT THREAT, ARE ASSOCIATED WITH DIFFERENCES IN NETWORK CONNECTIVITY DURING AFFECTIVE PROCESSING

Gabriella Alvarez, MA, Margaret Sheridan, PhD, Madeline Robertson, MA, Psychology & Neuroscience, The University of North Carolina at Chapel Hill, Chapel Hill, NC, Sophia Martin, BA, Adrienne Bonar, BA, Psychology & Neuroscience, University of North Carolina Chapel Hill, Chapel Hill, NC, Matteo Giletta, PhD, Department of Developmental, Personality and Social Psychology, Ghent University, Ghent, NA, Belgium, Paul Hastings, PhD, Psychology, University of California Davis, Davis, CA, Matthew Nock, PhD, Psychology, Harvard University, Cambridge, MA, Kinjal Patel, BA, Psychology & Neuroscience, University of North Carolina Chapel Hill, Chapel Hill, NC, Karen Rudolph, PhD, Psychology, University of Illinois Urbana-Champaign, Champaign, IL, George Slavich, PhD, Psychiatry and Biobehavioral Sciences, University of California Los Angeles, Los Angelos, CA, Leah Somerville, PhD, Psychology, Harvard University, Cambridge, MA, Mitch Prinstein, PhD, Psychology & Neuroscience, American Psychological Association, DC, DC, Adam Bryant Miller, PhD, Psychology & Neuroscience, University of North Carolina Chapel Hill, Chapel Hill, NC

Understanding neurobiological mechanisms linking childhood adversity and health is vital given that early adversity portends poor physical and mental health across the lifespan. A recent neurobiological model of adversity argues that different types of adversity likely have dist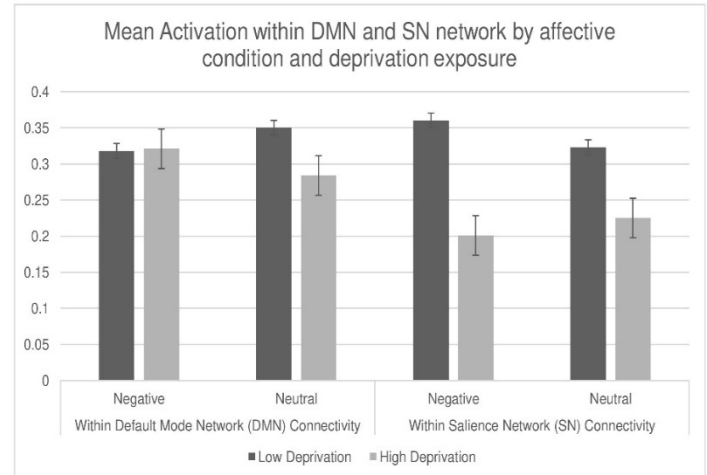inct neurobiological consequences. Specifically, experiences of threat and deprivation might differentially affect neural function. The present study investigated how exposure to threat and deprivation were related to two critical brain networks linked to affective processing and physiological dysregulation: the default mode (DMN) and salience (SN) networks. Participants were 119 children (9-15 years old) assigned female at birth. They completed questionnaires assessing exposure to threat and deprivation and an fMRI task in which they viewed negative and neutral images. A repeated-measures ANCOVA was conducted to assess differences in within-person variables (DMN and SN connectivity, stimulus type [negative vs. neutral images]), and between-person variables (adversity type [exposure to threat and/or deprivation]). Age and mean framewise displacement were entered as covariates.

There were no main effects or two-way interactions between the main study variables (ps>0.05). There was a 3-way interaction between network type and stimulus type by deprivation exposure $F(1,112) = 4.94$, p=0.028. Children with fewer deprivation experiences exhibited less connectivity within the DMN but greater connectivity in the SN when viewing negative (vs neutral) pictures. Children with more deprivation experiences exhibited greater connectivity within the DMN but no difference in SN connectivity for negative (vs. neutral) pictures.

These results suggest that different types of adversity are related to distinct patterns of neural processing. For children with greater exposure to deprivation, the salience network was less sensitized to changes in the affective context. It was only while processing negative images that children with greater exposure to deprivation demonstrated enhanced default mode network connectivity, potentially related to the enhanced need for automatic regulatory processes in this context. Future analyses will examine links between network connectivity and pro-inflammatory reactivity to further probe links between adversity and physiological dysregulation.

Mean Activation within DMN and SN network by affective condition and deprivation exposure

Abstract 1243
EXAMINING THE RELATIONSHIP BETWEEN PERCEIVED DISCRIMINATION AND ALLOSTATIC LOAD AMONG A SAMPLE OF FIRST-GENERATION, MINORITY COLLEGE STUDENTS

Lorena Reynaga, MPH(c), Kennedy Stewart, MPH(c), Karina Barragán, BS, Department of Health Sciences, California State University Northridge, Northridge, CA, Nayely Cazares, High School Diploma, Department of Life Sciences, East Los Angeles College, Los Angeles, CA, Tiffany Chapman, MPH, Angel Arizpe, MPH, Department of Population and Public Health Sciences, University of Southern California, Los Angeles, CA, Claudia Toledo-Corral, PhD, Department of Health Sciences, California State University Northridge, Northridge, CA

Background: Chronic exposure to stressful events, such as the discrimination experienced by marginalized groups, can contribute to the persistent activation of the body's physiological stress responses. Over time, this can produce cumulative physiological stress responses in four specific systems in the body: metabolic, cardiovascular, immune, and neuroendocrine systems. Collectively, this accumulation of biological responses associated with chronic stress is known as allostatic load (AL). Greater perceived discrimination has been shown to associate with higher AL in various populations. The aim of this study is to examine the association between perceived discrimination, AL, and the four systems represented in AL.

Methods: Individuals ages 18-25 years old, enrolled in the Metabolic and Stress Assessment (MeSA) study (n=63, 68.3% female, 60.3% Hispanic/Latino) provided diurnal saliva samples, biometric measures, and completed self-reported questionnaires. Perceived discrimination was measured using the 10-item Everyday Discrimination Scale (EDS). Total AL was calculated with 11 theoretically relevant biomarkers by dichotomizing them into "low" and "high" risk using 75th percentile cut-off points. High risk salivary adiponectin levels (ng/mL), total body fat percentage (%), and waist circumference (cm) classifications were summed to calculate overall metabolic AL index score (0-3). Spearman's correlations and multinomial logistic regressions (MLR) were calculated.

Results: There was no relationship between EDS scores and total AL (ρ=0.079, p=0.595). EDS scores were correlated with the metabolic component of AL (ρ=0.354, p=0.008). In the unadjusted MLR model, every one-unit increase in EDS score associated with 1.105 times the risk for a metabolic AL score equal to 1 (RRR=1.105 [1.009, 1.209]; p=0.031) or a metabolic AL score equal to 2 or 3 (RRR=1.105 [1.001, 1.220]; p=0.047). MLR adjusting for age, and gender did not significantly impact these findings.

Conclusion: In a sample comprised of mostly first-generation college, minority students, higher reports of discrimination are associated with higher metabolic AL, but not total AL score. These findings suggest that greater perception of discrimination may associate with body fat composition and adiponectin, a novel finding with respect to these biomarkers. Further exploration of AL definitions is warranted.

Late Breaking Session 4 - Stress & psychosomatic symptoms
Saturday 14:30-15:30

Abstract 1621
HETEROGENEOUS DISTRIBUTION OF PSYCHOLOGICAL STRESS HORMONE RECEPTORS ACROSS MAJOR HUMAN ORGAN SYSTEMS: A MAP FOR STRESS TRANSDUCTION

Sophie Basarrate, B.A. Candidate, Caroline Trumpff, PhD, Martin Picard, PhD, Division of Behavioral Medicine, Department of Psychiatry, Columbia University Medical Center, New York, NY

Background:
The influence of psychosocial stress on different organ systems is heterogeneous. The hypothalamic-pituitary-adrenal and sympathetic-adrenal-medullary axes transduce psychosocial stress, and their resulting hormones act on target organs through glucocorticoid and adrenergic receptors, respectively. Therefore, varying receptor expression levels among organs could explain why specific organ systems exhibit resilience or vulnerability to chronic stress. Here we systematically quantify the expression of stress hormone receptors across all major human organ systems.

Methods:
Using the HumanProteinAtlas, we systematically examined gene expression levels for the glucocorticoid receptor (GR), α-adrenergic receptors (AR-α1B, AR-α2B), and β-adrenergic receptors (AR-β2, AR-β3) previously implicated in stress transduction, across 55 different organs. Organs were grouped by major systems, including the immune (n=5, e.g., spleen), brain and central nervous system (CNS, n= 15, e.g. cortex), digestive (n= 7, e.g., liver), reproductive (n= 11, e.g., ovary), and other systems (n= 17). Organ systems-level differences were quantified using Hedge's g. Coregulation between stress hormone receptors was examined using Spearman's r with Bonferroni correction.

Results:
GR was expressed ubiquitously at high levels in all organs. GR was highest within the immune system, 60% higher than in the CNS (Hedge's g=1.70), digestive (g=1.23), and reproductive organs (g=1.18). In contrast, AR-α1B was highest in the CNS, on average 3.8-fold higher than in reproductive organs (g=1.12). AR-β2 and AR-α2B were highest in other organs including muscles and skin, whereas β3 was expressed at high levels in isolated brain regions, including white matter tracts and the medulla. Organs that expressed higher levels of the GR also expressed higher levels of the AR-β2 receptor (r= 0.50, adjusted p<0.0005), suggesting specific coregulation of glucocorticoid and adrenergic stress transduction pathways.

Discussion:
Our results document high heterogeneity in the expression of canonical glucocorticoid and adrenergic receptors across the human body. The resulting quantitative map of organ-specific stress hormone receptors may explain the selective vulnerability of specific organ systems, such as the brain and immune system, to the chronic activation of neuroendocrine pathways by psychosocial stress.

Abstract 1616
NEURODEVELOPMENTAL COMPLEXITY: INFLAMMATION MEDIATES THE LINK BETWEEN NEURODIVERGENCE AND CHRONIC FATIGUE

Lisa Quadt, PhD, Jenny Csecs, PhD, Neuroscience, Brighton and Sussex Medical School, Brighton, NA, United Kingdom, Rod Bond, PhD, Psychology, University of Sussex, Falmer, Brighton, NA, United Kingdom, Neil Harrison, FRCPsych, Neuroscience, Cardiff University Brain Research Imaging Centre, Cardiff, NA, United Kingdom, Hugo D. Critchley, FRCPsych, Neuroscience, Brighton and Sussex Medical School, Brighton, NA, United Kingdom, Jessica Eccles, MRCPsych, Neuroscience, Brighton and Sussex Medical School, Falmer, Brighton, NA, United Kingdom

Background
Neurodivergent individuals (encompassing those with a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), and/or autism) appear to be at greater risk of developing chronic fatigue (CF). Cognitive traits that are characteristic of ADHD overlap with CF symptomatology and similar overlap is suspected to extend to autistic individuals. Neurobiological factors are proposed to contribute to such a relationship. We hypothesized that inflammatory processes implicated in CF may link the expression of neurodivergent traits to CF. We therefore investigated the developmental pathway from neurodivergent traits in childhood to chronic fatigue (CF) in adolescence.

Methods
Using a large birth-cohort, we tested if children meeting screening criteria for ADHD and/or autism at age 9 yrs had an increased risk of CF in adolescence (age 18 yrs). Odds ratios (OR) and confidence intervals (CI) for effects were computed using binary logistic regression and two separate mediation analyses were conducted to test if an inflammatory marker (Interleukin-6 level age 9 yrs) linked ADHD/autism traits to later CF (controlling for depression).

Results
Children with neurodivergent traits at age 9 yrs were around twice as likely to have CF at age 18 years (ADHD OR=2.18, 95% CI=1.33, 3.56; autism OR = 1.78, 95% CI=1.17, 2.72). Mediation analyses showed inflammation at age 9 years mediated effects of neurodivergence on CF (significant indirect effect via IL-6 level: ADHD *b*=1.083, 95% CI=1.01, 1.6; autism *b*=1.063, 95% CI=1.02, 1.11).

Conclusion
Our results indicate that neurodivergent traits in childhood increase the likelihood of experiencing CF in adolescence. Whereas previous research focused on the symptomatic overlap between ADHD and CF, our research confirm that autistic children are also at higher risk. Our results point to a potential mechanistic neurodevelopmental pathway from neurodivergence to CF through inflammation. Importantly, increased IL-6 is not only a marker of inflammation processes underlying CF but may also be an indication of heightened biopsychosocial stress in neurodivergent children. These findings call for more mechanistic research into this relationship, and for the implementation of trans-diagnostic screening criteria to inform strategies to counteract risk early in life.

Abstract 1636
ARE ADVERSE CHILDHOOD EXPERIENCES (ACES) ASSOCIATED WITH WEIGHT TRAJECTORIES IN HISPANICS/LATINOS IN THE US? RESULTS FROM THE HISPANIC COMMUNITY HEALTH STUDY/STUDY OF LATINOS (HCHS/SOL) SOCIOCULTURAL ANCILLARY STUDY

Manuela Jaramillo, BS, Clinical Health Psychology, Maria M. Llabre, PhD, Patrice Saab, PhD, Neil Schneiderman, PhD, Behavioral Medicine, University of Miami, Coral Gables, FL, Linda C. Gallo, PhD, Behavioral Medicine, San Diego State University,

San Diego, CA, Martha Daviglus, PhD, Behavioral Medicine, University of Illinois Chicago, Chicago, IL, Carmen Isasi, PhD, Epidemiology & Population Health, Albert Einstein College of Medicine, Bronx, NY, Krista Perreira, PhD, Social Medicine, University of North Carolina at Chapel Hill, Chapel Hill, NC, Qingyun Liu, MS, Psychology, Frank Penedo, PhD, Behavioral Medicine, University of Miami, Coral Gables, FL

There is a high prevalence of overweight/obesity among Hispanics/Latinos in the US and models show that Hispanic/Latino weight follows a positive quadratic curve that plateaus at age 59. Adverse childhood experiences (ACEs), prevalent in Hispanics/Latinos, have been associated with weight trajectories among non-Hispanic populations. This study examines whether ACEs are associated with weight trajectories among Hispanic populations living in the US.

Participants in the study were self-identified Hispanic/Latino adults participating in the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) Sociocultural Ancillary Study. The HCHS/SOL represents multiple Hispanic/Latino background groups, recruited from the Bronx, NY, Chicago, IL, Miami, FL, and San Diego, CA. At baseline, self-reported current body weight and self-reported retrospective body weight(s) at ages 21, 45, and 65 (as available) were collected. Within 9 months of their baseline, participants completed a 10-item ACE questionnaire (Felitti et al., 1998) that covers abuse, neglect, and household dysfunction. Self-reported current body weight was again collected at visit 2, approximately 5-6 years after the baselines.

Participants were 5,244 adults (BMI 30.0+/-6.2 kg/m2; 62% female; mean age 46.5+/-13.9yrs) identifying as Mexican (39%), Cuban (15%), Puerto Rican (17%), Dominican (9%), Central American (10%), South American (7%), or Other (3%). Latent growth quadratic models were specified in a multilevel modeling framework with participants as level 2 and age as level 1 random variables. Adjusting for sex, Latino/Hispanic background, and study site, ACEs significantly predicted weight at age 21 (b=0.19; CI=0.021-0.360) and the instantaneous slope at age 21 (b=0.15; CI=0.004-0.300). When adjusting for the above covariates, birth cohort (born before or after 1980), US nativity or age at immigration to the US, and age at baseline visit, ACEs significantly predict weight at age 59 (b=0.27; CI=0.053-0.486), but not at age 21.

Among Hispanics/Latinos in the US, adversity in childhood significantly predicts individual differences in lifetime weight trajectories. However, findings suggest that the cumulative effect of ACEs on weight are detectable only in older age. Identifying high-risk growth trajectories early may improve health outcomes for Hispanic/Latino adults who experienced adversity in childhood.

Abstract 1553
LONGER MATERNITY LEAVE POLICY REDUCES POSTPARTUM HEALTH RISKS AMONG MILITARY MOTHERS

Stacy A. Hawkins, Ph.D., Kerry S. Whittaker, Ph.D., Thomas Taylor, Ph.D., Jacob N. Hawkins, B.S., Whitney Kelley, MPH, Angela Andrews, M.S., Research Facilitation Laboratory, Edward N. Edens, Ph.D., Research Facilitation Laboratory`, Army Analytics Group, Monterey, CA

Maternity leave within the military is an important, yet understudied, policy. In 2016, all military service branches shifted to offer 12 weeks of maternity leave for new mothers. While this doubled the amount of leave available for the Army and Air Force (previously 6 weeks), it reduced the leave for the Navy and Marines (previously 18 weeks). This study examined the impact maternity leave length has on new mothers, and explored the association between maternity leave policy and military mothers' postpartum health outcomes. We hypothesized that women who had children when maternity leave policies were shortest (i.e., 6 weeks) would exhibit poorer postpartum health outcomes compared to mothers who had children when longer leaves were available (i.e., 12 or 18 weeks).

METHOD
This study leveraged existing data, drawn from the Person-event Data Environment (PDE), a secure data repository that houses extensive military records. We created a dataset of female Service members who had a live birth recorded in healthcare administrative data between 2014 and 2019 ($N = 48{,}730$). The Functional Comorbidity Index was used to group ICD-9/ICD-10 codes into 5 categories of chronic conditions: depression, anxiety, back pain, diabetes, and obesity, all documented within the first year postpartum.

RESULTS
We conducted a series of General Estimated Equations in which maternity leave cohort (6, 12, or 18 weeks) was used to predict each of the physical health outcomes. As predicted, women in the 6-week cohort had poorer postpartum health outcomes. Having longer leave available (12 or 18 weeks) was associated with reduced depression (RR=.86 and RR=.86, respectively), anxiety (RR=.89 and RR=.72, respectively), and back conditions (RR=.42, RR=.49, respectively) compared to 6 weeks of leave.

DISCUSSION
Findings from this project revealed how maternity leave policy can greatly impact the postpartum health of female Service members. Having additional maternity leave available may be protective for mothers' health, allowing them additional time to adjust to the new demands of motherhood. While maternity leave necessitates Service members being away from duty for longer periods of time, that time significantly promotes mothers' health, resilience, and readiness for duty, supporting our hypothesis that longer leave policies are associated with better health outcomes and readiness.

Paper Session 31 - Discrimination and early life stress effects on health in minoritised ethnic populations
Saturday 14:30-15:30

Abstract 1501
ACKNOWLEDGEMENT AND LONG-TERM EXPERIENCES OF DISCRIMINATION IMPACTS CHRONIC HEALTH CONDITIONS

Brittany Price, MA, Health Psychology Program, Andrew Case, PhD, Jeanette Bennett, PhD, Psychological Science, University of North Carolina at Charlotte, Charlotte, NC

Background: Chronic disease development is a major health concern in the United States (US) and multimorbidity is steadily rising. In the US, racial minorities carry greater disease burden. Experiences of discrimination have been consistently linked to poor health outcomes and African Americans consistently report experiencing more discrimination than other racial groups. Notably, acknowledgement of discrimination is a promising, but understudied, avenue to examine the association between discrimination and health outcomes, as acknowledgement may activate necessary coping skills. Further, the majority of research exploring the mechanisms linking discrimination to poor health outcomes is cross-sectional and does not assess for multiple chronic diseases. Therefore, we examined whether prior discrimination solely or its interaction with acknowledgement of discrimination predicted development of chronic conditions 10 years later, or if the relationship could be explained by discrimination over time. **Method:** Data from the Midlife in the United States (MIDUS) study from MIDUS II (M2) and MIDUS III (M3) were used, including 147 Black/African Americans (51.8 ± 10.6 yrs; 65% Female) who endorsed experiencing at least one item on the Everyday Discrimination Scale, responded about having ever experienced discrimination, and endorsed health conditions at M2 and M3. The moderated mediation and moderation were tested using Hayes PROCESS macro model 8 controlling for M2 chronic conditions, M3 age, M3 BMI, M3 sex, and M3 education. **Results:** M2 discrimination predicted change in chronic health conditions at M3 in Black/African Americans who did not

acknowledge discrimination (b=.22, SE=.08, p<.05), but not in those who acknowledged discrimination (b=-.01, SE=.04, p=.80). The moderated mediation was not significant (b=-.0046, SE=.0094, CI [-.0285, .0114]). **Conclusion:** In this sample of adults, discrimination can contribute to the development of chronic conditions 10 years later for Blacks/African Americans who did not acknowledge discrimination when asked, yet endorsed some type of everyday experience; thus, acknowledging discrimination may be health protective. Future studies should investigate coping skills/protective factors that may be contributing to this finding.

Abstract 1107
THE INFLUENCE OF DISCRIMINATION ON AFFECTIVE FACTORS RELEVANT TO THE EXPERIENCE OF PAIN

Amanda M. Acevedo, PhD, Division of Cancer Control & Population Sciences, National Cancer Institute, Silver Spring, MD, Titus Abraham, BA, Chicano Latino Studies, University of California, Irvine, San Diego, CA, Mary Lamons, BA, Chicano Latino Studies, University of California, Irvine, Costa Mesa, CA, Belinda Campos, PhD, Chicano Latino Studies, University of California, Irvine, Irvine, CA, Michelle Fortier, PhD, Sue & Bill Gross School of Nursing, University of California Irvine, Orange, CA

Pain is a universal experience, but the affective and behavioral responses to pain can differ in marginalized groups. Previous research has shown that discrimination, depressive symptoms, and pain catastrophizing can all exacerbate pain and may contribute to disparities in the experience of pain. In the current study, we examined the association of discrimination with pain tolerance during an experimentally-induced pain task in a sample of mostly individuals from Latino or European American backgrounds. Specifically, we tested whether depressive symptoms, emotion suppression, and pain catastrophizing partially explained the association of discrimination with pain tolerance. Participants (N=215; 77.8% female; 57.5% Latino, 29.4% White, & 13.1 % Mixed) self-reported perceived discrimination, depressive symptoms, emotion regulation tendencies, and demographic information. Following a practice task conducted using room temperature water, participants completed the cold pressor task by submerging their nondominant hand into circulating water (between 4.8°C and 5.2°C) until they were no longer willing to tolerate the pain (or until an uninformed ceiling of 4 minutes was reached). Results indicated that discrimination was associated with pain tolerance through depressive symptoms and pain catastrophizing, such that higher perceived discrimination was associated with higher depressive symptoms (ß = .40, p < .001), which were associated with increased pain catastrophizing (ß = .58, p < .001), which was associated with decreased pain tolerance (ß = -.22, p < .001; indirect effect = -.05, p < .001). Our findings suggest that experiences of discrimination can cascade into decreased psychological well-being, characterized by increased depressive symptoms, which can promote rumination, magnification, and feelings of helplessness in the face of pain, thereby reducing the individual's willingness to tolerate pain.

Abstract 1030
DISCRIMINATION AND HEALTH: THE MEDIATING ROLE OF DAILY STRESS PROCESSES

Elana M. Gloger, M.S., Kate A. Leger, PhD, Jessica Maras, BA, Christopher K. Marshburn, PhD, Department of Psychology, University of Kentucky, Lexington, KY

Objective: Exposure to discrimination shapes the interpretations and affective reactions to daily stressful events, which impacts health. The current study examined the role of these two daily psychological stress processes as a pathway linking the longitudinal association between perceived discrimination, and physical and mental health outcomes.
Methods: Participants from the Midlife in the United States (MIDUS) study were followed over three waves, 9-10 years apart, spanning 20 years (N = 1,315). Lifetime and everyday discrimination were measured wave 1; daily stress, threat appraisals, and negative affect were assessed through eight daily dairy days at wave 2; physical health (chronic conditions (CC), functional limitations (FL), and self-rated physical health (SRP)) and mental health (depression (D), anxiety (A), and self-rated mental health (SRM)) were assessed at wave 3.
Results: Lifetime discrimination was associated with worse physical (FL: b = .07, 95% CI [.03, .16]; SRP: b = .08, 95% CI [.04, .18]) and mental health (SRM: b = .08, 95% CI [.03, .18]) after adjusting for age, gender, race, education, and baseline health. Everyday discrimination was associated with worse physical (FL: b = .06, 95% CI [.01, .11]; SRP: b = .07, 95% CI [.02, .12]) and mental health (SRM: b = .14, 95% CI [.09, .19]). The relationship between lifetime discrimination and physical health and lifetime discrimination and self-rated mental health were both serially mediated by daily threat appraisals and NA reactivity (CC: $B = 0.01$, 95% CI [0.001, 0.011]; FL: $B = 0.01$, 95% CI [0.001, 0.010]; SRP: $B = 0.003$, 95% CI [0.001, 0.010]; SRM: $B = 0.01$, 95% CI [0.001, 0.010]). The relationship between everyday discrimination and physical health, self-rated mental health, and depression were all serially mediated by daily threat appraisals and NA reactivity (CC: $B = 0.01$, 95% CI [0.001, 0.024]; FL: $B = 0.003$, 95% CI [0.001, 0.006]; SRP: $B = 0.003$; 95% CI [0.001, 0.006]; D: $B = 0.01$, 95% CI [0.002, 0.020]; SRM: $B = 0.01$, 95% CI [0.001, 0.010]).
Conclusion: Daily psychological stress processes are a potential mechanism by which exposure to unfair treatment relates to health. Findings underscore the insidious nature of unfair treatment and demonstrate how such experiences may be particularly consequential for daily stress processes and later physical and mental health outcomes.

<u>**Paper Session 32 - What works for whom? Individual differences in trial outcomes**</u>
**Saturday 14:30-15:30**

Abstract 1090
EFFECT OF MODERNIZED COLLABORATIVE CARE FOR DEPRESSION ON OVERLAPPING PSYCHOLOGICAL RISK AND PROTECTIVE FACTORS FOR CARDIOVASCULAR DISEASE: DATA FROM THE EIMPACT TRIAL

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Negative psychological factors are risk factors for cardiovascular disease (CVD), and positive psychological factors may be protective factors. Initial research suggests that interventions targeting one of these factors can produce reductions in the others. To determine the longer-term impact of a depression intervention on these psychological factors, we examined data from the eIMPACT trial (NCT02458690). 216 participants (primary care patients ≥50 years with depression and elevated CVD risk from a safety net healthcare system; M age=59 years, 78% women, 50% Black) were randomized to 12 months of the eIMPACT intervention (our modernized collaborative care intervention involving internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants; n=107) or usual primary care for depression (primary care providers supported by embedded behavioral health clinicians and affiliated psychiatrists; n=109). Outcomes for depression (Hopkins Symptom Checklist-20 [SCL-20]; possible range: 0-4), anxiety (Generalized Anxiety Disorder-7 [GAD-7]; possible range: 0-21), hostility/anger (Buss-Perry Aggression Questionnaire [BPAQ]; possible range: 29-145), and trait positive affect (Positive and Negative Affect Schedule-Positive Affect Subscale [PANAS-PA]; possible range: 10-50) were measured over 24 months. Mixed-effects

quadratic models using full information maximum likelihood (FIML) revealed that, versus the usual care group, the intervention group exhibited significant improvements across all outcomes (see Figure 1). The intervention group had a faster decrease in depressive symptoms, anxiety symptoms, and hostility/anger and a faster increase in trait positive affect during the 12-month treatment period. Group differences were largest at post-treatment: SCL-20 d_{adj}=0.57, GAD-7 d_{adj}=0.50, BPAQ d_{adj}=0.17, and PANAS-PA d_{adj}=0.41. At 24 months, intervention effects lessened: SCL-20 d_{adj}=0.24, GAD-7 d_{adj}=0.20, BPAQ d_{adj}=0.06, and PANAS-PA d_{adj}=0.17. Race, education, and income were not moderators of intervention effects. Our findings show that successful depression treatment has meaningful effects on overlapping psychological risk and protective factors for CVD. However, it is likely that such improvements must be sustained over time to reduce CVD risk in people with psychological risk factors for CVD. This research was supported by R01 HL122245.

Figure 1. Effect of the eIMPACT depression intervention, compared to usual care, on depression (SCL-20), anxiety (GAD-7), hostility/anger (BPAQ), and trait positive affect (PANAS-PA). Factors were measured at pre-treatment (pre-tx), mid-treatment (mid-tx), post-treatment (post-tx) and follow-up (f/u). n=216 *p<.05 **p<.01 ***p<.001
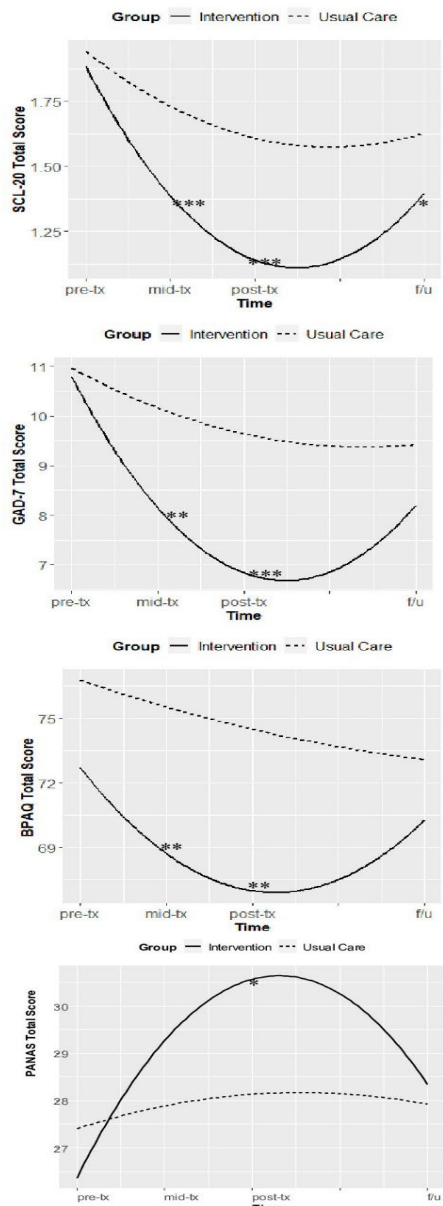
Abstract 1252

EFFECT OF DEPRESSION TREATMENT ON SUBJECTIVE SLEEP PARAMETERS AMONG PRIMARY CARE PATIENTS: DATA FROM THE EIMPACT TRIAL

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Depression and sleep disturbance (e.g., insomnia) are psychological risk factors for cardiovascular disease (CVD). While cognitive-behavioral therapy for insomnia has been shown to improve depressive symptoms, few studies have evaluated the effect of depression treatment on sleep disturbance, and the available results are mixed. Thus, we examined the effect of a depression treatment on subjective sleep parameters using data from the eIMPACT trial (NCT02458690). 216 primary care patients ≥50 years with depression and elevated CVD risk from a safety net healthcare system (M_{age}=59 years, 78% women, 50% Black) were randomized to 12 months of the eIMPACT intervention (our modernized collaborative care intervention involving internet cognitive-behavioral therapy [CBT], telephonic CBT, and/or select antidepressants; n=107) or usual primary care for depression (primary care providers supported by embedded behavioral health clinicians and affiliated psychiatrists; n=109). 199 (92%) patients attended the 12-month post-treatment visit. At pre- and post-treatment, participants completed the Hopkins Symptom Checklist-20 (SCL-20) and the Pittsburgh Sleep Quality Index (PSQI). Sleep parameters were computed from the PSQI: sleep onset latency (SOL), total sleep time (TST), habitual sleep efficiency (SE), sleep quality, sleep medication use, sleep disturbances, and PSQI global score. Independent samples t-tests revealed that treatment groups did not differ on baseline SCL-20 or any sleep parameter (ps>.07). However, at post-treatment, eIMPACT patients had lower SCL-20 scores (d=0.66, p<.01), lower SOL (d=0.36, p=.01), better sleep quality (d=0.34, p=.02), fewer sleep disturbances (d=0.35, p=.02), and lower (i.e., better) PSQI global scores (d=0.41, p=.01) than usual care patients. There were no group differences for TST (p=.12), SE (p=.06), and sleep medication use (p=.25). ANCOVAs adjusting for education, income, systolic blood pressure, and baseline level of the outcome yielded similar results – eIMPACT patients exhibited improvements in SCL-20, SOL, TST, sleep quality, sleep disturbances, and PSQI global scores (ps<.05). Our findings show that successful depression treatment has small-to-moderate effects on indicators of sleep disturbance, suggesting potential pathways through which depression treatment could lower CVD risk. This research was supported by R01 HL122245.

Abstract 1512

EHEALTH TO IMPROVE PSYCHOLOGICAL DISTRESS AND SELF-MANAGEMENT OF CHRONIC KIDNEY DISEASE: A RANDOMIZED CONTROLLED TRIAL

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Medical Center, The Hague, NA, Netherlands, Andrea W.M. Evers, PhD, Sandra van Dijk, PhD, Health, Medical and Neuropsychology unit, Leiden University, Leiden, NA, Netherlands

Psychological distress is common among patients with chronic kidney disease (CKD) not receiving dialysis, and can interfere with disease self-management. The objective of this randomized controlled trial was to assess the effectiveness of the E-GOAL patient-tailored eHealth care pathway with screening and guided cognitive-behavioral therapy, to treat psychological distress and facilitate self-management behaviors in CKD (N = 121). Primary outcome was psychological distress after the 3-month intervention and at 6-month follow-up. Secondary outcomes were physical and mental health-related quality of life, self-efficacy, and self-management. Personalized outcomes were perceived progress on personally prioritized areas of functioning (e.g., mood or social functioning) and self-management (e.g., dietary or medication adherence). Linear mixed-effects analyses showed no significant time-by-group interaction effects for our primary outcome. For secondary outcomes, only the improvement in self-management between baseline and 3 months was significantly larger in the intervention group than for controls (p = .030), with Cohen's d 0.22 (small effect). Cohen's d effect sizes did indicate a larger improvement in the intervention group compared to care as usual controls on all outcomes, except for self-management at 6 months. For personalized outcomes, ANCOVAs showed significantly more improvement in the intervention group in perceived progress on personally prioritized areas of functioning at 3 months, $F(1, 107)$ = 5.32, p = .023, , and 6 months, $F(1, 107)$ = 7.95, p = .006, with Cohen's ds 0.46 and 0.55 (moderate effects), respectively. Similarly, the intervention group reported more perceived improvement on personally prioritized areas of self-management at 3 months, $F(1, 105)$ = 6.91, p = .010, , with Cohen's d 0.54 (moderate effect), but not at 6 months, $F(1, 107)$ = 0.02, p = .880, as both groups reported no further improvement or worsening. Compared to regular care only, this eHealth intervention did not reduce psychological distress significantly, although effect sizes were promising and self-management and personally relevant treatment outcomes did improve significantly post-intervention. The results suggest that future studies should consider personalized outcomes that reflect individually relevant areas and treatment goals, matching patient-tailored treatments.

Abstract 1284
VIDEOCONFERENCED GROUP COGNITIVE BEHAVIORAL STRESS MANAGEMENT IMPROVES SYMPTOMS IN ME/CFS PATIENTS PRESENTING WITH ELEVATED POST-EXERTIONAL MALAISE

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Background. Patients with myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) are heterogeneous in terms of post-exertional malaise (PEM), an exacerbation of symptoms following exertion. PEM is associated with greater psychological distress and physical symptoms. The commonly applied, polythetic Fukuda criteria for CFS (1994) do not require PEM, whereas updated case definitions see PEM as a hallmark of ME/CFS. Cognitive behavioral stress management (CBSM), a cognitive behavioral therapy that emphasizes adaptive coping skills to manage stress, has previously demonstrated beneficial effects for ME/CFS patients, and may decrease stress-related triggers of PEM.

Methods. We present secondary analyses of a randomized controlled trial comparing 10-week videoconferenced group CBSM (V-CBSM; n=75) versus a 10-week videoconferenced health information active control condition (V-HI; n=75). Linear regression analyses considered whether PEM status (highPEM, n=71; lowPEM, n=79) moderates treatment effects on overall symptom frequency and intensity, and fatigue interference and intensity at 5-month follow-up. Chi-squared tests and logistic regression also explored whether V-CBSM influences follow-up PEM status. Analyses controlled for baseline scores on outcomes, age, gender, race/ethnicity, mode of symptom onset, and illness duration.

Results. The sample (M age = 47.96) was 87% female and 65% non-Hispanic White. Treatment groups were equivalent on PEM status and baseline clinical/sociodemographic variables. For highPEM patients, there were large effects of V-CBSM versus V-HI on symptom frequency and intensity, and fatigue interference (d's=0.600-1.071), and small effects on fatigue intensity (d=0.244). Patients in V-CBSM reported significantly decreased fatigue interference (β=-0.419), and trends suggested lower symptom frequency (β=-0.225, p=.055) and intensity (β=-0.243, p=.058). LowPEM patients did not demonstrate treatment group differences or treatment effects. Significantly fewer patients in V-CBSM (39%) than V-HI (56%) were classified as highPEM at follow-up (p=.034). Results suggested that V-CBSM is associated with half the risk of follow-up highPEM classification compared to V-HI.

Conclusions. V-CBSM appears to be efficacious in reducing total symptom burden for ME/CFS patients with highPEM and may decrease the odds of clinically elevated PEM over time.

Paper Session 33 - Moderators of the stress response
Saturday 15:45-16:45

Abstract 1541
ADDICTION AND THE STRESS RESPONSE: DOES PHYSICAL ACTIVITY ENHANCE RESILIENCE AGAINST EARLY ADVERSITY IN TOBACCO AND CANNABIS USERS?

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Background. Early life adversity (ELA) is associated with dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis. Regular exercise is a compelling health behavior that mitigates psychological and physiological responses to stressful events. In this study, we investigated the moderating role of exercise in the association between acute stress responses and ELA. Methods. Adult participants (N=134) attended a medical screening session where they completed an 18-item Adverse Childhood Experiences (ACE) questionnaire, from which an overall ACE score was calculated as a measure of ELA. Participants self-reported their average number of hours spent exercising at low, moderate, or high intensity, nicotine use, and cannabis use. Participants completed a laboratory stress session during which salivary cortisol was collected during baseline (rest) and after exposure to acute stress challenges. We used a linear model to model the association between cortisol after exposure to the acute stress challenges with the number of hours of exercise spent exercising at a given intensity and ACE along with their interaction, while adjusting for baseline cortisol, age, sex, current nicotine and cannabis use, and the interaction between ACE and current nicotine and cannabis use. Results. Men and current nicotine non-users

generally had higher cortisol responses (ps < 0.01 for both main effects). There was no evidence that cannabis use was significantly related to cortisol responses (p>0.05). There was also no evidence of an effect of either ACE or age on cortisol response (ps>0.05). A main effect of the number of hours of moderate-intensity exercise (β=0.17, p<0.05) suggested a positive association with cortisol responses. A significant interaction term with the number of hours of moderate-intensity exercise showed a dampening of the effect of moderate-intensity exercise on cortisol responses among individuals with high levels of ELA (β=-0.05, p<0.05). These associations held for light-intensity exercise with similar effect sizes, but not for high-intensity exercise. **Conclusions.** Our findings demonstrate that physical activity can offset the increase in cortisol response to acute stress associated with early life adversity. They suggest that promoting some degree of physical activity can confer a measure of resilience against early adversity and trauma.

Abstract 1454
DIFFERENTIAL IMMUNE RESPONSES TO ACUTE STRESS IN BEREAVED AND NONBEREAVED ADULTS

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Background: Spousal bereavement ranks as one of life's greatest stressors and significantly increases risk for major depression, cardiovascular disease, and dementia, among others. The mechanisms underlying disproportionate health risks between widow(er)s and nonbereaved adults remain unclear. Daily stressors related to the bereavement context may upregulate inflammatory processes that are implicated in the onset and progression of depression and other age-related diseases. Socially-oriented stressors, in particular, strongly evoke proinflammatory activity, and stressed individuals typically show larger increases in inflammation following acute social stressors than less stressed subjects. Exaggerated physiological responses to acute stress are associated with greater illness frequency and poorer self-reported health. We previously showed that recently bereaved spouses have higher baseline levels of inflammation than nonbereaved adults, but no study to date has examined whether they also exhibit greater inflammatory reactivity to acute social stressors, relative to nonbereaved adults. **Methods:** In the present study, widow(er)s at approximately 4 months post-loss (n=114, mean age (SD) = 68.17 (8.77)) and nonbereaved adults (n=69, mean age (SD) = 68.28 (13.11)) underwent a standardized social stressor (i.e., Trier Social Stress Test) and provided blood samples before, 45 minutes after, and 120 minutes after the stressor. Serum levels of Interleukin-6 (IL-6), a proinflammatory cytokine, were assayed. We utilized a random effects mixed model and included age, sex, body mass index, education, comorbid conditions, and anti-inflammatory medication as covariates in the model. **Results:** We observed a significant group by time interaction (b = .13, p < .001, CI [.128, .133]). Widow(er)s showed a steeper increase in circulating levels of IL-6 per hour (b = .22, p < .001, CI [.222, .227]) than nonbereaved adults (b = .093, p = .002, CI [.093 .096]). **Conclusions:** Bereaved spouses exhibited an exaggerated inflammatory response to a laboratory-induced social stressor, relative to nonbereaved adults. Our results suggest that maladaptive stress response patterns (i.e., inflammatory reactivity to stress) may be a mechanism through which widow(er)s sustain short- and long-term health risks months to years after losing their spouse.

Abstract 1324
EMOTION SUPPRESSION AND PHYSIOLOGICAL STRESS REACTIVITY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Emotion suppression may be a risk factor for poor health outcomes, such as cardiovascular disease (CVD). One potential explanation is that suppression may exacerbate the negative effects of stress on health through elevated stress-related physiology. However, findings in the literature are mixed and inconclusive. This lack of understanding may stem from inconsistencies in the types of laboratory tasks employed to induce physiological changes. Indeed, evidence suggests that active stress tasks disrupt the sympathetic nervous system to a stronger degree than passive, film-viewing tasks. Also, responses to active stress tasks are more predictive of CVD outcomes. Thus, the outcomes of these tasks should be examined separately.
Aim: To systematically quantify the findings of existing laboratory studies that examined the association between suppression and physiological reactions to active psychological stress tasks.
Method: Relevant articles were identified through Medline, PsychINFO, PubMed, and ProQuest. Studies were eligible if they (a) used a sample of healthy, human subjects; (b) collected physiological data during a true resting baseline and an active psychological stress task (e.g., mental arithmetic, public speaking, dyadic interaction); and (c) measured self-report or experimentally manipulated suppression. A total of 24 studies were identified and grouped within two separate meta-analyses based on study methodology, namely, self-report (k = 14) and/or manipulated suppression (k = 12).
Results: Experimental manipulation of suppression was associated with greater overall physiological stress reactivity compared to controls, primarily driven by cardiac, hemodynamic, and neuroendocrine parameters. In contrast, self-report trait suppression was not associated with overall physiological stress reactivity, but was specifically associated with greater neuroendocrine reactivity. Several significant moderator variables were identified (i.e., type and duration of stress task, nature of control instructions).
Conclusion: The active effort required to suppress one's behavioral expression during stress exposure may result in a pattern of physiological arousal that is characteristic of threat responding. This review identifies a possible mechanism that links suppression to poor health, providing insight for future research and clinical interventions.

Abstract 1583
AT THE HEART OF THE MATTER: DISCRIMINATION, ACCULTURATION AND CARDIOVASCULAR REACTIVITY TO PSYCHOSOCIAL STRESS

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Marginalized ethnic groups commonly experience discrimination, and these experiences are increasingly linked to adverse health outcomes. Research indicates that the psychosocial stress of discrimination is negatively associated with cardiovascular health. We report a study of the role of U.S. acculturation in this link via an examination of the relation of discrimination with cardiovascular responses to a psychosocial evaluative stressor in a sample of Latino, East Asian, and European American young adults and explored the role of U.S. acculturation and ethnicity in that association. Participants (n = 158, M_{age} = 20.49, 58% Females, 53.8% Latinos, 14.6% European Americans, 12.7% East Asians) from a larger study on stress reactivity self-reported on experiences of discrimination, U.S. acculturation (rating scale, nativity) and ethnicity. We obtained

measures of heart rate variability (HRV), as indexed by root mean-squared successive differences (RMSSD) and high-frequency HRV (HFHRV). Relevant to this study, participants engaged in a 3-minute standing baseline, and then took part in the 5-minute speech task of the Trier Social Stress Test (TSST). Results indicated that discrimination, parental nativity, and quadratic time interacted to influence the RMSSD trajectory during the TSST. Specifically, those reporting higher levels of discrimination and had at least one U.S. born parent exhibited a decrease in RMSSD ($\gamma = 0.18$, $RSE = 0.08$, $z = 2.30$, $p = .021$, 95%CI [0.03, 0.33]). We also found that during the TSST, East Asians surprisingly exhibited significantly lower HFHRV, as compared with European Americans ($\gamma = -233.78$, $RSE = 86.93$, $z = -2.69$, $p = 0.007$, 95%CI [-404.17, -63.40]), while Latinos were not significantly different from European Americans in HFHRV ($\gamma = -15.00$, $RSE = 92.99$, $z = -0.16$, $p = .872$, 95%CI [-197.26, 167.26]). Furthermore, higher discrimination was associated with lower HFHRV ($\gamma = -12.68$, $RSE = 4.20$, $z = -3.02$, $p = 0.003$, 95%CI [-20.92, -4.45]). Taken together, these findings suggest that perceiving higher levels of discrimination can play a role in the ability to physiologically regulate during stress, and that U.S. acculturation may also contribute. It also suggests the importance of considering ethnicity, as the cardiovascular health of those of various marginalized ethnic groups may be differentially affected.

Paper Session 34 - Current state of the art of COVID-19 research
Saturday 15:45-16:45

Abstract 1352
MENTAL HEALTH BEFORE AND DURING THE COVID-19 PANDEMIC AND THE ROLE OF PHYSICAL ACTIVITY: RESULTS FROM THE 4HAIE STUDY IN THE CZECH REPUBLIC
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It has become a research priority to examine mental health during the COVID-19 pandemic in different populations and countries. We evaluated weekly/monthly within-individual changes in the prevalence of depression, stress and feelings of happiness before (up to one-year prior) and during 17 months (30/3/2020 to 4/07/2021) after lockdown was first announced. Futhermore we assessed how the changes differ by age, sex, physical activity status and other health behaviors. We analyzed data from 1153 adults (aged 18 to 65 years) from the Czech Republic involved in a prospective-cohort study Healthy Aging in Industrial Environment–Programme 4. Mixed linear models were fitted. Prevalence of depression 3 weeks after the lockdown in March 2020 increased from 5% to 19% (p=0.044) and then declined over the following 6 weeks to 5,5% (p=0.045). Depression levels increased again to 10% (p=0.009) when a new lockdown was introduced in October 2020, but by the end of May 2021 they had returned to near baseline. Young adults 18-34 years reported the highest levels of depression after both lockdowns (21% and 13%). Being habitually physically active, older and male were protective factors. Similar but opposite trend was observed for frequency of feeling happy with older adults 55-67 years being the happiest. The age inequality in experiences were reduced as lockdown continued. The most prevalent stressors were worries about catching COVID-19 (10%), finances (9%) and marriage/partnership (15%). These data indicate that when countries faceing potential future lockdowns, the highest levels of depression should be expected in the early stages of lockdown. These data also suggest the importance of supporting young adults and encouraging political strategies to promote physical activity during lockdowns.

Abstract 1178
THERAPEUTIC ALLIANCE AND WELL-BEING FROM USE OF A GLOBAL DIGITAL MENTAL HEALTH BENEFIT DURING THE COVID-19 PANDEMIC
Sara Sagui-Henson, PhD, Maximo Prescott, MPH, Camille Welcome Chamberlain, MSc, Cynthia Castro Sweet, PhD, Myra Altman, PhD, Clinical Strategy and Research Team, Modern Health, San Francisco, CA
Background: Digital mental health services leverage technology to increase access to care, yet less is known about how quality therapeutic relationships form in a virtual setting. This study examined therapeutic alliance (a mechanism underlying successful treatment) and its association with well-being among registrants of a digital mental health platform. **Method:** Adults (n=3,087, M age=36±9 years, 54% female) engaged in videoconference sessions with a licensed therapist (18%), certified coach (65%), or both (17%) between 9/29/20-10/12/21. Members completed 2 adapted items of the Working Alliance Inventory (goal and bond) after each session and we averaged ratings across visits ($?$=.72). We used the WHO-5 to measure changes in well-being. We performed Mann-Whitney U tests, Kruskal-Wallis tests, paired samples t-tests, and linear regressions to examine: (1) average alliance ratings; (2) differences in alliance by member demographics and provider type; and (3) if alliance was related to changes in well-being over time. **Results:** Members completed a median of 3 digital sessions over a median of 28 days. Median therapeutic alliance was 4.8 (range=1-5) and did not differ by age, country, or baseline well-being (ps>.07). Females reported higher alliance than males (4.88 vs. 4.67, p=.01). Members in coaching reported higher alliance than those in therapy or both modalities (4.83 v. 4.75, p=.004), though effect sizes were negligible. Members reported an average WHO-5 increase of 4.14 points (95% CI [3.44, 4.83], p<.001), a 10% improvement in well-being (d=0.22). Therapeutic alliance predicted greater well-being at follow-up (b=2.17, 95% CI [1.07, 3.28]) after controlling for age, sex, and baseline WHO-5 (R^2=.22, p<.001). This association did not differ by provider type (p=.78). **Conclusion:** Members of a global digital mental health benefit formed a high therapeutic alliance with their providers, both coaches and therapists. Higher alliance was associated with greater well-being improvements, providing evidence that it is a key mechanism in virtual care outcomes as it is in face-to-face care. Continued focus on the quality of therapeutic relationships will ensure digital mental health services are patient-tailored as these platforms expand equitable access to evidence-based care.

Abstract 1328
IMPROVING PATIENT ENGAGEMENT AND EXPERIENCE: LESSONS LEARNED FROM LONG COVID
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Background: Long COVID is increasingly recognized as a post-viral syndrome; however general knowledge within the medical field is limited and many with the syndrome continue to face challenges accessing healthcare. The present study examined long COVID patients' perceptions and experiences of medical care. **Methods:** Participants (N=123) with protracted COVID

symptoms (≥ 3 months) were recruited via social media and completed online measures of premorbid health, COVID-19 positivity, symptoms, recovery, and perceptions of their healthcare experience. Satisfaction with medical care was rated on a scale of 0 "very dissatisfied" to 4 "very satisfied." **Results:** Participant satisfaction of long COVID related healthcare ranged from "dissatisfaction" with their emergency room experience (M=1.45, SD=1.37) to "neither satisfied nor dissatisfied" for cardiology (M=2.43, SD=1.25). Fifty-six participants (46%) received an anxiety disorder diagnosis by at least one physician despite experiencing symptoms that were not consistent with the diagnosis (e.g. protracted fever, anosmia). As a result, they felt dismissed (84%), unheard (64%), angry (54%), and delayed (29%) or discontinued medical care (25%). Common themes in the open-ended responses included perceiving providers to be dismissive of long COVID medical literature (18%), female patients' belief that clinician response and treatment would have been different if they were male (15%), and a desire for clinicians to recognize limits of their knowledge (11%). Ten percent reported positive experiences, specifically when the relationship felt collaborative and/or the clinician recognized a need to learn more about post-COVID syndromes and complications. Another 5% acknowledged and empathized with challenges faced by the medical community during the pandemic. **Discussion:** These findings suggest that long COVID patients are generally dissatisfied with their healthcare experiences, and that, in line with research in other populations, engaging the patient's experience, working collaboratively, and recognizing limits of knowledge contribute to a more positive experience. When a formal mental health evaluation supports a psychiatric diagnosis, clinicians can improve patient engagement and treatment compliance by acknowledging symptoms that are inconsistent with such diagnosis and referring to other specialists as appropriate.

Abstract 1038

A SLOW PACED BREATHING INTERVENTION TO REDUCE IL-6 IN PATIENTS WITH COVID-19-PNEUMONIA - A RANDOMIZED CONTROLLED TRIAL

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Elevated pro-inflammatory cytokines such as interleukin-6 (IL-6) have been observed in patients with COVID-19 and are associated with adverse clinical outcomes. Systemic immune response is co-regulated via the vagally-mediated cholinergic anti-inflammatory reflex. Specifically, a reduced release of pro-inflammatory cytokines such as IL-6 from acetylcholine-synthesizing T-cells in response to Vagus nerve stimulation has been demonstrated in animal and human studies. A known non-invasive and cost-effective way to stimulate efferent vagal activity is slow-paced breathing. The primary aim of this RCT was to determine if high-dose breath-assisted reflex stimulation results in a reduction of systemic inflammatory levels in COVID-19 patients.

48 hospitalized COVID-19 patients with moderate to severe symptoms from two isolation wards were randomized to intervention (3x20min app-assisted slow-paced breathing @6BPM) or TAU control group at the University Medical Center Ulm (Germany) during March & May 2021 (BEAT-COVID-study; DRKS00023971). Morning samples of IL-6, protocol adherence and self-reported total practice time (TPT) were collected bi-daily. Mixed effect linear regression models were used to explore groupXtime differences as well as dose-response analysis. Models were adjusted for age, ward, and TAU protocols.

A total of 40 patients (age 55±14; 67% male) were included to the final analysis. Feasibility of the applied breathing protocol was good, oxygenation was stable and no adverse events occurred. Adherence was closely monitored and sufficient in 17 out of 25 IG patients. Primary reason for non-adherence was worsening of symptoms with transfer to ICU.

Reduction rate in inflammatory markers were not statistically different between IG and CG. Investigating the effect of categorized TPT on next morning IL-6 levels in 25 IG patients from 112 intervention days revealed significant lower IL-6 values when TPT exceeded 40min (b= -0.898ln[pg/ml]; p=0.043). This is equivalent to a ratio of 59.3% reduction in circulating IL-6 compared to days with TPT <10min.

This is the first clinical RCT to study immediate anti-inflammatory effects of a slow-paced breathing protocol in hospitalized COVID-19 patients. Although no between group differences were found in the reduction rate of systemic inflammatory markers, promising dose-response effects were observed.

THE ROLE OF DIAGNOSTIC UNCERTAINTY, UNPREDICTABILITY AND ASSOCIATED OVERPROTECTIVE BEHAVIOR IN CHRONIC PAIN DISABILITY

Ann Meulders, PhD, Ann Meulders, PhD, Experimental Health Psychology, Maastricht University, Maastricht, Netherlands, Melanie Noel, PhD, Department of Psychology, University of Calgary, Calgary, AB, Canada, Emma E. Biggs, PhD, Biobehavioral Pediatric Pain Lab, Stanford School of Medicine, Palo Alto, CA

Learning to predict danger is adaptive; it assists in anticipating and avoiding harm. Given its intrinsically alarming function, pain is a potent motivator for learning –it stimulates the detection of stimuli predicting the occurrence of pain to minimize their impact. Protective responses (fear/avoidance) are adaptive and promote recovery, yet when pain no longer signals bodily harm they may derail into chronic pain. Many people with chronic pain however experience uncertainty about pain and its causes, which may hamper predictive learning, leading to sustained anxiety, in turn fostering overprotective behavior and increasing fear, avoidance, and disability. In addition, uncertainty surrounding their pain diagnosis can lead to increased stress, worry, and anxiety, further negatively impacting mental health and general well-being.

This symposium brings together cutting-edge research on how (diagnostic) uncertainty and unpredictability affect fear/avoidance learning processes, contribute to pain responses, pain persistence, and pain-related disability and how these processes can be targeted in treatment.

Three speakers from different labs will present innovative research on this topic. The first speaker will present new data using an operant avoidance learning paradigm showing that people with lower proprioceptive accuracy, thus those who are less certain about their own movements, tend to show overprotective behavior. The second speaker will present novel data examining diagnostic uncertainty in a cohort of youth with chronic pain and their parents, demonstrating that in this cohort intolerance of uncertainty boosts their fear and avoidance leading to worsening of pain over time. Finally, our last speaker will present qualitative research data on experiences of unpredictable pain occurrence in people with CRPS. Using daily reconstruction method and ecological momentary assessment measures they compared both retrospective and prospective references to mismatching pain expectations and experiences.

Individual Abstract Number: 1396
BEING UNCERTAIN ABOUT YOUR OWN MOVEMENT: POOR PROPRIOCEPTIVE ACCURACY IS ASSOCIATED WITH OVERPROTECTIVE BEHAVIOR

Ann Meulders, PhD, Kristof Vandael, MsC, Anda Vasilache, MsC, Experimental Health Psychology, Maastricht University, Maastricht, Netherlands

Pain is a motivational state that urges us to take action and restore bodily integrity. Learning to predict bodily threat enables us to initiate defensive responses including increased arousal, self-reported fear, but also recuperative avoidance and safety-seeking behaviors. These protective behaviors are adaptive in the acute pain stage, but when they persist after normal healing time or generalize to safe movements and situations, they may foster disability. The imprecision hypothesis of chronic pain proposes that when stimuli associated with pain are poorly encoded, stimulus generalization may lead to excessive spreading of pain.According to this hypothesis, proprioceptive accuracy may

be an important contributor to motor learning and memory. Interestingly, proprioceptive accuracy is impaired in various chronic pain conditions, prompting the question whether being uncertain about your own movement is related to avoidance becoming excessive. Yet to date, research investigating the relationship between proprioceptive accuracy and overprotective behavior is virtually non-existent. I will present new data investigating this hypothesis in an operant conditioning paradigm in which healthy participants could learn to perform robotic arm-reaching movements to avoid a pain stimulus. We used a new dynamic movement reproduction task to assess proprioceptive accuracy. Results supported our hypothesis that participants with poorer accuracy show excessive avoidance. Furthermore, exploratory analyses indicated that proprioceptive accuracy was reduced after conditioning. Interestingly, worsened proprioceptive accuracy was associated with overprotective behavior and higher trait fear of pain scores. This study is the first to highlight the role of proprioceptive accuracy in avoidance of pain-associated movements, and points toward the potential of training accuracy to tackle chronic pain disability.

Individual Abstract Number: 1395
THE ELEPHANT IN THE ROOM: DIAGNOSTIC UNCERTAINTY IN PEDIATRIC CHRONIC PAIN

Melanie Noel, PhD, Alexandra Neville, MsC, Department of Psychology, University of Calgary, Calgary, AB, Canada, Abbie Jordan, PhD, Department of Psychology, University of Bath, Bath, United Kingdom

A life with chronic pain is fraught with uncertainty. Often in the absence of a scan or positive test result to "prove" the cause of pain, patients begin an unrelenting search for a diagnosis and believe that there is something serious causing the pain that doctors have not yet found. This diagnostic uncertainty is prevalent, even in 1 in 5 children who live with chronic pain and their parents, and leads to worse pain and mental health over time. We were the first to examine the phenomenon of diagnostic uncertainty in children with chronic pain and their parents and learned that this is integrally tied to patients' past medical encounters and their mistrust in the medical system. Moreover, we showed that intolerance of uncertainty in youth with chronic pain and their parents feeds into their fear and avoidance to lead to a worsening of pain over time. I will present new, novel data examining the phenomenon of diagnostic uncertainty in a cohort of youth with chronic pain and their parents. Rare videotaped interactions of their first clinical encounter with a physician when a diagnosis is provided and explained, as well as in depth interviews before and months after the encounter, will be analyzed to examine the key drivers of diagnostic uncertainty and how it can be fueled or ameliorated in clinician-patient interactions.

Individual Abstract Number: 1397
THE PHENOMENOLOGY OF (UN)PREDICTABILITY IN COMPLEX REGIONAL PAIN SYNDROME

Emma E. Biggs, PhD, Biobehavioral Pediatric Pain Lab, Stanford School of Medicine, Palo Alto, CA, Johan Vlaeyen, PhD, Health Psychology, KU Leuven, Leuven, NA, Belgium, Ann Meulders, PhD, Experimental Health Psychology, Maastricht University, Maastricht, NA, Netherlands

Complex Regional Pain Syndrome (CRPS) is a chronic pain condition characterized by a broad range of symptoms that are typically localized to a specific limb. Touch to the affected area is often painful (allodynia) although pain fluctuations can also occur spontaneously. However, while temporally unpredictable pain fluctuations are common, it has not yet been investigated how patients experience this pain, and thus whether current

experimental operationalizations are suitable. I will present new data from a qualitative approach to capturing the experience of pain unpredictability from a sample of individuals with CRPS. Data was collected using a number of methods (open-ended interview questions, daily reconstruction methods, and a follow-up ecological momentary assessment measure), to allow us to investigate evidence of explicit (e.g., "I do not know when the pain will occur") and implicit (e.g., "I often have to change plans as a result of pain") experiences of unpredictable pain occurrence. Furthermore, the daily reconstruction method and ecological momentary assessment measure allowed us to compare both retrospective and prospective references to mismatching pain expectations and experiences. These new data will be presented and their implications for our understanding of 'unpredictability' in chronic pain, and its operationalization, discussed.

Symposium 2: 1288/S157
Thursday, March 23, 4:15pm-5:30pm

PROMOTING WELL-BEING IN CANCER SURVIVORSHIP: RANDOMIZED CONTROLLED TRIALS ACROSS THE TRANSLATIONAL CONTINUUM

Julienne Bower, PhD, Psychology, UCLA, Los Angeles, CA, Patricia I. Moreno, PhD, Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL, Michael A. Hoyt, PhD, Population Health and Disease Prevention, Marcie D. Haydon, PhD, Department of Medicine, University of California, Irvine, Irvine, CA, Annette L. Stanton, PhD, Julienne Bower, PhD, Annette L. Stanton, PhD, Psychology, UCLA, Los Angeles, CA
With advances in cancer detection and treatment, there is a large and growing number of cancer survivors in the US.   Cancer survivors face many challenges, including management of psychological distress, persistent physical symptoms, adherence to long-term therapies, and re-engagement with goals, social relationships, and meaning/purpose in life.   Typically, psychosocial interventions for cancer patients and survivors have focused on reducing the negative sequelae of diagnosis and treatment.   However, there is growing interest in interventions that focus on enhancing well-being and/or that use positive psychological approaches to achieve desired outcomes. This symposium will feature five such interventions, ranging from Phase I to Phase III randomized controlled trials in diverse groups of survivors. These include a trial of Acceptance and Commitment Therapy for women living with metastatic breast cancer; goal-focused emotion-regulation therapy for survivors of testicular cancer; an online prosocial writing intervention for adolescent and young adult cancer survivors; a values-based intervention to promote adherence to endocrine therapy in breast cancer survivors; and mindfulness and survivorship education for younger breast cancer survivors. Notably, these interventions were all designed to meet the specific needs of the target group, consistent with the overall focus of the meeting on patient-tailored clinical care.

Individual Abstract Number: 1289
DEVELOPMENT OF TAILORED ACCEPTANCE AND COMMITMENT THERAPY (ACT) INTERVENTION TO OPTIMIZE QUALITY OF LIFE IN WOMEN LIVING WITH METASTATIC BREAST CANCER: A PILOT RANDOMIZED CONTROLLED TRIAL
Patricia I. Moreno, PhD, Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami,

FL, Robert K. Sommer, BS, Department of Educational and Psychological Studies, University of Miami School of Education and Human Development, Miami, FL, Blanca Noriega Esquives, MD, Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL, Jessica L. Thomas, MA, Department of Medical Social Sciences, Northwestern University Feinberg School of Medicine, Chicago, IL, Fiona S. Horner, BA, Department of Psychology, Carnegie Mellon University, Pittsburgh, PA, Joanna B. B. Torzewski, PhD, Department of Psychiatry and Behavioral Sciences, William Gradishar, MD, Department of Medicine, Division of Hematology and Oncology, Northwestern University Feinberg School of Medicine, Chicago, IL, David Victorson, PhD, Department of Medical Social Sciences, Northwestern University Feinberg School of Medicinestern, Chicago, IL, Frank J. Penedo, PhD, Departments of Psychology and Medicine, University of Miami Miller School of Medicine and College of Arts and Sciences, Miami, FL
Purpose: Women living with metastatic (stage IV) breast cancer face unique challenges, including arduous treatments, chronic symptom burden, and emotional distress. Acceptance and Commitment Therapy (ACT) is an evidence-based, third-wave cognitive behavioral therapy that focuses on promoting meaning and purpose and optimizing quality of life. ACT may be particularly well-suited for women with metastatic breast cancer as it addresses salient existential concerns, while allowing for the co-occurrence of feelings of grief and loss that are normal and expected when facing a life-limiting prognosis. The aims of this two-part study were to characterize supportive care needs among women with metastatic breast cancer and develop and assess the feasibility and acceptability of an ACT intervention tailored for this population. Methods: Four focus groups (N=22) were audio-recorded, transcribed verbatim, and analyzed in Dedoose using a general inductive approach. Pilot trial participants (N=30) were randomized 1:1 to ACT, cognitive behavioral stress management (CBSM), or usual care. Results: Diverse supportive care needs emerged across psychosocial, physical and functional, health system and information, and sexuality and fertility domains. More than half of endorsed needs (56.2%) were in the psychosocial domain. Across domains, the most common supportive care needs were breast cancer-related symptom burden (17.4%), lack of social support (14.9%), uncertainty (10.0%), stress management (9.0%), patient-centered care (7.5%), and sexual functioning (7.5%). Supportive care needs unique to living with metastatic breast cancer included the cumulative effects of continuously undergoing cancer treatment on symptom burden, worry from scan to scan regarding response to cancer treatments, diagnosis-related stigma and social isolation, end-of-life concerns, and misconceptions regarding metastatic breast cancer. Discussion: Findings suggest that women with metastatic breast cancer have unique supportive care needs to women with early-stage breast cancer and highlight the importance of addressing psychosocial concerns and breast cancer-related symptoms. Results from the pilot trial will also be presented, including rates of acceptance, retention, and satisfaction and preliminary effects on meaning and purpose, psychological flexibility, self-efficacy, and domains of quality of life.

Individual Abstract Number: 1290
A GOAL-FOCUSED INTERVENTION TO REDUCE THE ADVERSE IMPACT OF TESTICULAR CANCER IN YOUNG ADULTHOOD: A RANDOMIZED TRIAL
Michael A. Hoyt, PhD, Population Health and Disease Prevention, University of California, Irvine, Irvine, CA, Christian J. Nelson, PhD, Psychiatry, Memorial Sloan Kettering Cancer Center, New York, NY

Objectives/Purpose
Testicular cancer can be distressing in the formative period of young adulthood. The majority of young survivors experience impairing, distressing, and modifiable adverse outcomes. These include distress, impairment in pursuit of life goals, and biobehavioral burden (e.g., enhanced inflammation, dysregulated stress hormones). Yet, few targeted interventions exist to promote adjustment and none focus on reducing morbidity via biobehavioral mechanisms. This talk will present results from a pilot randomized controlled trial designed to investigate the preliminary efficacy of a novel intervention, Goal-focused Emotion-Regulation Therapy (GET), aimed at improving distress symptoms, emotion regulation, goal-navigation, and stress-sensitive biomarkers.

Methods
Participants [N=75; M age=28, SD=4.2)] were randomized to receive six sessions of GET or Individual Supportive Therapy (ISP). Primary (depressive symptoms) and secondary (emotion-regulation and goal-navigation skills, career confusion) outcomes before, after, and 3-months after intervention were measured. Stress (i.e., salivary stress markers) and proinflammatory biomarkers (i.e., plasma sTNFαRII, IL-6, CRP, IL-Ira) were also measured.

Results
Those receiving GET had a 35% pre/post reduction in depressive symptoms, and reductions were maintained in the GET (and not ISP) condition 3-months post intervention with a small to moderate between-group effect size (Cohen's d = .4). Depressive symptoms in ISP did not change significantly from baseline to post-intervention or at 3-months. GET significantly increased goal navigation capacity, emotion regulation skills, and life satisfaction; and career confusion was reduced 35% in the GET condition (17% in ISP).
Receipt of GET (versus ISP) was significantly related to reduction in IL-1ra from pre- to post-intervention (b = -.64, p < .05); Cohen's d = 0.65). Also, decreases were observed in both groups post-intervention with effect sizes favoring GET for IL-6 (Cohen's d = 0.26; 0.22 for ISP) and CRP (0.14 for GET; 0.06 for ISP). There were significant pre- to post-intervention declines in daily salivary cortisol (area under the curve): 18% reduction in the GET group; 2% reduction in ISP.

Conclusion and Clinical Implications
GET has potential to improve self-regulation across biobehavioral domains, improve overall cancer adjustment for young adults.

Individual Abstract Number: 1291
THE AYA WRITING PROJECT: A RANDOMIZED CONTROLLED TRIAL TESTING THE BENEFITS OF AN ONLINE PROSOCIAL INTERVENTION IN YOUNG ADULT CANCER SURVIVORS
Marcie D. Haydon, PhD, Department of Medicine, University of California, Irvine, Irvine, CA, Annette L. Stanton, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA, Michael A. Hoyt, Ph.D., Public Health, University of California, Irvine, Irvine, CA, Julienne E. Bower, Ph.D., Psychology, University of California, Los Angeles, Los Angeles, CA
Adolescent and young adult (AYA) cancer survivors are at risk for experiencing adverse psychological, social, and behavioral sequelae following treatment. Yet, research on interventions for use with AYA cancer survivors is lacking. The current study sought to address this gap by testing two 4-week, online prosocial writing interventions with AYA cancer survivors. Participants were randomized to one of three conditions—peer helping, expressive writing + peer helping, or a cancer-specific writing control—and completed four writing activities, once per week, each on a different topic. Assessments of the primary (hedonic, eudaimonic *social*, eudaimonic *psychological* well-being) and secondary (depressive symptoms, anxiety, physical and behavioral symptoms, social support, affect, and fulfillment of psychological needs) outcomes were administered at baseline, weekly, post-intervention, and the 1-month follow-up. In total, 203 participants (M_{age} = 32.33 years; 76% female) enrolled in the study. Participants were, on average, 5.07 years since diagnosis, and the majority received a diagnosis of thyroid cancer (17%) or breast cancer (15%). Adherence to the intervention was high, and 89% of the sample was retained at post-intervention. Participants in the peer helping condition had significantly greater increases in eudaimonic *psychological* well-being (b = 1.56, p = .04) from pre- to post-intervention, relative to controls. Both the peer helping and expressive writing + peer helping conditions evidenced a trend towards greater increases in social support (b = 3.47, p = .050 and b = 2.64, p = .077, respectively) from pre- to post-intervention, relative to controls. Main effects of time were observed across groups for eudaimonic *social* well-being, depressive symptoms, anxiety, sleep disturbance, fatigue, positive and negative affect, and fulfillment of psychological needs, with all groups showing improvements (ps ≤ .029). A main effect of time on hedonic well-being also emerged (p = .015), with all groups reporting declines across the intervention. Prosocial writing-based interventions are promising and warrant further study. Future studies should consider whether the three writing approaches used here are reliably distinct and who benefits most (e.g., moderated effects).

Individual Abstract Number: 1293
PROMOTING ADHERENCE TO ENDOCRINE THERAPY THROUGH LEVERAGING BREAST CANCER SURVIVORS' VALUES: THE REACH TRIAL
Annette L. Stanton, PhD, Psychology, UCLA, Los Angeles, CA, Catherine M. Crespi, PhD, Biostatistics, University of California, Los Angeles, Los Angeles, CA, Sarah R. Genung, BA, Madeline Nealis, MPH, Psychology and Neuroscience, University of Colorado, Boulder, CO, Jill L. Mitchell, PhD, Psycho-Oncology, Rocky Mountain Cancer Centers, Boulder, CO, Emma E. Bright, PhD, Joanna J. Arch, PhD, Psychology and Neuroscience, University of Colorado, Boulder, CO, Michael E. Levin, PhD, Psychology, Utah State University, Logan, UT
Adherence to oral oncologic treatments, including endocrine therapies (ET) for breast cancer survivors, is a challenge. Few scalable interventions exist to promote ET adherence. A randomized, controlled trial was designed to assess the acceptability, feasibility, and preliminary efficacy of a remotely-delivered values plus ET education intervention (REACH) to promote adherence. A mixed-methods trial randomized 88 breast cancer survivors 1:1 to REACH or Education alone. Wisepill real-time electronic adherence monitoring tracked monthly ET adherence during a 1-month baseline through 6-month follow-up (primary outcome). Patient-reported outcomes were evaluated through 3 and 6 months. Multiple indices of intervention feasibility and acceptability were evaluated. Qualitative exit interviews (*n*=38) further assessed participants' perceptions of feasibility and acceptability as well as recommendations for intervention adaptation. The trial showed strong feasibility and acceptability, with an eligible-to-enrolled rate of 85%, 100% completion of the intervention sessions, and "good" intervention satisfaction ratings on average. For Wisepill-assessed ET adherence, REACH outperformed Education at one month after the intervention (*p*=.027) although not thereafter. Participants in REACH maintained high adherence until the fourth month of follow-up, whereas in Education, adherence declined significantly in the first month.

Conditions did not differ in self-reported adherence, positive affective attitudes, future intentions, or medication necessity beliefs. REACH trended toward less negative attitudes toward ET than Education at three months (p=.057), reflecting improvement in REACH (p=.004) but not Education (p=.809). Exploratory moderator analyses showed that average to highly positive baseline ET affective attitudes and more favorable perceptions of oncologist-patient communication each predicted higher adherence following REACH than Education; low levels did not. Participants identified recommendations to strengthen the interventions. As a readily disseminable, values-based intervention, REACH demonstrated high feasibility and acceptability as well as initial promise in improving objectively-assessed ET adherence among breast cancer survivors, relative to education alone. Future research should target improving REACH's endurance.

Individual Abstract Number: 1295
PSYCHOLOGICAL AND IMMUNE EFFECTS OF MINDFULNESS MEDITATION AND SURVIVORSHIP EDUCATION FOR YOUNGER BREAST CANCER SURVIVORS: THE PATHWAYS TO WELLNESS RANDOMIZED CONTROLLED TRIAL

Julienne Bower, PhD, Psychology, Steve Cole, PhD, Michael Irwin, MD, Psychiatry and Biobehavioral Sciences, UCLA, Los Angeles, CA, Ann Partridge, MD, Medicine, Harvard Medical School, Boston, MA, Antonio Wolff, MD, Oncology, Johns Hopkins University, Baltimore, MD, Catherine Crespi, PhD, Biostatistics, Patricia Ganz, MD, Medicine, Health Policy and Management, UCLA, Los Angeles, CA

Background: Women diagnosed with premenopausal breast cancer are at elevated risk for psychological distress as well as cancer recurrence and mortality. The Pathways to Wellness RCT evaluated two promising interventions for younger breast cancer survivors – mindful awareness practices (MAPs) and survivorship education (SE) – relative to wait-list control (WLC). The primary outcome was depressive symptoms, which were declined in both intervention groups. Mindfulness interventions also have the potential to influence positive psychological processes, stress, and inflammation. Here, we report on intervention effects on these domains.

Method: Women diagnosed with early-stage breast cancer at or before age 50 who had completed cancer treatment and had elevated depressive symptoms were randomly assigned to 6 weeks of MAPs, SE, or WLC. Assessments were conducted pre- and post-intervention and at 6-month follow-up (FU), including questionnaires and blood samples for genome-wide transcriptional profiling of PBMCs. Analyses compared each intervention to WLC using linear mixed models. Outcomes included positive affect (PANAS), meaning and peace in life (FACIT), perceived stress (PSS), and proinflammatory gene expression.

Results: 247 women (median age = 46 years) were randomized to MAPS (n=85), SE (n=81), or WLC (n=81). MAPs led to significant improvements in meaning/peace (d = .40) and positive affect (d = .35), and reductions in stress (d = -.27) from pre- to post-intervention relative to WLC (all p < .05); these effects persisted at 6 month FU for meaning/peace and positive affect (but not stress). SE had no significant effect on these outcomes at post-intervention, but did show significant increases in positive affect at 6 month FU relative to WLC (d = .46; p < .01). With respect to inflammatory gene expression, no change was observed in the MAPs group from pre- to post-intervention (-0.2%; p=.66), whereas both SE and WLC showed significant increases over this period (+15% and +9%, respectively; both p < .01).

Conclusion: Results support the beneficial impact of mindfulness meditation on stress and well-being and also demonstrate buffering of inflammatory processes in younger breast cancer survivors with depressive symptoms, with potential relevance for behavioral and disease-related outcomes.

Symposium 3: 1128/S144
Thursday, March 24, 4:15pm-5:30pm

TOWARDS A BIOPSYCHOSOCIAL UNDERSTANDING OF ASTHMA: NEW AVENUES OF INQUIRY

Thomas Ritz, Ph.D., Psychology, Southern Methodist University (SMU), Dallas, TX, Melissa A. Rosenkranz, Ph.D., Psychiatry, University of Wisconsin-Madison, Madison, WI, Renu Sah, PhD, Pharmacology & Systems Physiology, University of Cincinnati, Cincinnati, OH, Melissa A. Rosenkranz, Ph.D., Psychiatry, University of Wisconsin-Madison, Madison, WI, Hannah O. Nordberg, M.A., Margot L. Salsman, M.Sc., Psychology, Southern Methodist University, Dallas, TX

Asthma, a chronic disease of the airways, was originally included in Franz Alexander's "Holy Seven" of psychosomatic diseases and thought to originate in a specific conflictual mother - child relationship. Today's understanding of asthma appreciates the organic nature of the disease, but psychological factors are accepted as important factors that influence its disease process. Evidence has been accumulating over the past two decades that asthma's relationship with psychological factors is more complex than originally thought. The symposium will present dimensions of this complexity, with topics that include animal studies of allergic asthma, neuroscientific perspectives on airway immunology and brain metabolites in asthma, pandemic-specific concerns in asthma patients, and treatment of depression in caregivers of children with asthma. These topics will illustrate diverse lines of inquiry that have recently been found to contribute to an enhanced understanding of psychosocial factors in this chronic disease and have the potential to improve its management. Animal models of severe allergic inflammation and associated T helper cell dynamics are elucidating their effects on fear conditioning and extinction and studies have begun detailing some of the mechanistic pathways that translate allergic airway inflammation into critical modifications of central nervous system structures and functions. Interrogation of patients' brain function and chemistry demonstrates further that, far from being a purely peripheral disease of the airways, asthma interacts with central nervous system processes that are associated with emotion and cognition. The recent viral infection pandemic is also uncovering overlooked areas of psychological vulnerability in patients and can inform asthma management efforts about unmet needs. The social network in which the young asthma patient is embedded has long been shown to be important for asthma management, but a novel avenue to improvements in asthma control are interventions focusing on caregivers' emotional health. Thus, this symposium will showcase promising new lines of inquiry that will deepen the acceptance and appreciation of the intricate nature of mind – body interactions in asthma and emphasize the necessity of a biopsychosocial approach to treatment and self-management of the disease.

Individual Abstract Number: 1142

ASTHMA, AIRWAY INFLAMMATION AND PTSD ASSOCIATION: RELEVANT MODELS AND A ROLE OF IL17A

Renu Sah, PhD, Pharmacology & Systems Physiology, University of Cincinnati, Cincinnati, OH

Background: There is a growing interest in airway inflammation and mental health. Recent genetic and epidemiological evidence supports an association between PTSD and asthma however, contributory immune mediators/mechanisms are unclear. Recent work from our group employs mouse aeroallergen, house dust mite (HDM) models to examine the role of severe asthma linked inflammatory T helper cells, Th17 and interleukin 17 (IL-17A) in regulating PTSD-relevant behaviors.

Methods: A combination of behavioral, immunological, transgenic and transcriptomic approaches were used. **1)** BALBc-C5a receptor treatment that shifts Th2 mild asthma phenotype to Th17/IL17a expansion and robust airway inflammation; 2) IL-17a receptor knockout mice and 3) RNAseq transcriptomics of cortical and blood brain barrier compromised area, subfornical organ (SFO) tissue was performed. Fear conditioning and extinction was assessed as a PTSD-relevant behavior.

Results: Induction of Th17/IL-17 in the BALBc/anti-C5aR1 treated mice resulted in compromised fear extinction and increased fear reinstatement. Absence of IL-17 signaling in IL17Ra deficient mice attenuated HDM effects on fear extinction. Preliminary evidence suggests a potential of the SFO in translating HDM effects to the medial prefrontal cortex, an area regulating fear extinction. Transcriptomic analyses revealed modulation of immune T cell-targeted signaling pathways within the SFO in mice with Th17A expansion.

Conclusion: Overall, our work provides novel insights on mechanisms by which mediators of severe airway inflammation, Th17/IL17A regulate fear memory of relevance to PTSD. Beyond asthma-PTSD, our findings have relevant implications for other pulmonary (e.g. COVID-19) and autoimmune inflammatory conditions and mental health.

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Individual Abstract Number: 1137
AIRWAY INFLAMMATION IMPACTS ON SALIENCE NETWORK FUNCTION: CELLULAR AND MOLECULAR PATHWAYS LINKING ASTHMA AND EMOTION.

Melissa A. Rosenkranz, Ph.D., Psychiatry, University of Wisconsin-Madison, Madison, WI, Kimberly Dill-McFarland, Ph.D., Medicine, University of Washington, Seattle, WA, Stephane Esnault, Ph.D., Nizar N. Jarjour, M.D., William W. Busse, M.D., Medicine, University of Wisconsin-Madison, Madison, WI, Matthew C. Altman, M.D., Medicine, University of Washington, Seattle, WA

Rationale: The increased incidence of mood and anxiety disorders in asthma is well-documented, and our prior work has demonstrated that function in brain circuits important in processing and regulating emotion is altered in response to provocation with inhaled allergen. Nonetheless the afferent signaling pathways important in connecting airway inflammation with functional changes in affective neurocircuitry are not well understood.

Methods: Twenty-three patients with allergic asthma underwent segmental allergen bronchial provocation (SABP) to provoke airway inflammation. Functional magnetic resonance imaging (fMRI) data were acquired during performance of an asthma-variant of the Stroop task, at baseline and 48h post-SABP to assess emotion-related changes in brain function.

Samples of bronchial alveolar lavage (BAL) fluid were also acquired immediately prior to and 48 hours after SABP, and assayed for changes in cellular, protein, and transcriptional responses to SABP. SABP-induced BOLD changes in the salience network were analyzed with respect to changes in markers of airway inflammation in BAL.

Results: SABP caused changes in BAL markers of airway inflammation at the cellular (e.g. eosinophils; Δ=32.0%, p<0.001), protein (e.g. IL-17A; Δ=9.9 pg/ml, p<.05), and transcriptional (differential expression of 3,302 genes; FDR<0.05) levels. Further, change in IL-17A level was significantly associated with change in salience network responsivity to emotional cues ($r's$ = 0.57-0.70, p<0.05). At the level of transcription, a gene expression module enriched for genes upregulated in corticosteroid-resistant type 2 myeloid cell populations in the lung (FDR<0.001), in which NOTCH1 and VEGFA were functionally central, was significantly correlated with both changes in IL-17A and the changes in the salience network BOLD response (r-values=0.53-0.69, p<0.05).

Conclusions: Our data provide important new insights into how airway inflammatory signaling contributes to risk for dysregulated emotion. Challenge-induced up-regulation of IL-17 and its association with changes in salience network responsivity directly connects changes in airway biology with affective symptoms. In addition, the involvement of NOTCH1 and VEGFA genes in a network responsive to SABP and correlated with salience network responsivity implicates immune cell migration and changes in vascular permeability in the mechanisms through which airway inflammation impacts brain function, and suggests a possible role of neuroinflammation in the overrepresentation of psychopathology in asthma.

Individual Abstract Number: 1211
ANXIETY AND DISGUST REACTIVITY IN ASTHMA: THE ROLE OF HIPPOCAMPAL VOLUME AND HIPPOCAMPAL METABOLITE LEVELS

Hannah O. Nordberg, M.A., Juliet Kroll, Ph.D., David Rosenfield, Ph.D., Psychology, Southern Methodist University, Dallas, TX, Sina Aslan, Ph.D., Psychiatry, Changho Choi, Ph.D., Advanced Imaging Research Center - Radiology, E. Sherwood Brown, MD, Ph.D., Psychiatry, University of Texas Southwestern Medical Center, Dallas, TX, Thomas Ritz, Ph.D., Psychology, Southern Methodist University, Dallas, TX

Background: Emerging research suggests an association between asthma and decreased cognitive function. The association of asthma with individuals' neuronal health, however, has been largely understudied. The hippocampus is a critical structure implicated in cognitive and affective functioning. Although individuals with asthma experience anxiety disorders at increased rates, effects of the interaction of asthma with hippocampal structure/chemistry on individuals' affect has not been previously examined. In the present study, we sought to investigate the association of asthma, hippocampal volume and hippocampal metabolite levels on individuals' affective reactivity. Method: Adults with asthma (N = 20) and healthy controls (N = 20) participated in the study. Left hippocampal metabolite concentrations (N-acetylaspartate (NAA), glutamate (Glu), glutamine (Gln), myo-inositol (mI), total creatine (tCr), and total choline (tCho)) were obtained using magnetic resonance spectroscopy and left hippocampal volume was obtained with 3T structural Magnetic Resonance Imaging. Participants viewed two blocks of negative film clips and one block of neutral film clips. Ratings of their anxiety and disgust levels were obtained at baseline and after each block of films. Multilevel modeling controlling for age, gender, and

inhaled corticosteroid use was used to examine factors associated with individuals' anxiety and disgust reactivity to the films. Results: Hippocampal volume was not associated with individuals' affective responses to the films. Two out of six hippocampal metabolites, tCr and tCho, were associated with individuals' anxiety response to negative films. Lower tCr and tCho levels were associated with a stronger anxiety response to negative compared to neutral films in asthma but not healthy controls. For tCr, disgust responses to negative films increased with lower tCr levels for both groups. In general, asthmatics had significantly greater anxiety and disgust responses to negative films. Conclusion: Hippocampal chemistry appears to modulate the affective responding in asthma specifically. Our findings reflect earlier reports of an association between low tCr or tCho and psychopathology and may indicate problematic interactions of asthmatic disease processes with neuronal health that are already visible in young to middle aged patient populations.

Individual Abstract Number: 1151
THE PSYCHOLOGICAL IMPACT OF LIVING WITH ASTHMA DURING THE COVID-19 PANDEMIC

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Background
Underlying chronic conditions could make individuals particularly vulnerable to environmental stress during the coronavirus-19 disease (COVID-19) pandemic. Comorbid psychopathology frequent in asthma could increase the vulnerability of this population. As psychological symptoms are intimately linked with asthma control, research is needed to uncover potential mental health considerations for the clinical management of asthma in a pandemic setting.
Objective
We investigated whether differences exist between asthmatics relative to non-asthmatics in various dimensions of psychological health during a pandemic. We then investigated how perceived COVID-19 vulnerability, asthma and COVID-19 symptom experience, and symptom-related worry may mediate group differences in psychological distress.
Methods
Survey data on the physical, psychological, and pandemic-related health of 234 adults was collected from July-November 2020. Controlling for demographic and health-related confounds, multiple regression analyses examined differences in psychological distress between asthmatics (n=111) and non-asthmatic controls (n=123) during a pandemic. Mediation analyses investigated roles of perceived COVID-19 vulnerability, symptom experience, and symptom-related worry in this model.
Results
Compared to non-asthmatics, scores on anxiety, stress, and symptoms of burnout were significantly higher for individuals with asthma (P<.05). Emotional exhaustion, represented by a subscale of the Maslach Burnout Inventory, remained elevated beyond general anxiety and depression. Experience of symptoms typical in both asthma and COVID-19 (i.e., chest tightness) mediated 42% of this effect (95%CI=[0.72, 2.51]).
Conclusion
The mental health of individuals with asthma is differentially impacted in a pandemic environment compared to individuals without asthma. Characteristics of burnout, partially mediated by physical symptoms related to asthma and COVID-19, may constitute a new "symptom burnout" phenomenon related to viral pandemics. This phenomenon emerged over and above comorbid anxiety and depression, which are commonly observed in asthma. Our findings can contribute to an

optimization of asthma management, and more research is needed to understand whether "symptom burnout" exists beyond the limited access to care and heightened environmental stress of a viral pandemic.

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Individual Abstract Number: 1187
THE RELATIONSHIP BETWEEN CHANGE IN CAREGIVER DEPRESSION AND CHILD'S ASTHMA CONTROL AND SPIROMETRY

E.Sherwood Brown, MD, PhD, Psychiatry, UT Southwestern Medical Center, Dallas, TX, Bruce Miller, MD, Beatrice Wood, PhD, Psychiatry, Heather Lehman, MD, Pediatrics/Allergy, Immunology and Rheumatology, SUNY Buffalo, Buffalo, NY, David Khan, MD, Internal Medicine/Allergy and Immunology, Jayme S. Palka, PhD, Psychiatry, UT Southwestern Medical Center, Dallas, TX

Background: Depression and other psychiatric disorders are common in caregivers of children with asthma and, when present, are associated with poor outcomes in the child, including greater use of acute care resources. No prior studies have longitudinally examined relationships between caregiver depression and the child's asthma. The present two-site study examined whether child asthma outcomes over time were related to improvement in their caregiver's depression.
Methods: A total of 205 caregivers with current major depressive disorder and children age 7-17 with persistent asthma were observed every four weeks for 52 weeks. Caregivers were offered open-label, algorithm-based antidepressant treatment which some elected to receive while others received care outside of the study or declined depression care. Caregiver depressive symptoms were measured using the 17-item Hamilton Rating Scale for Depression (HRSD). The child's asthma was assessed with the Asthma Control Test (ACT) and spirometry, and their depressive symptoms with the Children's Depression Inventory (CDI). Multiple linear regression analyses were conducted with change in ACT and FEV_1% predicted as dependent variables and fraction of visits with depression remission (HRSD score ≤ 7) as the predictor, and caregiver age and ethnicity, language spoken and child age and sex as well as study site as covariates. Multilevel mediation analyses were conducted to examine the role of the child's depressive symptoms (CDI) and asthma controller medication adherence as potential mediators.
Results: On average, caregivers were about 39 years old, female (98%), primarily spoke English (86.3%), and identified as non-Hispanic/Latino (65.4%) ethnicity and African American (52.2%) race. HRSD remission proportion was a significant predictor of improvement of both ACT and FEV_1% predicted. Both relationships were mediated through improvement in CDI scores not by improvement in adherence.
Conclusion: The findings suggest that improvement in caregiver depression positively influences the child's asthma outcomes through improvement in the child's mood. The findings suggest that screening for depression both in caregiver's and children with asthma may identify modifiable mood symptoms that could lead to improved asthma control and respiratory functioning.

Symposium 4: 1132/S146
Friday, March 25, 11:45am-12:45pm

THE ROLE OF BIOBEHAVIORAL FACTORS IN BIOLOGICAL AGING: ADVANCING THE FIELD OF GEROSCIENCE

Rebecca G. Reed, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Kelly E. Rentscher, PhD, Kelly E. Rentscher, PhD, Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, Rachel Haahr, HS, Psychiatry, Columbia University, New York, NY, Rebecca G. Reed, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Elissa S. Epel, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA

This symposium brings together innovative research from the emerging field of geroscience, which aims to identify and ultimately target the key biological mechanisms that drive the aging process in order to reduce and delay multiple age-related diseases. Empirical investigations and theory have identified several hallmarks of biological aging, including cellular senescence, inflammation, telomere shortening, mitochondrial function, and DNA-methylation based epigenetic changes that occur with age. Importantly, research is also beginning to address the potential role of biobehavioral factors in the aging process. This symposium will showcase research with diverse populations and methods across the translational spectrum on the psychosocial, behavioral, and cognitive factors that relate to hallmarks of biological aging. Rentscher will present data linking psychosocial stress to cellular senescence and inflammation in humans and mice. Carroll will present longitudinal data demonstrating that breast cancer survivors with a history of depression show accelerated telomere shortening over two years. Picard will present on the mind-mitochondria connection and demonstrate dynamic links among psychosocial and behavioral factors, hair greying, and aging biomarker growth differentiation factor 15 (GDF15) in two studies. Reed will present longitudinal data showing that a faster DNA-methylation Pace of Aging is associated with cognitive decline in midlife. The discussant, Dr. Elissa Epel, will share her expert reflections and discuss future directions in social-behavioral geroscience. Together, this exciting work and discussion by early-, mid-career, and senior scholars will highlight research on biobehavioral factors that may accelerate aging and disease-risk, including cognitive decline, and may ultimately inform future interventions to slow aging and extend the healthspan and lifespan.

Individual Abstract Number: 1493
PSYCHOSOCIAL STRESS IS ASSOCIATED WITH CELLULAR SENESCENCE MARKER P16^{INK4A} IN HUMANS AND MICE

Kelly E. Rentscher, PhD, Donald M. Lamkin, PhD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, Lilian R. Polsky, MS, Cousins Center for Psychoneuroimmunology, Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA

Background: Exposure to psychosocial stress and adversity is thought to accelerate biological aging, offering one mechanism through which stress may increase risk for age-related diseases and early mortality. Cellular senescence, a hallmark of biological aging, is a permanent state of cell cycle arrest commonly reached through DNA damage or telomere attrition and believed to be a driver of age-related disease. Senescent cells release numerous pro-inflammatory factors termed the senescence-associated secretory phenotype (SASP) that further drive aging. In this presentation, we describe a conceptual model outlining the biological processes involved in the stress-senescence-inflammation pathway and present findings linking stress to these aging processes.
Methods: In an experimental model, 26 male SCID mice were exposed to 14 days of restraint stress, with (n=6) or without (n=10) propranolol administration, or a non-stress control condition (n=10). Normal femoral bone marrow leukocytes were isolated from engrafted leukemia cells that had been injected prior to the stressor, as the mice were also under a cancer challenge. We performed whole genome transcriptional profiling to assess key processes in the senescence pathway: cell stress, DNA damage repair, cellular senescence markers p16^{INK4a} and p21, and the SASP.
Results: ANCOVAs that adjusted for tumor load and Fisher's pairwise comparisons revealed that stressed mice had enhanced p16^{INK4a} (t=-2.52, p=.02) and p21 (t=-3.26, p=.004), lower DNA damage repair (t=4.56, p<.001), and higher SASP (t=-2.36, p=.03) gene expression than control mice. Promoter-based bioinformatics analyses suggested that stressed mice also showed up-regulated beta-adrenergic (CREB) and inflammatory (NF-κB, AP-1) and down-regulated cell stress (Nrf2) transcription factor activity relative to control mice (ps<.01). Propranolol reversed CREB and Nrf2 activity (ps<.03).
Conclusion: Together with our prior work linking chronic stress exposure, perceived stress, and accumulated daily stress appraisals to increased expression of p16^{INK4a}, these experimental findings provide initial evidence of a stress-senescence-inflammation causal pathway and support the hypothesis that psychosocial stress and adversity can accelerate biological aging, increasing risk for age-related declines, disease, and early mortality.

Individual Abstract Number: 1495
ACCELERATED TELOMERE SHORTENING IN BREAST CANCER SURVIVORS WITH DEPRESSION HISTORY: A TWO-YEAR LONGITUDINAL COHORT STUDY

Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, Richard Olmstead, PhD, Cousins Center for Psychoneuroimmunology, University of California, Los Angeles, Los Angeles, CA, Reina Haque, PhD, Research & Evaluation, Health Systems Science, Kaiser Permanente Southern California, Pasadena, CA, Michael R. Irwin, MD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA

Background: Depression, with a nearly four-fold greater prevalence in breast cancer survivors than in the general community, increases risk of morbidity and mortality. Breast cancer survivors may also have accelerated biological aging, although this trajectory is highly variable. In this study, we hypothesize that among breast cancer survivors a lifetime history of depression, as well as the cumulative lifetime number of depression episodes, accelerates the rate of biological aging as indexed by shortening of peripheral blood mononuclear cell (PBMC) telomere length.
Methods: In a prospective cohort study of non-depressed breast cancer survivors (n=208) from a large community-based health plan, we assessed depression history by a structured diagnostic interview and collected blood specimens at baseline and repeatedly every 8 months over 24 months to measure PBMC telomere length. Nested mixed linear multivariable models examined the effect of lifetime depression history and number of depression episodes on change in telomere length, adjusting for demographic, comorbidity, and cancer-specific factors.
Results: In the fully adjusted model, depression history predicted shortening of PBMC telomere length over 24 months

(Beta[SE]=-.006[.002], p=.001) (two-sided). A greater number of depressive episodes over the lifetime was also associated with greater attrition of PBMC telomere length over 24 months (Beta[SE]=-.004[.001], p=.001).

Conclusion: In breast cancer survivors without current depression, mean PBMC telomere shortening over 24 months was greatest in those with a lifetime depression history compared to those without such a history. Those with a greater number of episodes of major depressive disorder (MDD) over their lifetime had the greatest rate of telomere length shortening. Depression history and its cumulative burden may contribute to accelerated biological aging, with implications for increased risk of morbidity and mortality in breast cancer survivors.

Individual Abstract Number: 1148
PROBING THE MIND-MITOCHONDRIA CONNECTION IN GREYING HAIRS AND IN SALIVA

Rachel Haahr, HS, Shannon Rausser, BS, Ayelet Rosenberg, BS, Anna Monzel, PhD, Martin Picard, PhD, Psychiatry, Columbia University, New York, NY

Background: Life stress triggers multisystem neuroendocrine and metabolic recalibrations that cost energy. The increased energy demand is supplied by mitochondria, a cellular organelle specialized in energy transformation and signaling. However, little is known about how stress-induced mitochondrial recalibrations may influence human aging biology.

Methods: Results from two studies were integrated. In study 1, we examined hair greying. Hairs grow continuously and absorb neuroendocrine and metabolic factors in the hair follicle. Using a novel imaging approach, we quantified greying dynamics and the associated proteomic features in relation to self-reported life stress over the preceding year. In study 2, we tracked a validated age-related biomarker, growth differentiation factor 15 (GDF15), in a high-frequency, repeated-measures design, to probe its existence in saliva and quantify its diurnal variation in parallel with mood and physical activity.

Results: Study 1 revealed synchronous events of hair greying associated with perceived stress and stressful life events. Our longitudinal results revealed that hair greying is reversible, and that grey hairs show alterations in the mitochondrial proteome. In Study 2, we confirmed the existence of GDF15 in human saliva, and characterized its natural dynamic variation including a robust negative awakening response. In simple correlation analyses, neither daily mood nor physical activity were associated with morning or evening salivary GDF15 levels.

Conclusion: These findings from greying hairs and the aging biomarker GDF15 in saliva call for replication in larger studies, and open new avenues to non-invasively probe the mind-mitochondria connection across the lifespan.

Individual Abstract Number: 1149
EPIGENETIC AGING AND COGNITIVE DECLINE IN A LONGITUDINAL SAMPLE OF MIDLIFE ADULTS

Rebecca G. Reed, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA, Judith E. Carroll, PhD, Cousins Center for Psychoneuroimmunology, Psychiatry & Biobehavioral Sciences, University of California, Los Angeles, Los Angeles, CA, Anna L. Marsland, PhD, RN, Stephen B. Manuck, PhD, Psychology, University of Pittsburgh, Pittsburgh, PA

Background: Older epigenetic age, above and beyond chronological age, has been associated with increased risk of premature morbidity and mortality. However, links between epigenetic and cognitive aging are less well characterized, despite the burden of cognitive decline. This pilot study examined longitudinal associations between epigenetic and

cognitive aging across midlife in the Adult Health and Behavior (AHAB-1) registry.

Methods: AHAB participants had blood drawn and were administered neuropsychological tests (working memory, processing speed, executive function, attention) at baseline and follow-up (M=15.9 years later, SD=0.33). A cognitive composite was formed (α=.77 across people and time) and used in an extreme groups approach to select two subsets of participants: those who declined in cognitive function (n=24; 11 males, 13 females) and those who maintained cognitive function over time (n=24; 10 males, 14 females). Selected participants (N=48) had a mean age of 44.8 years (SD=6.3) at baseline and 92% were white. DNA was extracted from peripheral whole blood; DNA methylation (DNAm) assays (Illumina EPIC) were conducted. Epigenetic ages at both time points were estimated using the Horvath, Hannum, PhenoAge, and GrimAge epigenetic clocks, and Dunedin Pace of Aging measure. Multilevel models tested main effects of group, time, and group by time interactions, adjusting for baseline age and sex.

Results: There were no significant differences in age, sex, or race between the Decliners and Maintainers. Across participants, adjusted multilevel models showed increases over time in Horvath, Hannum, PhenoAge, and GrimAge predicted ages, and the Pace of Aging measure (all p<.001). Across waves, there was a significant group difference in Pace of Aging (F(1,44)=4.29, p=.044) such that Decliners on average had a faster Pace of Aging than Maintainers. No other DNAm aging measures showed significant group differences, nor did any show significant group by time interactions.

Conclusion: Preliminary evidence indicates a faster Pace of Aging may be associated with cognitive decline. Pace of Aging measures that assess the *rate* a person is aging, versus epigenetic clocks that measure how much aging has occurred up until a point in time, may be more sensitive to pre-clinical cognitive changes in midlife.

Symposium 5: 1195/S153
Friday, March 25, 1:45pm-2:45pm

DYADIC AFFECTIVE PROCESSES IN MENTAL HEALTH AND WELL-BEING ACROSS THE LIFESPAN

Elizabeth Necka, PhD, Division of Behavioral and Social Research, National Institute on Aging, Bethesda, MD, Claudia Haase, PhD, Human Development and Social Policy and (by courtesy) Psychology, Northwestern University, Evanson, IL, Andrea Coppola, MA, Psychology, University of Arizona, Tucson, AZ, Casey L. Brown, PhD, Psychology, University of California, Berkeley, Berkeley, CA, Alaina I. Gold, BA, Psychology, University of Southern California, Los Angeles, CA

Individuals do not age in a vacuum; rather, the interpersonal relationships that we establish and maintain throughout our lives play a fundamental role in shaping our health and well-being. Any attempt to personalize medicine must account for the influences of the significant others in our lives, as the health, behaviors, and well-being of these partners can explain variance in our own. This symposium will address the ways in which romantic partners influence one another's health and well-being across the lifespan. Talks use a range of methodological approaches – from laboratory experiments to population-based survey studies, spanning psychology, psychophysiology, and neuroscience – to address the question of how the experiences of our significant others shape our own experiences of depression, anxiety, and loneliness, particularly

in mid- and late-life. Haase and colleagues demonstrate the long-lasting consequences of emotion regulation in martial conflict. Coppola, Maresh, and colleagues present evidence that social support in romantic relationships shapes affective and neural responses to potential social threat. Brown and colleagues show that the ability to understand other's emotions can be potentially detrimental when one's partner is experiencing depressive symptoms. Gold and Beam demonstrate that one's partner's depressive symptomology can also influence one's own loneliness, at least for women. Together, the talks in this symposium will address the role of interpersonal relationships as a potential mechanism to explain heterogeneity in clinical outcomes such as depression, anxiety, and loneliness. This symposium highlights the need to account for social context when considering how to promote healthy aging and well-being across the lifespan.

Individual Abstract Number: 1197
EMOTION REGULATION AND MENTAL HEALTH: A LONGITUDINAL STUDY OF LONG-TERM MARRIED COUPLES

Claudia Haase, PhD, Human Development and Social Policy and (by courtesy) Psychology, Northwestern University, Evanson, IL, Lian Bloch, PhD, Coaching Bold, San Francisco, CA, Robert W. Levenson, PhD, Psychology, University of California, Berkeley, Berkeley, CA

The ability to regulate emotion is thought to play an important role in healthy aging. Although close relationships become particularly important later in life, few studies have examined how middle-aged and older adults regulate emotions in social interactions and links between regulation and mental health. We examined the downregulation of negative emotion during marital conflict and links with mental health in a longitudinal sample of middle-aged and older long-term married couples (N = 140). Emotion regulation was measured by how quickly spouses downregulated negative experience, negative behavior, and physiological arousal after negative emotional events during a 15-minute marital conflict discussion. Mental health (i.e., anxiety and depressive symptoms) was measured at baseline and 6 years later. Data were analyzed using actor-partner interdependence modeling. Results showed that, for wives, greater downregulation of negative emotional experience was associated with lower anxiety and depressive symptoms at baseline and predicted decreases in anxiety and depressive symptoms longitudinally. For husbands, greater downregulation of physiological arousal was associated with lower depressive symptoms at baseline (although this association did not remain stable when controlling for covariates) and predicted increases in depressive symptoms longitudinally. With the one exception noted, results remained stable when controlling for covariates (i.e., age, education, ethnicity, marital satisfaction, number of negative emotional events, negative emotional arousal). For wives, these results demonstrate benefits of downregulating negative emotions during marital conflict for mental health concurrently and longitudinally. For husbands, downregulating negative emotions during marital conflict may come at a cost, predicting increases in depressive symptoms longitudinally. These results provide new insights regarding the role of emotion regulation in healthy aging. Implications for future research are discussed.

Individual Abstract Number: 1198
FINDINGS FROM THE SELF OTHER OVERLAP FMRI (SOOF) STUDY: NEURAL SENSITIVITY TO SOCIAL FEEDBACK IS ASSOCIATED WITH PERCEIVED SOCIAL SUPPORT IN THE LABORATORY

Andrea Coppola, MA, Erin L. Maresh, PhD, Jessica R. Andrews-Hanna, PhD, David A. Sbarra, PhD, Psychology, University of Arizona, Tucson, AZ

High-quality social relationships are consistently associated with positive health outcomes, but the neural underpinnings of this association remain unclear. Perceived social support plays an important role in buffering negative affective experiences in the face of stressful life events. In the current study, we investigate how perceived social support during a conversation relates to neural empathy for a romantic partner. Twenty-five intact romantic couples (N = 50 people) between the ages of 18 and 35 completed an in-lab social support task designed to elicit support from partners in a naturalistic way. Participants rated how supported they felt using the Perceptions of Responses to Support Seeking scale. At a second laboratory visit, partners took turns completing a newly developed fMRI social feedback task. Participants were informed that they would be viewing positive and negative ratings purportedly made by other participants in the study about their own likability and the likability of their partner, based on photos taken of them in the first lab visit. Trials consisted of photos of "raters" along with the likability rating of the participant and their partner. We focused on simultaneous incongruent feedback—that is, trials in which both self and partner feedback was displayed and was opposite in valence (e.g., self: negative, partner: positive feedback). We hypothesized that those who perceived their partners as supportive would evidence greater activity in brain regions implicated in salience/threat and reward processing, suggesting greater neural instantiation of empathy and vicarious reward respectively, during these incongruent feedback conditions. Results from whole-brain analyses (Z=2.3, p<.05) show that, when participants received positive feedback but their partner received negative feedback, higher perceived support corresponded with greater neural activity in regions associated with emotional salience and threat response. When participants received negative feedback but their partner received positive feedback, higher perceived support corresponded with greater neural activity in regions associated with reward. These findings suggest that perceived support corresponds with greater vicarious reward and neural empathy for a romantic partner and may provide a working model for how dyadic affective experiences are represented in the brain. *Coppola and Maresh contributed equally to this work

Individual Abstract Number: 1535
EMPATHIC ACCURACY AND SHARED DEPRESSIVE SYMPTOMS IN AGING DYADS

Casey L. Brown, PhD, Psychology, University of California, Berkeley, Berkeley, CA, Kevin J. Grimm, PhD, Psychology, Arizona State University, Tempe, AZ, Jenna L. Wells, MA, Alice Y. Hua, PhD, Robert W. Levenson, PhD, Psychology, University of California, Berkeley, Berkeley, CA

Empathic accuracy, the ability to accurately understand others' emotions, is typically viewed as beneficial for social functioning and mental health. However, empathic accuracy may become problematic when a close relational partner has high levels of depressive symptoms. Across two studies, we measured empathic accuracy using objective laboratory tasks that capture the ability to rate others' emotional valence accurately over time: first, in a sample of 156 middle aged and older adult married couples (Study 1; Total N=312), and then in a sample of 102 informal caregivers of individuals with dementia (Study 2). Across both studies, the association between empathic accuracy and depressive symptoms varied as a function of a partner's level of depressive symptoms. Greater empathic accuracy was associated with fewer depressive symptoms when a partner had low levels of depressive symptoms,

whereas greater empathic accuracy was associated with more depressive symptoms when a partner had high levels of depressive symptoms. Findings suggest more accurate recognition of other's emotions can be beneficial or detrimental as we age, depending upon the depressive symptoms of one's partner. Findings also point to empathic accuracy as a potential mechanism underlying shared depression in aging dyads.

Individual Abstract Number: 1547
DYADIC EFFECTS OF LONELINESS AND DEPRESSIVE SYMPTOMATOLOGY IN OLDER ADULT COUPLES ACROSS FIVE YEARS

Alaina I. Gold, BA, Christopher R. Beam, PhD, Psychology, University of Southern California, Los Angeles, CA
Compared to younger adults, a greater portion of older adults endorses symptoms of depression or loneliness at subthreshold levels (Fiske et al., 2006). Falling just below clinical cutoffs, detection and treatment of symptoms thus become more challenging for this population. Furthermore, higher levels of individual loneliness have been found to temporally precede increases in depressive symptomatology (Cacioppo, Hawkley, & Thisted, 2010; Cacioppo et al., 2006). Loneliness and depression are highly interpersonal and can be conceptualized as dyadic processes, giving reason to believe that people's depressive symptomatology may be affected by their intimate partner's level of loneliness. The purpose of this study is to examine whether individual and partner loneliness predicts one's own and one's partner's subsequent depressive symptomatology in a large sample of older adult couples. Additionally, we test the competitive hypothesis that individuals' level of depressive symptomatology, their partners', or both predict subsequent loneliness.

We used a sample of 952 older adult male-female couples from the second and third waves of the National Social Life, Health, and Aging Project (NSHAP; Suzman, 2009). All couples provided scores on the 3-item UCLA Loneliness Scale and 11 items of the Center for Epidemiological Studies Depression Scale. Actor-Partner Interdependence Models were fit to the two-wave panel data (Kenny, Kashy, & Cook, 2006). Results only support temporal effects of loneliness on depressive symptomatology within individuals; no partner effects were observed (female: $b = .22$, $SE = .02$, $p < .001$; male: $b = .18$, $SE = .02$, $p < .001$). Model fitting suggested temporal individual ($b = .66$, $SE = .06$, $p < .001$) and partner ($b = .17$, $SE = .06$, $p < .010$) effects of depressive symptomatology on loneliness for women but only temporal individual effects for men ($b = .64$, $SE = .07$, $p < .001$). Male partner depressive symptoms, thus, may have spillover effects for female partners' feelings of loneliness. Findings are consistent with prior research suggesting gender differences in the association between partners' affect and personal well-being.

Symposium 6: 1323/S158
Friday, March 25, 4:00pm-5:15pm

BIOLOGICAL EMBEDDING OF EARLY LIFE ADVERSITY: A MECHANISM-FOCUSED, LIFESPAN APPROACH

Jennifer A. Sumner, PhD, Jordan L. Thomas, MA, Jennifer A. Sumner, PhD, Jordan L. Thomas, MA, Psychology, University of California, Los Angeles, Los Angeles, CA, Aoife O'Donovan, PhD, Psychiatry, University of California, San Francisco, San Francisco, CA, Elizabeth S. Clausing, PhD, Shakira F. Suglia,

ScD, Epidemiology, Emory University Rollins School of Public Health, Atlanta, GA
Individuals exposed to early life adversity (ELA)—experiences that represent a deviation from the expectable environment and require adaptation—are at elevated risk for poor health across the lifespan. Affecting nearly one-half of the population, ELA is one of the leading preventable causes of various forms of psychopathology and physical illnesses, including premature mortality. Moreover, early adverse environments can encompass a highly heterogeneous set of experiences, including abuse, neglect, and community violence. These wide-ranging experiences may have unique consequences for development and may require distinct interventions to offset risk. Given the lifelong negative consequences of ELA, understanding the varied mechanisms through which adversity may "get under the skin" to contribute to poor health is key. This symposium features four research presentations that shed light on how ELA may become biologically embedded and contribute to adverse health outcomes. These presentations focus on a wide range of ELA experiences and how they relate to several metrics that can reflect altered physiology and accelerated biological aging, including epigenetic (i.e., accelerated epigenetic age), cellular (i.e., leukocyte telomere length), and reproductive (i.e., pubertal timing) markers. These studies highlight diverse conceptualizations of ELA experiences—including cumulative risk and dimensional approaches—that hold promise for informing screening efforts and disentangling how adversity gets under the skin to influence health. Implications of these markers of biological aging for health will be highlighted, documenting links with other physiological systems affected by ELA (e.g., the HPA axis), as well as with adverse health indicators (e.g., sexual health outcomes). Furthermore, these projects take a life course perspective, studying these processes in children, adolescents, and adults, and they showcase a variety of research approaches, including cross-sectional, longitudinal, and population-representative cohorts in domestic (i.e., United States) and international (i.e., Switzerland) contexts. Our discussant—a leading scholar in adversity, stress, and health—will integrate findings and highlight future directions and potential clinical implications of ELA and its biological sequelae.

Individual Abstract Number: 1339
EARLY LIFE ADVERSITY, LIFE STRESS, AND ACCELERATED EPIGENETIC AGING IN YOUTH: PREDICTORS OF CHANGE OVER TIME

Jennifer A. Sumner, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA, Xu Gao, PhD, Occupational and Environmental Health Sciences, Peking University, Beijing, China, Simone Gambazza, PhD, Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy, Christian K. Dye, PhD, Environmental Health Sciences, Columbia University Mailman School of Public Health, New York, NY, Natalie L. Colich, PhD, Psychology, Harvard University, Cambridge, MA, Andrea A. Baccarelli, MD, PhD, Environmental Health Sciences, Columbia University Mailman School of Public Health, New York, NY, Katie A. McLaughlin, PhD, Psychology, Harvard University, Cambridge, MA
Background: Accelerated development may be a mechanism by which early life adversity (ELA) leads to adverse health outcomes, and ELA has been linked to accelerated biological aging (e.g., telomere length, epigenetic age, pubertal timing) in youths. Further, research suggests that early adversities characterized by threat (reflecting potential for physical harm)—and not deprivation (involving the absence of expected environmental inputs)—are particularly associated with accelerated biological aging. However, most research has

been cross-sectional, and it is unclear whether early experiences capturing the dimensions of threat and deprivation, along with intervening life stress, relate to change in biological aging.

Methods: In 119 youths aged 8-16 years at baseline, we examined if lifetime threat and deprivation, as well as intervening stressful life events, predicted rate of change in epigenetic age over 2 years. At baseline, youths and caregivers reported on youths' lifetime experiences of abuse, neglect, violence exposure, and other ELA; lifetime threat and deprivation composites were summed based on these reports. At follow-up, youths and caregivers indicated youths' past-year stressful life events during the UCLA Life Stress Interview; a total objective stress score was calculated by summing independent raters' event impact scores. At both timepoints, youths provided saliva samples for DNA. DNA methylation was assessed with the EPIC BeadChip, and Horvath epigenetic age estimates were derived.

Results: Epigenetic age estimates increased at an average rate of 1.02 years per calendar year. Neither lifetime threat nor deprivation significantly predicted rate of change in epigenetic age per calendar year in the full sample. In age-stratified analyses, greater lifetime threat—but not deprivation—was associated with a greater rate of change in epigenetic age for children (β=0.29, p=.049) but not adolescents (12+ years; β= -0.14, p=.422). Higher total objective stress scores at follow-up were also related to a greater rate of change in epigenetic age in the full sample (β=0.21, p=.040) and in children (β=0.29, p=.039).

Conclusions: Our results shed light on the biological embedding of aspects of ELA and stress. Further research is needed to understand if changes in epigenetic aging in youths relate to mental and physical health over the lifespan.

Individual Abstract Number: 1364
DIMENSIONS OF EARLY LIFE ADVERSITY AND SEXUAL BEHAVIOR IN A U.S. POPULATION-REPRESENTATIVE SAMPLE OF ADOLESCENTS

Jordan L. Thomas, MA, Psychology, University of California, Los Angeles, Los Angeles, CA, Natalie L. Colich, PhD, Katie A. McLaughlin, PhD, Psychology, Harvard University, Cambridge, MA, Jennifer A. Sumner, PhD, Psychology, University of California, Los Angeles, Los Angeles, CA

Background: Dimensions of early life adversity (ELA) have divergent health consequences. Although ELA has been broadly associated with sexual risk, key ELA dimensions—and potential mechanisms—have not been examined. We evaluated associations between threat and deprivation—two distinct ELA dimensions—and sexual behaviors important to adolescent health. A secondary objective was to investigate age at menarche—a marker of biological aging—as a mechanism linking ELA with sexual outcomes in adolescent girls. We predicted associations between threat and sexual behaviors—with younger age at menarche as a potential pathway.

Method: Data were from the National Comorbidity Survey, Adolescent Supplement. Adolescents and their caregivers reported on youths' ELA experiences, which were categorized as threat- or deprivation-related and summed to create composites. Adolescents reported if they ever engaged in sex (primary outcome) and on sexual risk behaviors, including age at first sex, number of past-year sexual partners, and condom use consistency ("always" vs "not always" used a condom). Girls reported age at menarche.

Results: In this sample of 9,937 adolescents (50.9% girls), cumulative experiences of threat (OR=1.10) and deprivation (OR=1.03) were each linked with engagement in sex, ps<.05. Threat experiences were associated with multiple sexual risk

markers, even when accounting for deprivation: earlier age at first sex (b=-0.20), greater number of past-year partners (b=0.17), and inconsistent condom use (OR=0.93), ps <.001. Deprivation was not associated with sexual risk when adjusting for threat. Among girls, earlier age at menarche was associated with elevated odds of engagement in sex (OR=0.97) and earlier age at first sex (b=0.12), ps<.05. We observed only one small, yet significant, indirect effect, whereby the association between threat and engagement in sex was partially accounted for by earlier age at menarche (OR=1.00), p=.05.

Conclusions: Although both threat and deprivation were related to engagement in sex in a population-representative sample of adolescents, threat experiences were uniquely associated with sexual risk. Pubertal timing did not consistently link threat with sexual outcomes, suggesting that additional mechanisms may be operating. Screening for threat-related ELA in pediatric settings may identify adolescents at-risk for poor sexual health.

Individual Abstract Number: 1413
HIGHER HAIR CORTISOL CONCENTRATIONS ARE ASSOCIATED WITH SHORTER LEUKOCYTE TELOMERE LENGTH IN YOUNG ADULTS WITH A HISTORY OF EARLY LIFE ADVERSITY

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Background: Early life adversity (ELA) is associated with accelerated biological aging as indexed by short age-adjusted leukocyte telomere length (LTL). A better understanding of the modifiable mechanisms linking ELA with LTL may yield targets and interim endpoints for intervention studies. Given that ELA is associated with elevated cortisol in adulthood and *in vitro* studies indicate that cortisol impairs telomere maintenance, cortisol potentially represents such a mechanism. Results of studies examining associations of basal cortisol levels with LTL are inconsistent. However, cortisol measures in these studies have frequently indexed only a single point in time and we need more stable chronic measures. Hair cortisol concentration (HCC) has emerged as a measure of chronic cortisol secretion, allowing the examination of relationships between aggregate cortisol levels over months and LTL.

Methods: Our sample includes 92 participants (38% women, M_{age} = 26±3.7 years) who experienced childhood residential care placements ($M_{Placements}$ = 3.7, Range: 1-20), with 78% reporting childhood maltreatment on the Childhood Trauma Questionnaire (CTQ). Two cm hair was collected for HCC, reflecting approximately eight weeks of cortisol secretion. HCCs were measured using a high-sensitivity enzyme immunoassay (Salimetrics, UK). Blood samples were collected between 9AM and 11AM, and quantitative polymerase chain reaction (qPCR) was used to quantify LTL (Applied Biosystems, USA). All samples for LTL were run in triplicate and assayed twice. Linear and polynomial regression models were used to describe the association between HCC and LTL, adjusting for age and sex.

Results: HCC and LTL showed large negative associations (β = -0.67, 95% CI [-0.83, -0.52], p < .001) in age and gender

adjusted analyses, indicating that higher HCCs are associated with shorter LTL. Moreover, using polynomial regression models we found a curvilinear relationship indicating a stronger negative association at lower cortisol concentrations.
Conclusions: Higher HCCs were associated with shorter LTL in a sample exposed to ELA, supporting the hypothesized involvement of prolonged cortisol secretion in telomere attrition. Thus, HCC may prove useful as a biological indicator of chronic stress associated with aging-related processes in samples with high levels of ELA.

Individual Abstract Number: 1412
ASSOCIATION OF EARLY LIFE ADVERSITY WITH EPIGENETIC AGE ACCELERATION IN ADULTHOOD

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Background: Accumulating evidence suggests that early life adversity, such as economic, social, and traumatic stressful experiences, can become embodied by leaving lasting signatures on the epigenome. A novel way to measure stress effects on the epigenome is through examining associations with estimates of DNA methylation age (DNAmAge). Deviation between chronological and estimated epigenetic age has been predictive of all-cause mortality, cancer, and cardiovascular disease. Many psychosocial stressors have been linked with accelerated epigenetic aging in adults, including chronic financial stress, lifetime stress exposure, and retrospective report of childhood trauma. However, few studies have examine prospective measures of childhood and adolescent stress with epigenetic aging.
Methods: In 359 individuals from the Child Health and Development Studies (CHDS) Disparities (DISPAR) Study, economic, social, and traumatic stressors were assessed at multiple timepoints (birth, age 9, 15 and 50). Life period stress scores were then assessed at childhood (birth-age 15) and adulthood (age 50). At age 50, participants provided blood samples for DNA, and DNA methylation was assessed with the EPIC BeadChip. Epigenetic age was estimated using 5 epigenetic clocks. Age acceleration was determined using residuals from regressing chronologic age on each of the 5 epigenetic clocks. Linear regression adjusted for race, gender, and smoking status was used to estimate associations between childhood and adulthood stress, and epigenetic age acceleration.
Results: Childhood stress independently predicted accelerated aging based on one of the five epigenetic clocks, GrimAge. Higher childhood stress was associated with higher epigenetic age acceleration (β =0.90, p=1.18E-07). In race-stratified analyses, greater childhood and adulthood stress were associated with accelerated epigenetic aging among White participants but not Black participants. In gender-stratified analyses, greater childhood and adulthood stress

were associated with accelerated epigenetic aging among female participants but not male participants.
Conclusion: We found that aspects of early life were associated with accelerated epigenetic age in GrimAge, which has been shown to be the strongest predictor of mortality risk among the epigenetic clocks. Further research of this association in larger samples is needed.

Symposium 7: 1559/S166
Saturday, March 26, 2:30pm-3:30pm

HETEROGENEITY IN MARKERS OF SUBCLINICAL CARDIOVASCULAR DISEASE: UNDERSTANDING THE INFLUENCE OF AGE, SEX, AND RACE IN EARLY RISK

Kristie M. Harris, PhD, Allison E. Gaffey, PhD, Internal Medicine, Yale School of Medicine, New Haven, CT, DeWayne P. Williams, PhD, Cameron Wiley, MA, Psychological Science, University of California Irvine, Irvine, CA, Kristie M. Harris, PhD, Allison E. Gaffey, PhD, Internal Medicine, Yale School of Medicine, New Haven, CT, Julian F. Thayer, PhD, Psychological Science, University of California Irvine, Irvine, CA

As precision medicine becomes the norm rather than the exception, alleviating the burden of cardiovascular disease among the general population and on the healthcare system requires a more nuanced understanding of the development of cardiovascular disease over time and the contextual background in which risk occurs. Increasing attention has been placed on identifying additional markers of subclinical cardiovascular disease – i.e., cardiac, hemodynamic, and vascular – with the potential to improve traditional risk stratification models. Less attention however, has been placed on understanding heterogeneity in these markers and how they may be associated with an individual's age, sex, race, or various psychosocial and behavioral determinants of health, including stress and sleep.
The primary purpose of this symposium is to offer emerging evidence concerning novel markers of subclinical cardiovascular disease – i.e., left ventricular mass, total peripheral resistance, and arterial stiffness – with a special focus on understanding variability associated with individual differences. The presentations include data from across the lifespan, including samples of adolescents, and younger and older adults from the general population. The first paper leverages a sample of adolescents to examine differences in left ventricular mass by age and sex. The second paper characterizes the associations between heart rate variability, blood pressure, and total peripheral resistance in specific sex and race groups using data from a 6-year cohort of Black and White younger adults. The third paper utilizes data from a laboratory-based investigation to examine the association of age and sex with arterial stiffness responses to acute stress. Finally, the fourth paper includes cross-sectional data to report on the sex-specific associations between actigraph-assessed sleep and arterial stiffness. Aligned with the conference theme of embracing heterogeneity, these papers demonstrate the complex interplay between patient-level variables and early markers of cardiovascular disease and will offer insights about physiological processes that may be relevant for explaining disparities in risk. The symposium will conclude with a discussion of future directions for research, led by an expert in individual differences in cardiovascular responsivity and adaptive functioning.

Individual Abstract Number: 1564

SEX DIFFERENCES IN THE ASSOCIATION BETWEEN AGE AND LEFT VENTRICULAR MASS IN ADOLESCENTS

DeWayne P. Williams, PhD, Psychological Science, University of California Irvine, Irvine, CA, Kristie M. Harris, PhD, Allison E. Gaffey, PhD, Internal Medicine, Yale School of Medicine, New Haven, CT, James D. Halbert, PhD, Xiaoling Wang, MD, PhD, Vincent Robinson, MD, Gaston Kapuku, MD, PhD, Department of Medicine, Georgia Prevention Institute, Medical College of Georgia at Augusta University, Augusta, GA, Julian F. Thayer, PhD, Psychological Science, University of California Irvine, Irvine, CA

Converging evidence suggests that greater left ventricular mass (LVM) is a risk factor for cardiovascular disease. Both age and sex have a complex association with LVM. For example, a multi-ethnic study found higher LVM in individuals younger than 65 compared to individuals older than 65 (Chong et al., 2009). In contrast, findings from The Cardiovascular Heart Study showed a weak, but positive association between age and LVM among older adults (Gardin et al., 1995). Regarding sex, LVM is generally lower in women than men, a difference which may begin in early life (e.g., 11-year-olds; Goble et al., 1992). However, among obese adults, LVM was higher in women compared to men (Simone et al., 2011). Less research has focused on earlier in the lifespan (i.e., adolescence), and understanding if sex moderates the association between age and LVM in a young, relatively healthy sample is warranted. In a sample of 687 adolescents (50% women) aged 13 and 19 years (mean = 16 years), LVM was assessed during a baseline period via echocardiography. Covariates for moderation tests included ethnicity, waist-to-hip ratio, waist circumference, body mass index, and blood pressure. Overall, age was directly associated with LVM (B=12.18 (2.38), p<.001) and young women had lower LVM than young men (F(1,677)=84.05, p<.001). Sex significantly moderated the association between age and LVM (F(1,677)=15.91, p<.001), such that older age was associated with greater LVM in young men (B =5.67 (1.12), p<.001), but no significant association was found for young women (B=-0.75 (1.16), p=.520). Results are consistent in a truncated sample (n=588) including c-reactive protein and inter-beat-intervals as covariates. Overall, age and LVM appear to differ by sex in adolescence, patterns which may be an important determinant of sex differences in cardiovascular disease risk later in life.

Individual Abstract Number: 1572
HEART RATE VARIABILITY PREDICTING BLOOD PRESSURE AND TOTAL PERIPHERAL RESISTANCE OVER SIX YEARS: THE INTERSECTION OF RACE AND SEX

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Black Americans (BA) have a greater risk for the development of cardiovascular complications, such as hypertension, compared to White Americans (WAs). Higher vagally mediated heart rate variability (HRV) is typically associated with lower blood pressure (BP) and total peripheral resistance (TPR). We previously showed higher resting HRV predicted lower BP and TPR six years later in WAs but not BAs (Williams et al., 2021), thereby highlighting less effective vagal activity in BAs which might contribute to health disparities as higher TPR is associated with end-organ damage. Regarding BP, we previously reported higher HRV predicted lower diastolic BP among WAs and Black men, but not in Black women. We therefore reconsidered how the association between HRV and TPR might vary at the intersection of both race and sex in 385 Black and White normotensive young adults (54% BAs; mean age 23.16 ± 2.9 yr). Bioimpedance was used to assess HRV at Time 1 and cardiac output at both Time 1 and Time 2, spanning approximately six years. Resting mean arterial pressure was measured at both times via an automated BP device. TPR was calculated as MAP divided by cardiac output. Cardiac index and total peripheral index were calculated by dividing cardiac output and TPR by body surface area, respectively; these adjusted indices were used as primary measures of TPR and cardiac output. Controlling for Time 1 TPR, moderation tests (F (1, 202) = 3.02, p = .083) showed that higher HRV at Time 1 significantly predicted lower TPR at Time 2 in Black men (F (1, 202) = -2.12, p = .028), but not in Black women (F (1, 202) = .023, p = .767). No moderation by sex was found among WAs (F (1, 173) = 3.02, p = .403), and no notable or similar moderation patterns were found when examining cardiac output or mean arterial pressure among BAs. These data extend our recent report (Williams et al., 2021) and highlight that Black women, specifically, may show TPR-mediated elevations in BP irrespective of resting HRV, which can be detrimental for overall health. From a psychological perspective, the dual impact of unfair treatment (e.g., race- and sex-based discrimination) may play an important role here that future studies should address. In sum, the intersectionality of race and sex, especially in BAs, should be considered when exploring physiological pathways underlying health disparities.

Individual Abstract Number: 1578
ACUTE PSYCHOLOGICAL STRESS-INDUCED CHANGES IN ARTERIAL STIFFNESS IN HEALTHY ADULTS: EXAMINING THE EFFECTS OF AGE AND SEX

Kristie M. Harris, PhD, Allison E. Gaffey, PhD, Internal Medicine, Yale School of Medicine, New Haven, CT, Joseph E. Schwartz, PhD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, Matthew M. Burg, PhD, Internal Medicine and Anesthesiology, Yale School of Medicine, New Haven, CT

Objective: Arterial stiffness (AS) is an early, independent predictor of cardiovascular morbidity and mortality that is associated with age, and this relationship is moderated by sex. Exposure to acute psychological stress can provoke an increase in AS, yet there is heterogeneity in who demonstrates a response and in the magnitude of increase. The aim of this study was to examine the associations of age and sex with the AS response to acute stress.
Methods: Healthy, normotensive adults (n=77; mean age=31.8±10.4 years; 78% women; 65% White) were recruited from the community and participated in a laboratory stress protocol, including resting baseline (10 min), stress (10 min), and recovery periods (60 min). Demographics were collected via self-report. Augmentation index adjusted to a heart rate of 75bpm (AIx), an AS measure, was assessed at the end of baseline, the mid-point and end of stress, and at 10-, 30-, 45-, and 60-minutes into recovery with the Oscar 2, a cuff-based non-invasive ambulatory monitor. Repeated measures mixed modeling was used to examine differences in AS between periods (baseline, stress, recovery), and the interaction of age and sex with period, adjusting for race, body mass index, and height.

Results: In the adjusted model, AIx during the stress period was higher than at baseline (β=5.54%, p=.005). AIx during the recovery period was lower than during the stress period (β=-7.30%, p=.0002) but did not differ from baseline (β=-1.76%, p=.33). There were main effects for age (β=0.52, p=.0003) and sex (β=-9.15, p=.03), whereby older age and female sex were associated with greater AIx across the study periods. The association of sex and age with AS did not differ by period (ps>.20 for both interactions). A post-hoc examination of the means for each AS assessment revealed that the mid- and end of stress values did not differ (p=.65) but AS showed a progressive decline over the 1-hour recovery period (β range=-4.62 to -3.06%, all p<.04; see Figure 1).
Conclusions: Age and sex were associated with AS across all periods of the stress-induction protocol but did not explain differences in the degree of increase in AS from baseline to peak stress. More work is needed to determine if acute stress-induced increases in AS translate into greater chronic AS and to identify other variables that might explain heterogeneity in the AS response to stress.

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Individual Abstract Number: 1586
ECOLOGICALLY ASSESSED SLEEP DURATION AND ARTERIAL STIFFNESS AMONG MEN AND WOMEN
Allison E. Gaffey, PhD, Kristie M. Harris, PhD, Internal Medicine, Yale School of Medicine, New Haven, CT, Joseph E. Schwartz, PhD, Renaissance School of Medicine, Stony Brook University, Stony Brook, NY, Martica H. Hall, PhD, Psychology, University of Pittsburgh School of Medicine, Pittsburgh, PA, Matthew M. Burg, PhD, Internal Medicine and Anesthesiology, Yale School of Medicine, New Haven, CT
Objective: Arterial stiffness (AS) is an indicator of early structural remodeling of the large arteries, a precursor to cardiovascular disease (CVD). Factors that accelerate AS are not well-known. Poor sleep – including both short and long duration – is associated with AS. Yet findings are limited to sleep assessed via self-report, or on a single night, or in a research laboratory, and typically rely on single, resting measurements of AS. Associations between sleep and AS may also differ by sex. Thus, we assessed sleep and AS in ecologically valid contexts and examined sex-specific associations.
Methods: Healthy adults (n=260, median age=29 [IQR:26,38], 65% women) completed a gold-standard AS assessment at rest (SphygmoCor) to derive pulse wave velocity (PWV) and central augmentation index (cAIx) – two indices of AS – followed by 7-day actigraph-assessed sleep with concurrent 36-hr assessment (every 30 min) of momentary cAIx, using an ambulatory device (Oscar-2). Multivariable regressions were used to examine cross-sectional associations of average sleep duration with PWV, resting cAIx, average day- and nighttime cAIx, and cAIx dipping, adjusted for age, sex, race, and body mass index. Curvilinearity was explored with a quadratic term (sleep duration squared). Models stratified by sex were explored.
Results: Overall, PWV (F(1,259)=9.31, p=0.003) and resting cAIx (F(1,259)=6.02, p=0.015) were both associated with average sleep duration and significant positive quadratic terms revealed U-shaped relations, with those who slept 7-9 hrs showing the lowest AS. For cAIx, this association was more robust in men (F(2,259)=4.90, p=0.008). There were also quadratic associations of average sleep duration and average day- and nighttime momentary cAIx: men and women with shorter and longer sleep duration had higher daytime cAIx (ps=0.003-0.036), but only men showed this association at night (F(1,79)=17.75, p<0.001). Lastly, sleep duration was

positively associated with cAIx dipping in women (F(1,169)=10.27, p=0.002), but not in men.
Conclusions: Associations between sleep duration and AS appear to be curvilinear, while sleep duration may be directly related to cAIx dipping in women. Our results underscore the value of ecological assessments of both sleep and AS. Interventions targeting sleep duration may reduce AS, a hypothesis to be tested in randomized clinical trials.

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Symposium 8: 1347/S160
Saturday, March 26, 3:45pm-4:45pm

TRAUMA AND HEALTH AMONG MIDLIFE AND AGING WOMEN
Rebecca C. Thurston, PhD, Psychiatry, Psychology, Epidemiology, Karen P. Jakubowski, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Carolyn Gibson, PhD, MPH, Psychiatry & Behavioral Sciences, University of California San Francisco, San Francisco, CA, Mary Y. Carson, MS, Psychology, Rebecca C. Thurston, PhD, Rebecca Thurston, PhD, Psychiatry, Epidemiology, and Psychology, University of Pittsburgh, Pittsburgh, PA
Psychosocial factors, including childhood abuse and traumatic life experiences (e.g., serious accidents, natural disasters, physical or sexual assault), are increasingly recognized as contributors to mental health problems and chronic disease. Midlife and the menopause transition is a time of psychosocial and biological transition for women often marked by hormonal changes, characteristic symptoms, vulnerability to poor sleep and mood, and accelerated accumulation of cardiovascular disease (CVD) risk. Thus, midlife is a particularly relevant life stage to consider health impacts of trauma. However, extant research on trauma (particularly sexual trauma) and health largely focuses on younger samples of women. This symposium brings together research focused on women's health during midlife and beyond. Using data from three well-characterized cohorts of women, presentations will focus on trauma and its potential impacts on incident CVD and menopause-related changes such as poor sleep, mood, and sex hormones that have been linked to CVD risk. Speakers are past or present members from a single laboratory across three stages of career development. The first speaker, a former predoctoral trainee in the laboratory and current Assistant Professor, will present results indicating that women Veterans who have experienced military sexual trauma are more likely to experience menopause symptoms, insomnia, and poor mental health at midlife. The second speaker, a doctoral student in the laboratory, will present work showing that midlife women exposed to trauma have lower levels of several endogenous estrogens during the postmenopause. The third speaker and symposium Chair, a Professor, senior investigator, and laboratory director will present findings from a longitudinal cohort of women indicating that women who experienced childhood sexual abuse or intimate partner violence show increased risk for incident CVD. Finally, these results will be placed into context by the discussants. The Chair/Discussant is a leading expert on the relationships of trauma and CVD risk across the menopause transition and beyond. The Co-chair/Co-discussant is a former postdoctoral trainee in the laboratory and an emerging expert on gender-based violence, sleep, and cardiovascular health. The discussants will describe key issues and knowledge gaps in research on trauma and midlife women's health and underscore how the presented

science may inform improvements in clinical care for midlife women who are trauma survivors. Overall, the research we will present speaks to issues of women's health equity, highlights the under-recognized importance of trauma to aging women's health, and emphasizes the potential value in addressing trauma history as part of prevention and intervention efforts to improve women's health at midlife and beyond.

Individual Abstract Number: 1436
MILITARY SEXUAL TRAUMA AND MENOPAUSE SYMPTOMS AMONG MIDLIFE WOMEN VETERANS

Carolyn Gibson, PhD, MPH, Psychiatry & Behavioral Sciences, Alison Huang, MD, MAS, General Internal Medicine, Shira Maguen, PhD, Sabra Inslicht, PhD, Amy Byers, PhD, MPH, Psychiatry & Behavioral Sciences, Anita Hargrave, MD, National Clinical Scholars Program at UCSF, Karen Seal, MD, MPH, Medicine, University of California San Francisco, San Francisco, CA

Objective: Military sexual trauma (MST) has been associated with a range of medical and mental health concerns. However, most research has focused on younger women, and little is known about the long-term impact of MST on health in midlife or older age.

Design: Cross-sectional study of women Veterans aged 45-64 enrolled in Department of Veterans Affairs (VA) health care in Northern California in March 2019-May 2020. Participants reported MST using standardized VA screening questions and current menopause symptoms in structured-item questionnaires. Multivariable logistic regression analyses were used to examine associations between MST and menopause symptoms (including vasomotor, vaginal, sleep, and mood symptoms), adjusting for age, race, education, menopause status, and body mass index. MST was examined both as defined by the VA (harassment and/or assault) and also disaggregated into military sexual harassment and military sexual assault.

Results: Among the 232 women Veterans (mean age=55.95, SD=5.13), 72% reported MST. Two thirds (66%) reported vasomotor symptoms (VMS), 57% reported vaginal symptoms, 36% met criteria for moderate-to-severe insomnia, and almost half reported current clinically significant mood symptoms (33% depressive symptoms, 49% anxiety, 27% probable posttraumatic stress disorder [PTSD]). In multivariable analyses, MST was independently associated with over two-fold odds of VMS (OR 2.18, 95% CI 1.14-4.17), three to four-fold odds of depressive symptoms (OR 3.04, 95% CI 1.39-6.63) and anxiety (OR 3.96, 95% CI 2.94-8.10), and over six-fold odds of probable PTSD (OR 6.49, 95% CI 2.21-19.10), after adjusting for menopausal status and other covariates as above. Similar findings were seen in models with disaggregated MST; military sexual assault was additionally associated with almost three-fold greater odds of vaginal symptoms (OR 2.74, 95% CI 1.35-5.57) and clinically significant insomnia (OR 2.96, 95% CI 1.62-5.40).

Conclusion: MST is common among midlife women Veterans and shows strong and independent associations with menopause symptoms, clinical insomnia, and mental health comorbidity. Findings highlight the importance of screening midlife women Veterans for MST in all healthcare settings and recognizing the potential role of this traumatic exposure on women's physical and mental health across the lifespan.

Individual Abstract Number: 1439
TRAUMATIC EXPERIENCES AND HORMONE CONCENTRATIONS AMONG MIDLIFE WOMEN

Mary Y. Carson, MS, Psychology, University of Pittsburgh, Pittsburgh, PA, Pauline M. Maki, PhD, Psychiatry, Psychology, and Obstetrics & Gynecology, University of Illinois at Chicago, Chicago, IL, Rebecca C. Thurston, PhD, Psychiatry, Epidemiology, and Psychology, University of Pittsburgh, Pittsburgh, PA

Background: Traumatic experiences are associated with poor health later in life. However, the relation of traumatic experiences to midlife women's physical health, particularly sex hormones, is not well understood. Estrogens are important to women's health, as loss of endogenous estrogen is associated with adverse changes in several health outcomes including cardiovascular, bone, and mental health. It is thought that severe psychological stress may suppress ovarian function which reduces ovarian estrogen secretion. Early data link trauma to lower estradiol, but this study was conducted among younger women whose levels of estradiol are in the high, premenopausal range. Midlife is an important time of rapid loss of ovarian estrogens and accumulating health risk. Further, little research has been conducted on estrone, the estrogen that becomes predominant in the postmenopause. We tested whether traumatic experiences are associated with lower endogenous estrogen (estradiol, estrone) in midlife women.

Methods: Participants (n=270; 79% white, 17% black, 4% other ethnicity; Mean age=59 years) were postmenopausal women free of hormone therapy. Women completed questionnaires (Brief Trauma Questionnaire, Center for Epidemiological Studies Depression, PTSD Checklist-Civilian Version, demographics) and a blood draw. Estradiol and estrone were assessed via liquid chromatography mass spectrometry. Associations between lifetime traumatic events in relation to estrogens were tested via linear regression [covariates age, race/ethnicity, body mass index, smoking (ever)]. Depressive or post-traumatic stress symptoms were added in separate steps.

Results: Of the 270 women, 173 women (64%) reported a lifetime traumatic event. Women with a trauma history had lower levels of estrone [b(SE)=-.16 (.06), p=.006; multivariable, Figure 1] and lower levels of estradiol [b(SE)=-.16 (.08), p=.04; multivariable, Figure 2] than women without this history. Findings were not accounted for by depressive or post-traumatic stress symptoms.

Conclusions: Among these midlife women, lifetime trauma history was associated with lower concentrations of estrone and estradiol. This work underscores the importance of considering trauma in relation to endogenous estrogens, which have implications for women's health as they age. Supported by RF1AG053504, R01HL105647, K24HL123565, UL1TR000005.

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Individual Abstract Number: 1445
INTERPERSONAL TRAUMA AND RISK OF INCIDENT CVD IN THE STUDY OF WOMEN'S HEALTH ACROSS THE NATION

Rebecca C. Thurston, PhD, Psychiatry, Epidemiology, and Psychology, Yuefang Chang, PhD, Neurosurgery, Karen A. Matthews, PhD, Psychiatry, University of Pittsburgh, Pittsburgh, PA, Sioban D. Harlow, PhD, Epidemiology, University of Michigan, Ann Arbor, MI, Samar R. El Khoudary, PhD, MPH, Epidemiology, University of Pittsburgh, Pittsburgh, PA, Imke Janssen, PhD, Preventive Medicine, Rush University Medical Center, Chicago, IL, Carol Derby, PhD, Epidemiology, Albert Einstein College of Medicine, Bronx, NY

Background. Traumatic experiences have been linked to risk for cardiovascular disease (CVD). Interpersonal violence is a prevalent trauma in women. However, few studies have investigated whether interpersonal violence is associated with

incident CVD events. Among midlife women, we tested whether interpersonal violence [childhood abuse, adulthood abuse, intimate partner violence (IPV)] was related to risk of subsequent CVD events.

Methods. 2201 women aged 42-52 at baseline underwent up to 16 in-person visits over 22 years in the Study of Women's Health Across the Nation (SWAN). Measures included questionnaires (childhood physical/sexual abuse, adult physical/sexual abuse, IPV), physical measures, phlebotomy, and reported CVD events (myocardial infarction, stroke, heart failure, revascularization). Death certificates were collected. Relationships of childhood abuse, adult abuse, and IPV to combined fatal/nonfatal CVD were tested in Cox proportional hazards models. Mediation was tested in additional models via product of coefficient methods.

Results. Women with a childhood abuse history had increased risk for incident CVD [vs. no abuse; HR (95%CI)=1.65 (1.12, 2.44), p=.01; adjusted for demographics, CVD risk factors; Figure 1]; associations were strongest for childhood sexual abuse. Women with IPV had a doubling of risk for incident CVD in demographic-adjusted models [vs. no IPV, IPV: HR (95%CI) = 2.06 (1.01, 4.23) p=.04; no partner: HR (95%CI)=1.79 (0.91, 3.53), p=.09; Figure 2]; systolic blood pressure (SBP) was a partial mediator of IPV-CVD associations. Adult abuse was not significantly associated with CVD.

Conclusion. Childhood abuse, particularly sexual abuse, was associated with increased risk of CVD events in midlife women. IPV was associated with CVD risk, and this relationship was mediated in part by higher SBP among IPV-exposed women. Interpersonal violence prevention may contribute to CVD risk reduction in women.

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